Final Report

2005 Urban Water Management Plan – Artesia

Golden State Water Company
A Subsidiary of American States Water Company

Region II Headquarters

1920 West Corporation Way
Anaheim, CA 92801

December 2005

CH2MHILL
325 E. Hillcrest Drive Suite 125
Thousand Oaks, CA
91360-5828

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Notice of Adoption

A meeting to solicit public comments on the 2005 Urban Water Management Plan for the Golden State Water Company Artesia System was held on November 15, 2005 at 7:00 pm at the Sproul Reception Center (Barn), Norwalk Arts & Sports Complex in Norwalk, California. Notice of this meeting was published in accordance with Section 6066 of Government Code in the Long Beach Press Telegram on October 27, 2005 and on November 3, 2005.

Copies of the Urban Water Management Plan were made available to the public at the Golden State Water Company Central Basin East Customer Service Office in Norwalk, California and the Central Basin West Customer Service Office in Bell Gardens,, California two weeks prior to the public hearing.

Comments, oral and written, if received and responses to comments are documented in Appendix H of this document.

Golden State Water Company hereby adopts the 2005 Urban Water Management Plan for the Artesia System.

Patrick Scanlon
Vice President, Customer Service
Region II
Golden State Water Company

December 31, 2005

Abbreviations

ABAG	Association of Bay Area Governments
ac-ft	acre-feet
ac-ft/yr	acre-feet per year
Act	Urban Water Management Planning Act
AMCL	alternative MCL
AWWA	American Water Works Association
BMPs	best management practices
CBO	community-based organization
CCL	contaminant candidate list
CCRs	consumer confidence reports
CDHS	California Department of Health Services
cfs	cubic feet per second
CIMIS	California Irrigation Management Information System
Council	California Urban Water Conservation Council
CPE	comprehensive performance evaluation
CPUC	California Public Utilities Commission
CSA	customer service area
CT	concentration time
CUWA	California Urban Water Agencies
CWSs	community water systems
D/DBP	disinfectant/disinfection by-product
DMM	demand management measure
DOC	dissolved organic carbon
DOF	Department of Finance
DWR Guidebook	Guidebook to Assist Water Suppliers in the Preparation of a 2005 Urban Water Management Plan
DWR	Department of Water Resources (California)

EC	enhanced coagulation
EPA	Environmental Protection Agency
ERP	emergency response plan
ETo	evapotranspiration
gpm	U.S. gallons per minute
GSWC	Golden State Water Company
GWR	Groundwater Rule
HAA5	haloacetic acids
IESWTR	Interim Enhanced Surface Water Treatment Rule
IOCs	inorganic contaminants
IRP	Integrated Resource Plan
LACSD	Sanitation Districts of Los Angeles County
LT1ESWTR	Long Term 1 Enhanced Surface Water Treatment Rule
LT2ESWTR	Long Term 2 Enhanced Surface Water Treatment Rule
MCLGs	maximum contaminant level goals
MCLs	maximum contaminant levels
Metropolitan	Metropolitan Water District of Southern California
MG	million gallons
MMM	multimedia mitigation
MOU	memorandum of understanding (regarding urban water conservation in California)
MRDLs	maximum residual disinfectant levels
mrem	millirems
MTBE	methyl tertiary-butyl ether
MWD	Municipal Water District with reference to any of the member agencies of the Metropolitan Water District of Southern California
N/A	not available
NAICS	North American Industry Classification System
NDMA	N-nitrosodimethylamine
NPV	net present value
NTNCWS	non-transient non-community water systems

NTU	nephelometric turbidity units
O&M	operation and maintenance
OEHHA	Office of Environmental Health Hazard Assessment
pCi	picoCuries
RO	reverse osmosis
SCAG	Southern California Association of Governments
SDWA	Safe Drinking Water Act
SMCL	secondary maximum contaminant level
SOCs	synthetic organic contaminants
SUVA	source-water-specific ultraviolet absorbance
SWP	State Water Project
SWTR	Surface Water Treatment Rule
TCR	Total Coliform Rule
TDS	total dissolved solids
TOC	total organic carbon
TTHMs	Total Trihalomethanes Rule
UCM	unregulated contaminants monitoring
ULF	ultra low flush
ULFT	ultra-low-flush-toilet
UWMP	Urban Water Management Plan
VOCs	volatile organic compounds
WEWAC	Water Education Water Awareness Committee
WRCC	Western Regional Climate Center
WRP	water reclamation plant
WSDM Plan	Water Surplus and Drought Management Plan
WY	water year

Definitions

Chapter 2, Part 2.6, Division 6 of the California Water Code provides definitions for the construction of the Urban Water Management Plans. Appendix A contains the full text of the Urban Water Management Planning Act.

CHAPTER 2. DEFINITIONS

Section 10611. Unless the context otherwise requires, the definitions of this chapter govern the construction of this part.

Section 10611.5. "Demand management" means those water conservation measures, programs, and incentives that prevent the waste of water and promote the reasonable and efficient use and reuse of available supplies.

Section 10612. "Customer" means a purchaser of water from a water supplier who uses the water for municipal purposes, including residential, commercial, governmental, and industrial uses.

Section 10613. "Efficient use" means those management measures that result in the most effective use of water so as to prevent its waste or unreasonable use or unreasonable method of use.

Section 10614. "Person" means any individual, firm, association, organization, partnership, business, trust, corporation, company, public agency, or any agency of such an entity.

Section 10615. "Plan" means an urban water management plan prepared pursuant to this part. A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities. The components of the plan may vary according to an individual community or area's characteristics and its capabilities to efficiently use and conserve water. The plan shall address measures for residential, commercial, governmental, and industrial water demand management as set forth in Article 2 (commencing with Section 10630) of Chapter 3. In addition, a strategy and time schedule for implementation shall be included in the plan.

Section 10616. "Public agency" means any board, commission, county, city and county, city, regional agency, district, or other public entity.

Section 10616.5. "Recycled water" means the reclamation and reuse of wastewater for beneficial use.

Section 10617. "Urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet(ac-ft) of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems subject to Chapter 4 (commencing with Section 116275) of Part 12 of Division 104 of the Health and Safety Code.

Chapter 1. Introduction and Overview

Background

The Urban Water Management Plan (UWMP) for the Golden State Water Company (GSWC) Artesia System is prepared in compliance with Division 6, Part 2.6, of the California Water Code, Sections 10610 through 10657 as last amended by Senate Bill (SB) 318, the Urban Water Management Planning Act (Act). The original bill, requiring a UWMP, was initially enacted in 1983. SB 318, which became law in 2004, is the eighteenth amendment to the bill. Increased emphasis on drought contingency planning, water demand management, reclamation, and groundwater resources has been provided through the updates to the original bill.

Under the current law, urban water suppliers with more than 3,000 service connections or water use of more than 3,000 acre-feet per year (ac-ft/yr) are required to submit a UWMP every five years to the California Department of Water Resources (DWR). The reports must be submitted by December 31 of years ending in zero and five. Under the name Southern California Water Company, GSWC prepared an UWMP for the Artesia System in 1985, 1990, 1995, and 2000. The 2005 UWMP is an update to the 2000 plan.

The law, as it is now, states and declares the following:

Section 10610.2

(a) The Legislature finds and declares all of the following:

(1) The waters of the state are a limited and renewable resource subject to ever-increasing demands.

(2) The conservation and efficient use of urban water supplies are of statewide concern; however, the planning for that use and the implementation of those plans can best be accomplished at the local level.

(3) A long-term, reliable supply of water is essential to protect the productivity of California's businesses and economic climate.

(4) As part of its long-range planning activities, every urban water supplier should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry water years.

(5) Public health issues have been raised over a number of contaminants that have been identified in certain local and imported water supplies.

(6) Implementing effective water management strategies, including groundwater storage projects and recycled water projects, may require specific water quality and salinity targets for meeting groundwater basins water quality objectives and promoting beneficial use of recycled water.

(7) Water quality regulations are becoming an increasingly important factor in water agencies' selection of raw water sources, treatment alternatives, and modifications to existing treatment facilities.

(8) Changes in drinking water quality standards may also impact the usefulness of water supplies and may ultimately impact supply reliability.

(9) The quality of source supplies can have a significant impact on water management strategies and supply reliability.

(b) This part is intended to provide assistance to water agencies in carrying out their long-term resource planning responsibilities to ensure adequate water supplies to meet existing and future demands for water.

Section 10610.4. The Legislature finds and declares that it is the policy of the state as follows:

(a) The management of urban water demands and efficient use of water shall be actively pursued to protect both the people of the state and their water resources.

(b) The management of urban water demands and efficient use of urban water supplies shall be a guiding criterion in public decisions.

(c) Urban water suppliers shall be required to develop water management plans to actively pursue the efficient use of available supplies.

System Overview

GSWC owns and operates the Artesia System. GSWC is an investor-owned public utility company regulated by the California Public Utilities Commission (CPUC).

Located in Los Angeles County, the Artesia System serves most residents in the cities of Artesia and Hawaiian Gardens, a portion of the City of Lakewood east of San Gabriel River, and a small portion of the City of Long Beach. The Artesia CSA is primarily characterized by residential with some commercial and industrial land use. Figure 1-1 illustrates the location of the Artesia System.

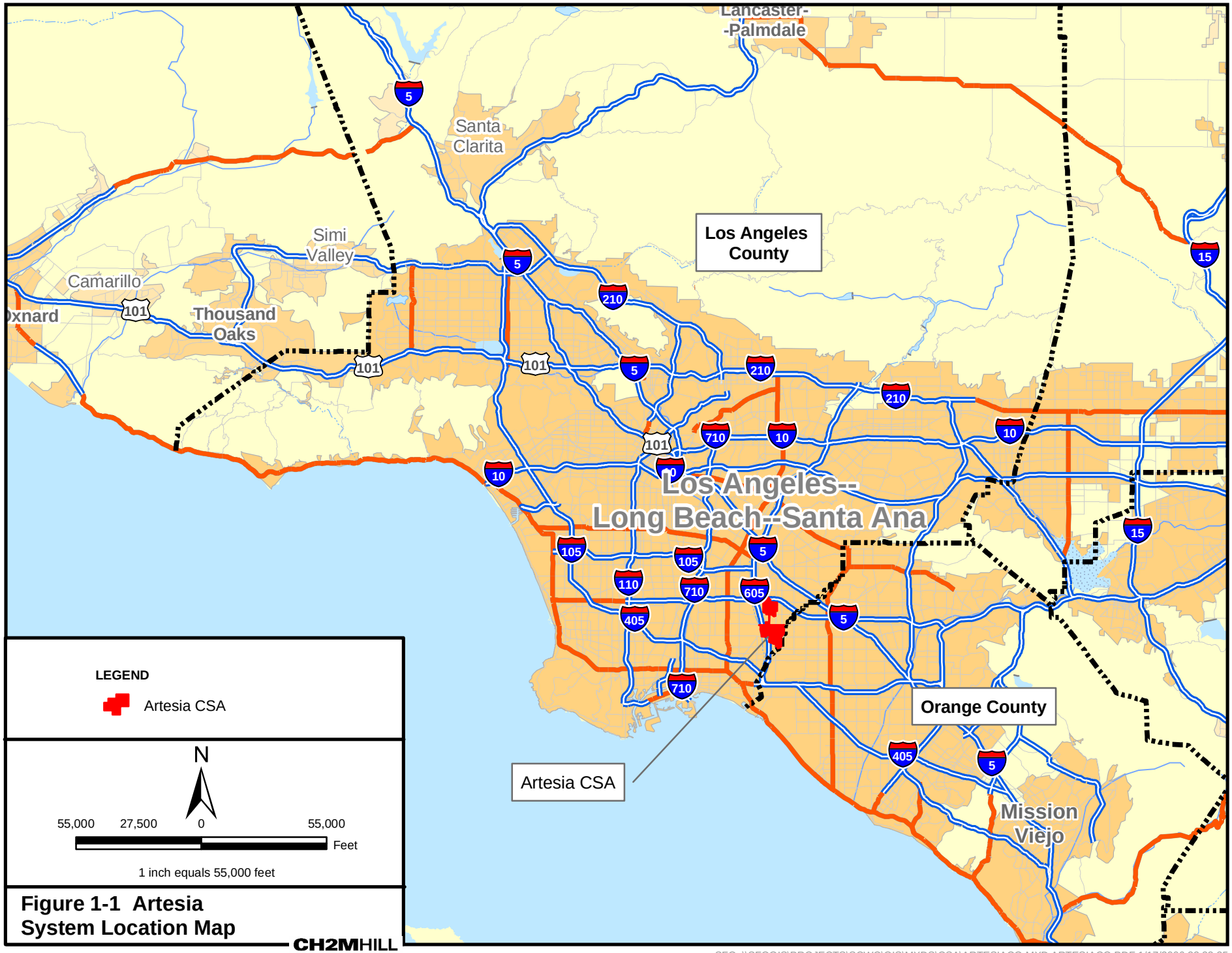

Figure 1-1 Artesia System Location Map

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California Urban Water Conservation Council

GSWC is a signatory to the Memorandum of Understanding Regarding Urban Water Conservation in California (MOU) administered by the California Urban Water Conservation Council (Council). The Council had its beginnings as an independent entity housed under California Urban Water Agencies (CUWA). Currently, the Council is a fully independent nonprofit organization.

The objective of the Council is to implement the MOU. The MOU was signed into existence in 1991 by nearly 100 urban water agencies and environmental groups. Current membership of the Council is over 300 members from various groups such as water suppliers, public advocacy organizations, and other interested groups (Council, 2004).

The MOU is a document by which the signatories obligate themselves to implement the urban water conservation practices identified in the MOU. The goal of the practices in the MOU is to reduce long-term urban water demands and to provide practices that may be implemented during occasional water supply shortages (Council, 2004). The urban water conservation practices identified in the MOU are called the Best Management Practices (BMPs) and range from water audits to toilet replacements. There are 14 practices that also coincide with the 14 demand management measures (DMMs) identified in the Act.

Each agency that is a signatory to the MOU is required to file reports on the implementation of the BMPs identified in the MOU. For the purposes of the UWMP, the reports filed with the Council on the BMPs that are implemented or under implementation can be substituted for the reporting requirements of Section 10631 (f) (1). The UWMP uses the reports filed with the Council in addition to any necessary analysis as described in Section 10631.

Public Utility Commission Policy Changes

Concurrent with the finalization of this document, the CPUC is considering the adoption of policy changes and objectives that would be applicable to GSWC and all other regulated water utilities. The CPUC's draft "Water Action Plan" (WAP) has established the following objectives:

1. Maintain highest standards of water quality;
2. Strengthen water conservation programs to a level comparable to those of energy utilities;
3. Promote water infrastructure investment;
4. Assist low income ratepayers;
5. Streamline CPUC regulatory decision-making; and
6. Set rates that balance investment, conservation, and affordability.

The WAP is a general policy document. Specific implementation policies and programs, along with necessary modifications to CPUC ratemaking policies, will be developed based on the final WAP and other programs including conservation, long term planning, water quality and drought management programs developed in conjunction with the CPUC.

GSWC has been actively involved with the CPUC in suggesting optimal approaches to the WAP. In particular, the GSWC has suggested specific implementation measures and modifications to certain CPUC ratesetting practices so that regulated utilities are able as a practical matter to achieve the policy objectives of the WAP. The exact implementation details have not yet been determined, but if successful, are expected to have a significant impact on GSWC approaches to the planning and management of resources. These efforts may include further investment in local resource optimization, reduced reliance on imported supplies, enhanced conservation and intensification of company-wide efforts to optimize water resource mix, including planned water supply projects and programs to meet the long term water supply needs of GSWC's customers.

In another example, the Urban Water Management Planning Act requires public water suppliers to have in place predetermined actions to be undertaken during water shortage conditions. GSWC has developed actions to be undertaken in response to water supply shortages, including up to a 50 percent reduction in water supply. However, implementation of the actions is dependent upon CPUC approval, particularly where mandatory water use restrictions may be required. As an element of the WAP and related policy improvements, GSWC has requested the CPUC adopt water shortage allocation policies that will facilitate appropriate drought response activities and associated cost recovery mechanisms.

Finally, as part of the Water Action Plan process and otherwise, GSWC is seeking parity with public water agencies in key areas that will impact its long term supply planning and reliability, namely, 1) access to state bond money on behalf of its customers, and 2) full participation in integrated regional water planning mechanisms to ensure that utility customers have a voice in planning outcomes, and, equal access to available funding to implement agreed planning objectives on behalf of their customers.

This UWMP presents an assessment of GSWC's demand projects and water supply availability and reliability under currently established CPUC regulations and conditions. While GSWC has detailed approaches to providing its customers with a reliable supply of water in accordance with UWMP criteria, adoption and implementation of the WAP and other policy objectives mentioned above will likely result in changes in the resource mix described in this UWMP which will likely further improve water supply reliability.

Agency Coordination

Water Code Section 10620 details the coordination requirements of the Act and provides guidance on how the UWMP can be prepared. The text of this section states:

Section 10620

(a) Every urban water supplier shall prepare and adopt an urban water management plan in the manner set forth in Article 3 (commencing with Section 10640).

(b) Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.

(c) An urban water supplier indirectly providing water shall not include planning elements in its water management plan as provided in Article 2 (commencing with Section 10630) that would

be applicable to urban water suppliers or public agencies directly providing water, or to their customers, without the consent of those suppliers or public agencies.

(d)

(1) An urban water supplier may satisfy the requirements of this part by participation in areawide, regional, watershed, or basinwide urban water management planning where those plans will reduce preparation costs and contribute to the achievement of conservation and efficient water use.

(2) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.

GSWC initiated agency coordination with a mailing of letters to cities and counties within its service area, as well as to wholesale agencies, wastewater agencies, and agencies with which GSWC has emergency connections. The initial letters notified the agencies of GSWC intent and requested data for the preparation of the UWMPs. All identified agencies received a follow-up telephone call. Notices of public meeting and intent to adopt were submitted with a copy of the draft report to all above-mentioned agencies. Table 1-1 lists the agencies contacted during the preparation of this UWMP.

Table 1-1
Coordination with Agencies

Agency	Participated in UWMP Development	Commented on the Draft	Attended Public Meetings	Contacted for Assistance	Received Copy of the Draft	Sent Notice of Intent to Adopt	Not Involved/ No Information
Central Basin Municipal Water District				✓	✓	✓	
City of Artesia				✓		✓	
City of Hawaiian Gardens						✓	
City of Lakewood						✓	
City of Long Beach						✓	
Metropolitan Water District of Southern California				✓	✓	✓	
Sanitation Districts of Los Angeles County				✓		✓	
Southern California Association of Governments (SCAG)	✓			✓			

Notes
1. This table is based on DWR's *Guidebook to Assist Water Suppliers in the Preparation of a 2005 Urban Water Management Plan* (DWR Guidebook) Table 1.

Public Participation and Plan Adoption

Public participation and plan adoption requirements are detailed in the following section of the Act:

Section 10642. Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan. Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area. After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

For this update of the UWMP, a public hearing was held on November 15, 2005 at the Sproul Reception Center (Barm), Norwalk Arts & Sports Complex in Norwalk, California for the Artesia System. This public session was held for review and comment on the draft plan before approval by GSWC. Legal public notices for the public hearing were published in the local newspapers in accordance with Government Code Section 6066. Copies of the draft plan were available to the public at GSWC's Central Basin East Customer Service Office in Norwalk, California and the Central Basin West Customer Service Office in Bell Gardens, California. Appendix B contains a copy of the hearing notice from a local newspaper and the meeting minutes from the public pertaining to the UWMP. Appendix C contains comments received, if any, and Appendix H contains responses to public comments.

The final UWMP, as adopted by GSWC, will be submitted to the DWR within 30 days of adoption. This plan includes all information necessary to meet the requirements of California Water Code Division 6, Part 2.6 (Urban Water Management Planning). Adopted copies of this plan are available to the public at GSWC's Central Basin East Customer Service Office and Central Basin West Customer Service Office.

UWMP Preparation

GSWC prepared this UWMP with the assistance of its consultant, CH2M HILL, as permitted by the following section of the Act.

Section 10620

(e) The urban water supplier may prepare the plan with its own staff, by contract, or in cooperation with other governmental agencies.

During the preparation of the UWMP, documents that have been prepared over the years by GSWC and other entities were reviewed and results of those documents incorporated, as applicable, into this UWMP. The list of the documents is provided in Chapter 11.

The adopted plans are available for public review at GSWC's Central Basin East Customer Service Office and the Central Basin West Customer Service Office. Copies of the plan were

submitted to DWR, cities and counties within the service area, the State Library, and other applicable institutions within 30 days of adoption as required by Sections 10644 and 10645.

UWMP Implementation

GSWC is committed to the implementation of this UWMP as required by Section 10643 of the Act. Each region of GSWC has a conservation coordinator that oversees the implementation of DMM via GSWC participation in the Council's MOU.

Content of the UWMP

This UWMP addresses all subjects required by Section 10631 of the Act as defined by Section 10630, which permits "levels of water management planning commensurate with the numbers of customers served and the volume of water supplied." All applicable sections of the Act are discussed in this UWMP, with chapters of the UWMP cross-referenced against the corresponding provision of the Act in Table 1-2.

Table 1-2
Summary of UWMP Chapters and Corresponding Provisions of the California Water Code

Chapter	Corresponding Provisions of the Water Code	
Chapter 1. Introduction and Overview	10642	Public participation
	10643	Plan implementation
	10644	Plan filing
	10645	Public review availability
	10620 (a)–(e)	Coordination with other agencies; document preparation
	10621 (a)–(c)	City and county notification; due date; review
	10620 (f)	Resource optimization
	10630	Level of planning
	10641	Coordination
Chapter 2. Service Area	10631 (a)	Demographics and climate
Chapter 3. Water Supply	10631 (b)–(d), (h), (k)	Water sources, reliability of supply, transfers and exchanges, supply projects, data sharing
Chapter 4. Water Use	10631 (e), (k)	Water use, data sharing
Chapter 5. Demand Management Measures	10631 (f)–(g), (j)	DMM
	10631.5	DMM implementation status
Chapter 6. Desalination	10631 (i)	Desalination
Chapter 7. Water Shortage Contingency Plan	10632	Water shortage contingency plan

Table 1-2
Summary of UWMP Chapters and Corresponding Provisions of the California Water Code

Chapter	Corresponding Provisions of the Water Code	
Chapter 8. Recycled Water Plan	10633	Recycled water
Chapter 9. Water Quality	10634	Water quality impacts on reliability
Chapter 10. Water Service Reliability	10635	Water service reliability

Resource Optimization

Section 10620 (f) of the Actasks urban water suppliers to evaluate water management tools and options to maximize water resources and minimize the need for imported water from other regions.

GSWC is committed to optimizing its available water resources and implements water conservation programs for each of its districts or customer service areas (CSAs). In an effort to expand the breadth of offered programs, GSWC partners with wholesale suppliers, energy utilities, and other agencies that support water conservation programs. While GSWC is fully committed to optimizing its available water resources and implementation of BMP's and DMM's, GSWC is currently limited in its ability to do so by certain ratesetting practices. As noted in the introduction, GSWC is working with the CPUC in the shaping of the Water Action Plan so that it assists regulated water utilities in implementing measures that optimize water resource programs.

Chapter 2. Service Area

Service area requirements are detailed in the following section of the Act:

Section 10631

(a) Describe the service area of the supplier, including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.

Chapter Two summarizes the Artesia System's customer service area (CSA) and presents an analysis of available demographics, population growth projections, and climate data to provide the basis for estimating future water requirements.

Area

The Artesia CSA is located in the Los Angeles County and serves most of the cities of Artesia and Hawaiian Gardens, a portion of the City of Lakewood east of San Gabriel River, a small portion of the City of Long Beach and the City of Cerritos. Figure 2-1 illustrates the Artesia System CSA. The service area consists of north and south portions that are primarily residential with some commercial and industrial land use.

Demographics

The City of Artesia was chosen as demographically representative of the Artesia CSA. According to the 2000 U.S census data, the median age of Artesia's residents is 33.8 years. Artesia has an average household size of 3.54 and a median household income of approximately $44,500.

General Plan or land use information is not available for the Artesia CSA. Based on Artesia's CSA map, it appears to be near "build-out", i.e. the planning area has reached its maximum population. There are only few undeveloped individual parcels in the system and any growth occurring will be a combination of urban expansion and in-fill. In a build-out or nearly build-out area, changes are minor and difficult to predict.

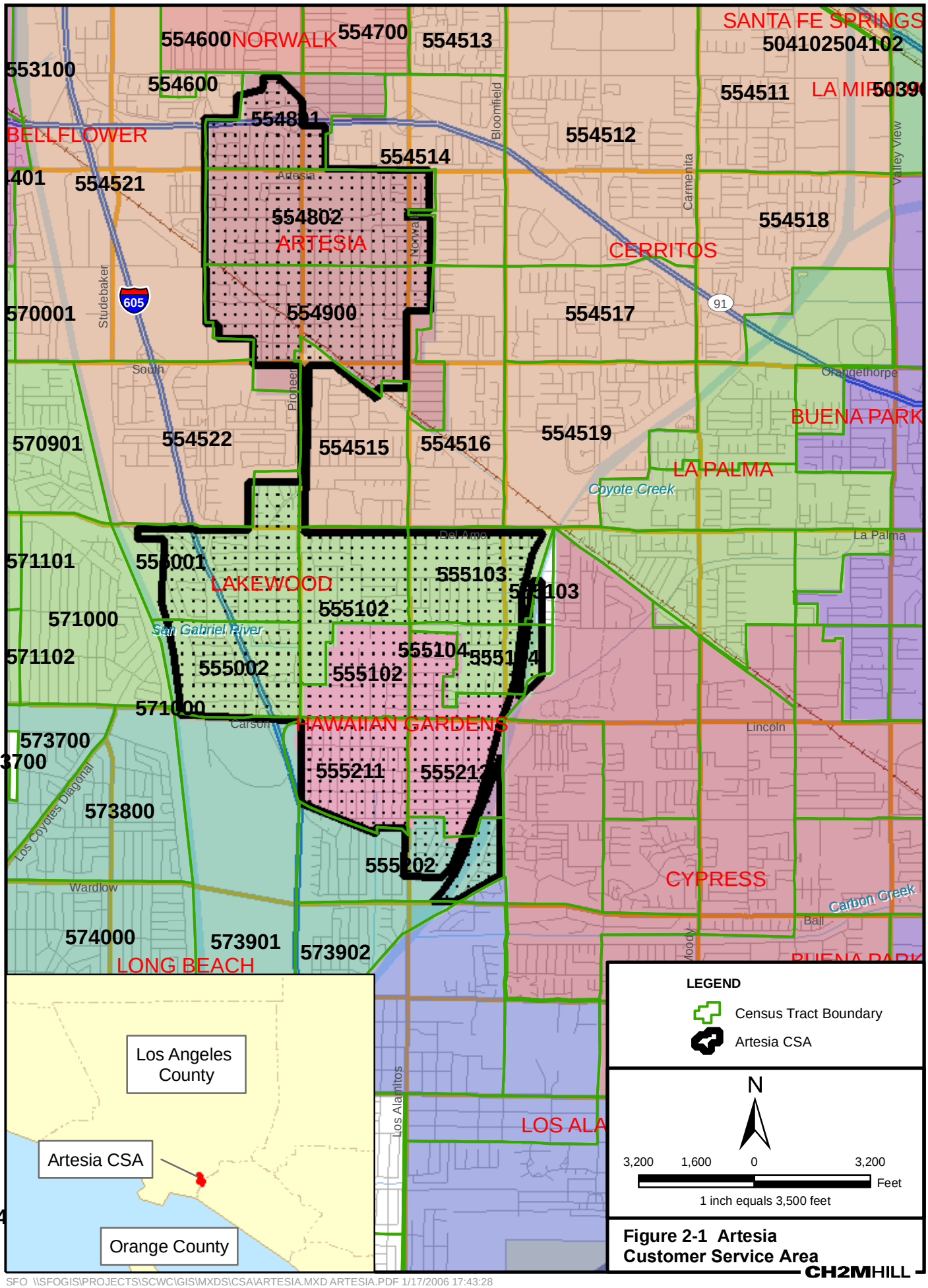

Figure 2-1 Artesia Customer Service Area

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Population, Housing and Employment

Population, housing, and employment projections were developed for the Artesia CSA using the Southern California Association of Governments (SCAG) population, housing and employment data. SCAG recently updated its projections for population, household, and employment growth through the year 2030 using 2000 U.S. Census data. SCAG's methodology is described below, followed by the derivation of population projections for the Artesia System. The current population projections differ from previous projections developed in 2000 primarily by the use of 2000 U.S. Census data. Previous projections utilized 1990 U.S. Census data.

SCAG Population Projection Development Methodology

The 2000 population, housing, and employment data is derived from the 2000 U.S. Census, which forms a baseline for local data projections. SCAG applies a statistical cohort-component model and the headship rate to the 2000 U.S. Census data for regional, county, and household demographic projections. The cohort model projects population by adding increases in population (births and relocation into the region) and subtracting decreases in population (deaths and relocation out of the region). The cohort model uses a group quartered population, meaning it is broken down by sex, age, and ethnicity. Headship rate is the proportion of a population cohort that forms the household as specified by age and ethnicity. SCAG uses headship rate to project regional and county households by multiplying the projected civilian resident population by projected headship rates.

The forecasts and projections are grouped into many geographical categories, including regional, county, city, unincorporated areas, census tract, and transportation analysis zones. To evaluate the Artesia System, SCAG data was used in census tract form, the smallest geographic division of data that SCAG provides. SCAG projects subcounty and census tract demographic trends using the housing unit method. This is the most widely used method for estimating and projecting local-area households and population for planning purposes. It projects the number of occupied housing units (households) and persons per household. Households are extrapolated from past trends in occupied housing units. Population per household is estimated by multiplying the number of occupied households by the projected average household size.

SCAG regional employment projections utilize a top-down approach, starting with a U.S. forecast followed by a California then a (SCAG) regional forecast. Employment projections are based on population and household projections, labor force participation rates, long-range unemployment rates, the ratio of total jobs to employed residents, and historical employment growth trends.

SCAG's demographic forecasting section works closely with California Department of Finance (DOF), and the Plans and Programs Technical Advisory Committee, which consists of members from subregions, local jurisdictions, the public and other major stakeholders to produce, review, and refine the socioeconomic projections for population, housing, and employment. The SCAG's socioeconomic projections were compared with regional independent projections and adjustments are made accordingly before public release.

The detailed explanation of the population projection process employed by SCAG is provided in Final 2004 RTP Technical Appendix, Appendix A: Growth Forecast, 2004 (SCAG Projections, 2004).

Artesia CSA Population Projections

SCAG-derived census-tract projections were used to determine population from 2000 to 2030. The Artesia System CSA boundaries often contain multiple census tracts, many of which have boundaries that do not coincide exactly with service area boundaries. The population projection analysis consisted of superimposing service area boundaries over census tract boundaries, identifying the applicable overlapping census tracts, and developing a percentage estimate for each overlapping area. For a census tract 100 percent within the service area boundaries, it was assumed that 100 percent of the associated census tract population data was applicable to the Artesia System. For areas where the overlap was not exact, the area of overlap as a percentage was applied to the data to develop an estimate of applicable population. Appendix J, Table J-1 lists the census tracts with a corresponding estimate of what percent of each tract lies within the Artesia System. It was typically assumed that the various types of housing and employment distributed within a census tract are distributed uniformly within all parts of that census tract, unless maps indicated non-uniform concentrations. In these cases, population estimates were either increased or decreased as applicable to match the existing land use. Appendix J, Table J-2 contains all of the SCAG's historic and projected demographic data for each census tract number from 2000 through 2030. Figure 2-1 details the census tracts within the Artesia CSA.

As concluded from analysis of SCAG demographic data, the Artesia CSA has an estimated population of 54,541 people in 2005. This population is expected to reach 57,497 by 2030. A summary of historic and projected population, households, and employment within the Artesia CSA (based on SCAG data) is presented in Table 2-1 and illustrated in Figure 2-2**.**

In summary, from 2000 to 2005 the Artesia population increased 5 percent, which is a growth rate[1] of approximately 0.9 percent per year. By 2030, population is expected to increase by a total of 5 percent, from 54,541 in 2005 to 57,497 in 2030, which is a 0.2 percent growth rate per year. The number of households is expected to grow 10 percent during the same period, which equates to an annual household growth rate of 0.4 percent. Employment is expected to grow 18 percent during the same period, which equates to an annual employment growth rate of 0.7 percent. Areas with the highest projected growth increases are also the areas that will see the largest increase in water use. SCAG does not project a year for build-out in their demographic analysis. Based on Artesia's CSA map there is not much land area available for future growth.

[1] Growth rate: The number of persons added to (or subtracted from) a population in a year due to natural increase or net migration; expressed as percentage of population at the beginning of the time period. (Source: http://www.prb.org)

Table 2-1
Artesia Customer Service Area Historical and Projected Population

Year	Service Area Population	Service Area Household	Service Area Employment
2000[2]	52,166	15,707	11,658
2005	54,541	15,988	11,757
2010	55,204	16,372	12,749
2015	55,803	16,681	13,073
2020	56,396	17,000	13,381
2025	56,958	17,313	13,657
2030	57,497	17,625	13,909

Notes
1. This table is based on the DWR Guidebook Table 2.
2. Based on fiscal year.
3. Dashed line represents division between historic and projected data

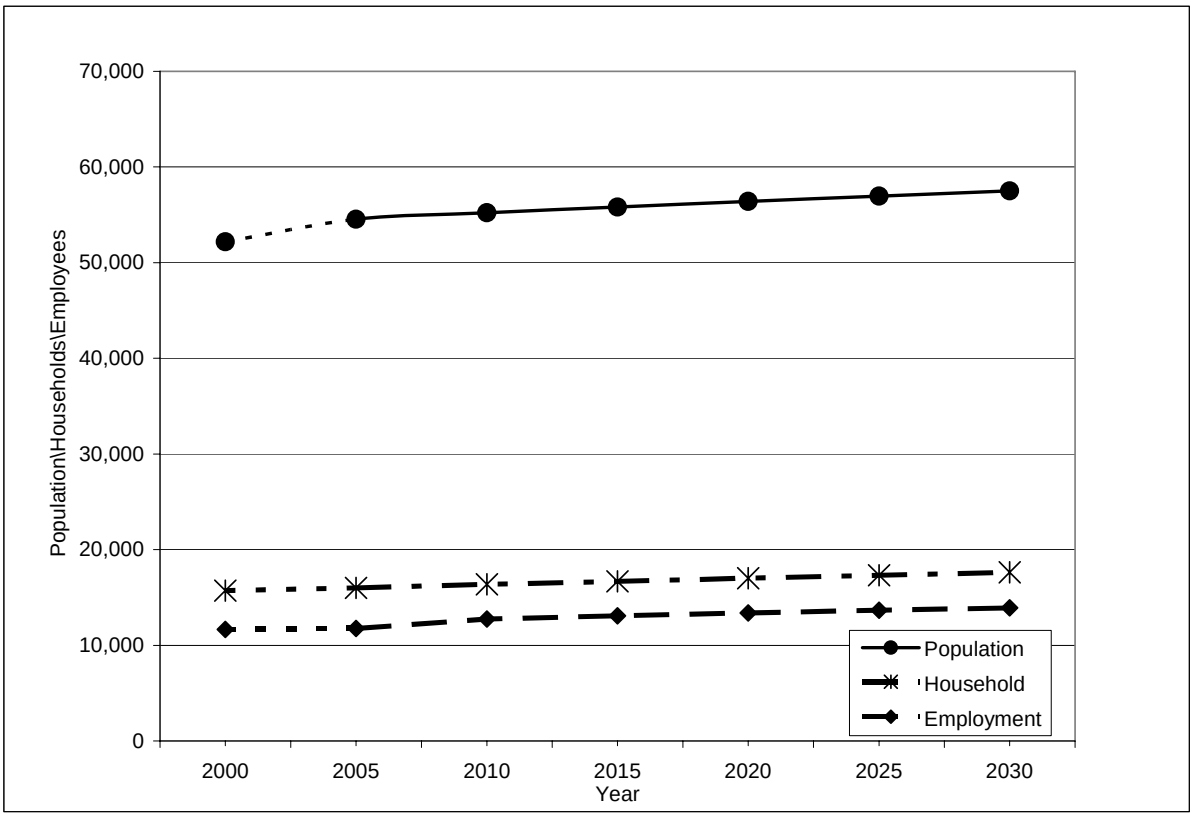

Figure 2-2 Historical and Projected Population, Household and Employment Growth within the Artesia CSA.

Climate

The Artesia CSA has cool, humid winters and warm, dry summers. The Western Regional Climate Center (WRCC) maintains 30 year historic climate data for some cities only. WRCC doesn't have a station at the City of Artesia and therefore the Long Beach station, 16 miles from Artesia, is utilized for the climate data analysis.

The Western Regional Climate Center web site (www.wrcc.dri.edu) maintains historical climate records for the past 30 years for Long Beach. Table 2-2 presents the monthly climate summary based on 30 year historical data for the Artesia System. In winter, the lowest average monthly temperature is approximately 45 degrees Fahrenheit while the highest average monthly temperature reaches approximately 84 degrees in the summer. Figure 2-3 presents the monthly average precipitation based on 30 year historical data. The rainy season is from November to March. Monthly precipitation during the winter months ranges from 2 to 3 inches. Low humidity occurs in the summer months from June to August. The moderately warm and dry weather during the summer months typically results in moderately high water demand.

Similar to the Western Regional Climate Center in the Artesia area, the California Irrigation Management Information System (CIMIS) web site (http://www.cimis.water.ca.gov) tracks and maintains records of evapotranspiration (ETo) for few cities only. ETo statistics used for this system also come from Long Beach station. ETo is a standard measurement of environmental parameters that affect the water use of plants. ETo is given in inches per day, month, or year and is an estimate of the evapotranspiration of a large field of well-watered, cool-season grass that is four- to seven-inches tall. The monthly average ETo is presented in inches in Table 2-2. As the table indicates, a greater quantity of water is evaporated during June and July in correlation to high temperatures and low humidity, which may result in high water demand.

Table 2-2
Monthly Climate Data Summary for Artesia CSA

Month	Standard Monthly Average ETo[2] (inches)	Average Total Rainfall (inches)	Average Temperature (degrees Fahrenheit) Max	Min
January	2.2	2.67	66.9	45.6
February	2.5	3.01	67.3	47.3
March	3.4	1.95	68.3	49.7
April	3.8	0.7	71.8	52.3
May	4.8	0.2	73.6	56.7
June	5.0	0.07	77.1	60.2
July	5.3	0.02	82.4	63.6
August	4.9	0.07	84.0	64.9
September	4.5	0.2	82.4	62.9
October	3.4	0.39	78.1	58.0
November	2.4	1.28	72.0	50.3
December	1.9	1.66	67.2	45.2

Notes
1. This table is based on the DWR Guidebook Table 3.
2. Evapotranspiration Overview (ETo) from http://www.cimis.water.ca.gov/cimis/welcom.jsp

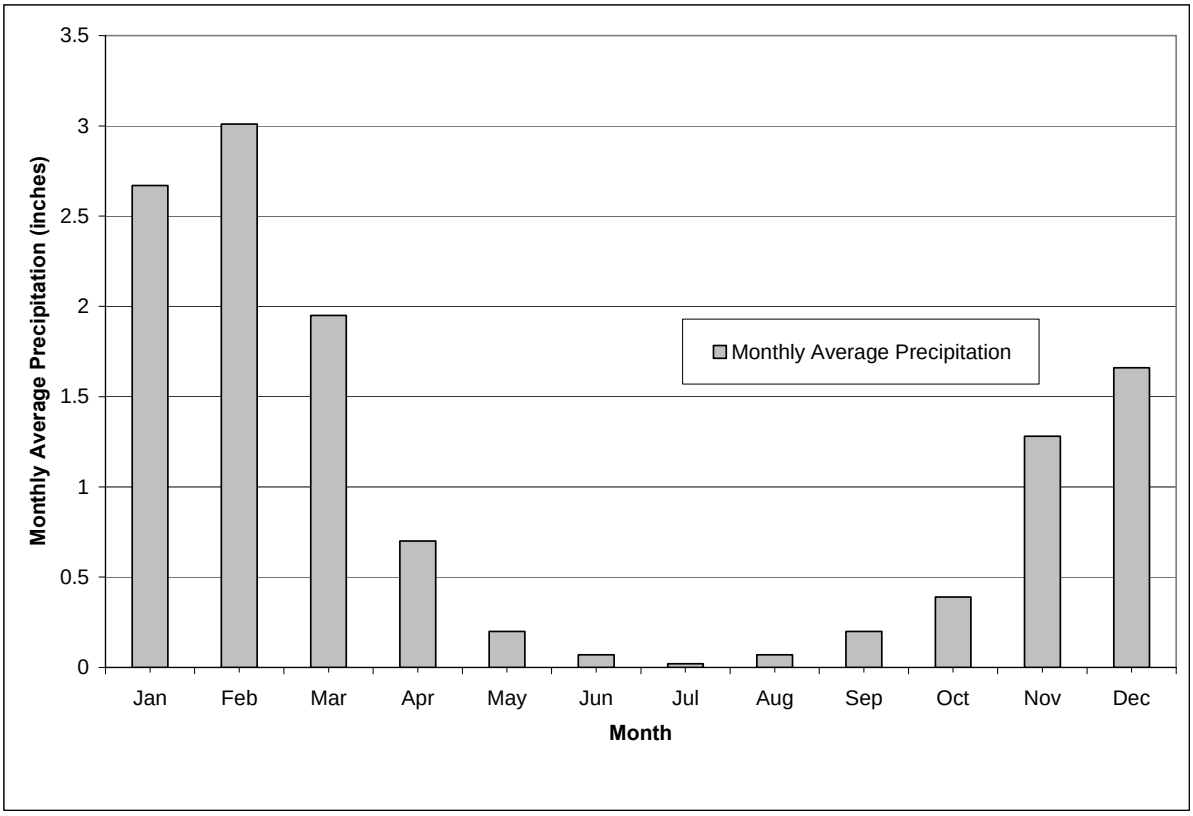

Figure 2-3 Monthly Average Precipitation in the Artesia CSA based on 30 Year Historical Data

Chapter 3. Water Supply

A detailed evaluation of water supplies is requested by the Act. Sections 10631 (a) through (d) and (h) require the following:

(b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a). If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:

(1) A copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.

(2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree.

For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.

(3) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(c) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following:

(1) An average water year.

(2) A single dry water year.

(3) Multiple dry water years.

For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.

(d) Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

(h) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established

pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single dry, and multiple dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.

This chapter addresses the water supply sources of the Artesia System. The following sections provide details in response to those requirements of this portion of the Act.

Water Sources

The Golden State Water Company (GSWC) currently obtains its water supply for the Artesia System from local groundwater, recycled water obtained through Central Basin Municipal Water District (CBMWD) and imported water obtained through CBMWD in conjunction with the City of Cerritos. CBMWD obtains its imported supply from the Metropolitan Water District of Southern California (Metropolitan). In addition, the Artesia Systems has a connection with GSWC's own Orange County System, which also relies on both local groundwater and imported water obtained from Metropolitan. A copy of the 1965 agreement of GSWC with the City of Cerritos is included in Appendix K.

Groundwater is currently pumped from a total of six active wells in the Central Basin. These wells have a current total active capacity of 5,570 acre-feet per year (ac-ft/yr) and between 2000 and 2004, the actual production averaged 4,874 ac-ft/yr.

Imported Water

Water is delivered to the Artesia System through the following connections:

- Two connections with the City of Cerritos, each with a capacity of 1,500 gallons per minute (gpm)
- GSWC Bloomfield 226th Street connection with a capacity of 2,000 gpm

These connections have a combined active design capacity of 5,000 gpm (8,100 ac-ft/yr). In addition, GSWC has one emergency connection with the City of Cerritos, with a capacity between 900 gpm and 1,200 gpm and another connection with the City of Lakewood.

Recycled Water

The Artesia System currently receives a small amount of recycled water from CBMWD. Treated water from the Los Angeles County Sanitation District is sent to CBMWD's Central Basin Recycled Water Project (CBRWP), which then distributes the water to CBMWD's customers. The 2000 CBMWD Water Recycling Program Master Plan identified potential recycled water customers within the service area of the Artesia System. It is anticipated that additional customers will be served with recycled water for irrigation and industrial use within the next 20 years. Recycled water projects are discussed in Chapter 8.

Table 3-1 summarizes the current and planned water supplies available to GSWC for the Artesia System that will meet their projected water demands through 2030, in accordance with GSWC's long term water supply planning projections and those of its wholesale suppliers. This water supply summary is based on groundwater analysis and imported data. Groundwater makes up between 60 and 67 percent of the available supply, whereas the remainder is recycled water and imported water. It should be noted that the connection capacity to deliver imported water to GSWC is significantly higher than the projected imported water supply that is expected to meet normal year demands.

Table 3-1
Current and Planned Water Supplies for the Artesia System in ac-ft/yr

	Year					
Source	**2005**	**2010**	**2015**	**2020**	**2025**	**2030**
Purchased Water Supplies	2,082	2,320	2,459	2,590	2,726	2,849
Groundwater[(2)]	4,500	4,500	4,500	4,500	4,500	4,500
Recycled water	100	100	100	110	110	120
Total	6,682	6,920	7,059	7,200	7,336	7,469

Notes
1. Based on GSWC's Allowed Pumping Allocation in the Central Basin
2. Table format based on DWR Guidance Document Table 4

GSWC's water supply is projected to increase by about 12 percent from 2005 to 2030 to meet the associated projected water demands, with this demand being met by groundwater, the implementation of conjunctive use storage programs that are expected to be developed in the Central Basin and by purchased water. Water demand projections are documented in Chapter 4. Details of the groundwater supply are presented in the following section followed by a discussion of the reliability of all sources of water supply.

Groundwater

The Artesia System is supplied by six wells in the Central Basin of the Coastal Plain of Los Angeles. The Central Basin has a surface area of approximately 177,000 acres (about 277 square miles). The Central Basin is bound by a surface high called the La Brea high on the north, the Elysian, Repetto, Merced and Puente Hills on the northeast and east, the Coyote Creek on the southeast, and the Newport Inglewood fault system to the southwest (DWR, 2003).

The Central Basin is subdivided into four areas: The Los Angeles Forebay, the Montebello Forebay, the Whittier area, and the Central Basin Pressure Area. The Los Angeles Forebay is located in the northern part of the Central Basin where the Los Angeles River enters the Basin through the Los Angeles Narrows. The Montebello Forebay extends southward from where the San Gabriel River enters the Central Basin through the Whittier Narrows. The Montebello Forebay is considered the most important area of recharge in the Central Basin (DWR, 2003). Both forebay areas have unconfined groundwater conditions and aquifers that extend up to 1,600 feet deep to provide recharge to the aquifer systems of the Central Basin

(DWR, 1961). The Whittier area extends south and southwest from the Puente Hills to the axis of the Santa Fe Springs-Coyote Hills uplift. The Whittier area contains up to 1,000 feet of freshwater-bearing sediments (DWR, 2003). The Central Basin pressure area contains many aquifers of permeable sands and gravels separated by semi-permeable to low permeability sandy-clay to clay. Those aquifers in the Central Basin pressure area extend approximately 2,200 feet below the surface (DWR, 1961). Those aquifers in the Whittier area and Central Basin pressure area are generally confined, but areas with semi-permeable aquitards allow some interaction between aquifers (DWR, 2003).

The main freshwater-bearing aquifers are contained within the Holocene alluvium and the Pleistocene Lakewood and San Pedro Formations. The main productive aquifers within the Basin are the Gardena and Gage aquifers in the Lakewood Formation and the Silverado, Lynwood, and Sunnyside aquifers in the San Pedro Formation (DWR, 1961). The Gardena and Gage aquifers are primarily comprised of sand and gravel and have a total maximum thickness of 280 feet (DWR, 2003). Aquifers within the San Pedro Formation are comprised of coarse sand, gravel, and sandy gravel and have a combined maximum thickness of 800 feet (DWR, 2003).

Recharge occurs from percolation of precipitation, stream flow, and return flow of applied waters (e.g., irrigation), from artificial recharge activities at spreading grounds, and injection of imported water into the Alamitos Barrier Project (a seawater intrusion barrier located in the southeastern part of the Basin). Recharge of the Basin occurs in the forebay areas due to the presence of permeable sediments, where as the pressure area is overlain by less permeable silt and clay units that preclude significant recharge in these areas. Purchased imported water from Metropolitan and recycled water from the Whittier and San Jose Treatment Plants are used for recharge in the spreading grounds in the Montebello Forebay area.

The total groundwater storage capacity of the Central Basin is about 13,800,000 ac-ft (DWR, 1961).

Groundwater flow is predominantly from the foothills northeast of the Central Basin towards the ocean to the southwest.

Central Basin Adjudication

In 1965, the Central Basin was adjudicated in the case *Central and West Basin Water Replenishment District vs. Charles E. Adams, et al* (Superior Court, County of Los Angeles, Case no. 786656). The Central Basin Judgment limits the amount of groundwater each party can extract annually from the Basin. This limit is referred to as the "Allowed Pumping Allocation" or APA, which is a fraction of each parties water rights, and is monitored by a court-appointed Watermaster. The Watermaster administers and enforces the terms of the Judgment and reports annually to the Court on significant groundwater-related events that occur in the Basin. The Court also retained jurisdiction to monitor ongoing management of the Basin, including the conjunctive use of Basin storage space, to assure the Basin will be capable of supplying sufficient water to meet local needs, including future growth and development.

The Central Basin adjudication limit (total of the allowed pumping allocations of each party) for groundwater extraction across the entire basin is 217,367 ac-ft/yr. GSWC maintains an

APA of 16,439 ac-ft/yr. GSWC's APA is shared between all of their systems that extract groundwater from the Central Basin: Norwalk, Florence-Graham, Hollydale, Willowbrook, Artesia, Bell/Bell Gardens, and portions of the Southwest system as shown in Table 3-2. GSWC reports total groundwater extractions (on a per-well basis) to the Watermaster.

Three agencies work with the water producers to ensure that the APA is available to be pumped by the pumpers in the Central Basin. These agencies include the Los Angeles County Department of Public Works (LACDPW), the Water Replenishment District of Southern California (WRDSC), and CBMWD. LACDPW operates and maintains the Rio Hondo and San Gabriel spreading grounds in the Montebello Forebay. LACDPW diverts and recharges storm flows from the Rio Hondo and San Gabriel Rivers, highly treated wastewater from the Los Angeles County Sanitation Districts (Whittier and San Jose Wastewater Reclamation Plants), and imported water from Metropolitan (including both State Water Project water and Colorado River water). LACDPW, in conjunction with Orange County Water District, operates and maintains the Alamitos Barrier Project to recharge imported water into this injection barrier, which is designed to prevent seawater intrusion into the Central Basin. WRDSC collects a replenishment assessment from all groundwater producers in the Basin to pay for water supplies to replenish the Basin. Annually, by statute, WRDSC is required to determine replenishment requirements. WRDSC pays CBMWD for imported and recycled water for recharge into the Central Basin.

Table 3-2
Groundwater Pumping Rights

Basin Name	Pumping Rights (ac-ft/yr)
Central Basin	16,439

Notes
1. Value is the allowed pumping allocation (80% of GSWC's adjudicated water right) for all seven systems GSWC has in the Central Basin. These systems are Artesia, Florence-Graham, Hollydale, Willowbrook, Bell-Bell Gardens, Norwalk, and portions of the Southwest system.
2. Table format based on DWR Guidance Document Table 5

Table 3-3 shows GSWC's wells and current well capacities for the Artesia System. The total current active well capacity for GSWC's Artesia System is 3,500 gpm (5,570 ac-ft/yr).

Table 3-3
Wells and Well Capacity in the Artesia System

Well Name	Design Well Capacity (gpm)	Design Well Capacity (ac-ft/yr)	Current Well Capacity (gpm)	Current Well Capacity (ac-ft/yr)	Status
Centralia No. 3	550	887	442	713	Active
Centralia No. 4	600	968	366	590	Active
Hawaiian No. 1	750	1,210	595	959	Active
Juan No. 4	850	1,371	850	1,370	Active
Massinger No. 1	500	806	412	664	Active
Roseton No. 1	790	1,274	835	1,274	Active
Total Capacity	4,040	6,516	3,500	5,570	
Active Capacity	4,040	6,516	3,500	5,570	

Notes
1. gpm = gallons per minute.
2. Active well status indicates the well is available for the current water supply

Table 3-4 shows the pumping history for the Artesia System for the calendar years (January 1 – December 31) 2000 through 2004. Groundwater pumping has ranged from 5,125 ac-ft/yr to 4,712 ac-ft/yr.

Table 3-4
Groundwater Pumping History by Artesia System (2000 to 2004) in ac-ft/yr

	Year				
Basin Name	2000	2001	2002	2003	2004
Central Basin	5,125	4,877	4,766	4,712	4,888
% of Total Water Supply	78	78	71	70	71

Notes
1. Table format based on DWR Guidance Document Table 6
2. Years are reported in calendar years (January 1 – December 31)

Table 3-5 shows the projected groundwater pumping amounts to serve the Artesia System. The amount projected will come from the six active wells shown in Table 3-3. Two additional wells are planned to be on line in 2006. These wells are presented in Table 3-11. GSWC's water rights within the Central Basin are shared among all GSWC's systems in the basin. Therefore, the actual pumping amounts for wells in each of their systems could vary based on GSWC's overall system management. Their access to local groundwater and imported water affords GSWC flexibility to meet demands in all of its systems. In addition to GSWC's APA in the Central Basin, GSWC also has the ability to annually lease water rights for groundwater, if needed. Historically, since 1991 GSWC has obtained up to 7,500 ac-ft annually to augment their APA.

Table 3-5
Projected Groundwater Pumping Amounts by Artesia System to 2030 in ac-ft/yr

	Year					
Basin Name	**2005**	**2010**	**2015**	**2020**	**2025**	**2030**
Artesia System	4,500	4,500	4,500	4,500	4,500	4,500
% of Total Water Supply	67	65	64	62	61	60

Notes
1. Table format based on DWR Guidance Document Table 7
2. Years are reported in calendar years (January 1 – December 31)

Reliability of Supply

The Artesia System gets its water supply from three sources: groundwater, imported water from the City of Cerritos and recycled water via CBMWD. Therefore, conditions in local and distant areas can impact the reliability of supplies. The following discussion summarizes the reliability of GSWC's water supply sources. In general, GSWC's supply is expected to be 100 percent reliable through 2030. Supply reliability for the Artesia System depends upon 1) adjudicated groundwater rights in the Central basin; 2) benefits of conjunctive use storage programs to be developed in accordance with amendments to the court Judgment that are anticipated at some time in the future; 3) water supplies available from the supplemental supplier, CBMWD (Metropolitan), which it projects will be 100 percent reliable; and 4) the availability of recycled water. The following is a summary of the basis of this reliability.

Reliability of Imported Water

CBMWD, the local imported water wholesaler, is largely a pass through entity which obtains nearly all its imported water from Metropolitan, directly or indirectly. Metropolitan's resource management plans are intended to optimize the use of its available resources during surpluses and shortages to minimize the probability of severe shortages and eliminate the possibility of extreme shortages and shortage allocations.

With the experience of the droughts of 1977-78 and 1989-92, Metropolitan undertook a number of planning initiatives to ensure supply reliability. Those initiatives included the Integrated Resources Plan (IRP), the Water Surplus and Drought Management Plan (WSDM Plan) and local resource investments. Together, these initiatives provided the policy framework for Metropolitan and its member agencies to manage their water resources to meet the needs of a growing population even under recurrences of the worst historical hydrologic conditions, locally and in the key distant watersheds that supply southern California. Metropolitan has stated that it expects to be 100 percent reliable in meeting all non-discounted, non-interruptible demands, as summarized below (see Metropolitan's UWMP for details). CBMWD has also proposed certain water supply development projects, as discussed below.

Metropolitan Integrated Resource Plan (IRP)

The objective of the 2003 IRP Update was to project the most likely combination of water resources to provide 100 percent reliability for full service demands over the next twenty years (from 2005 to 2025), at the lowest cost. Based upon the plans of its member agencies and the retail water suppliers, Metropolitan's preferred supply mix includes conservation, local supplies (recycled and brackish water desalination), State Water Project (SWP) supplies, Colorado Aqueduct supplies, groundwater banking, and water transfers to meet projected water demands under severe shortage conditions. Additional objectives included: (1) review of the goals and achievements of the 1996 IRP, (2) identification of changed conditions for water resource development, and (3) update of the resource targets through 2025. The 2003 IRP Update revealed a decrease in the region's reliance on imported supplies from the Colorado River and SWP compared to the 1996 IRP, while continuing to provide 100 percent reliability through the year 2025.

To reduce the likelihood of shortfalls due to implementation risk and water quality issues, the 2003 IRP Update also includes a planning buffer of up to ten percent of regional demands. This planning buffer calls for identification of an additional 500,000 ac-ft of contingency supplies above that needed to meet demands in 2030. The buffer supplies would include an equal proportion of local and imported supplies.

Metropolitan Water Surplus and Drought Management Plan (WSDM Plan)

In 1999 Metropolitan adopted the WSDM plan to integrate planned operational actions with respect to both surplus and shortage situations (for further details on the WSDM Plan actions, refer to Metropolitan's 2005 UWMP). While a specific allocation plan was not developed as part of the WSDM Plan, the guiding principle of the WSDM Plan is to manage Metropolitan's water resources and management programs to maximize management of wet year supplies and minimize adverse impacts of water shortages to retail customers. The WSDM Plan states that, except in extreme shortages or emergencies, Metropolitan resource management will allow shortages to be mitigated without impacting retail municipal and industrial customers. The key guiding principles of the WSDM Plan include:

- Encouraging efficient water use and economical local resource programs
- Coordinating operations with member agencies to make as much surplus water as possible available for use in dry years
- Pursuing innovative transfer and banking programs to secure more imported water for use in dry years
- Increasing public awareness about water supply issues

The WSDM Plan contains the following considerations that would go into an equitable allocation of imported water:

- Population growth
- Changes and/or losses in local supplies
- Impact on retail consumers and regional economy
- Investments in local resources, including recycling and conservation
- Investment in Metropolitan's facilities

Metropolitan Local Resource Investments

Metropolitan has made significant investments in local resource projects to optimize local supplies. These investments have been made in conservation, water recycling, storage, and supply. Metropolitan's objective is that its resource management plan results in 100 percent reliability for non-discounted, non-interruptible demands through 2025. Metropolitan's resource management strategy deals with several supply resources:

Local Resource Investment. Metropolitan has co-funded more than 74 local supply projects that provided an annual contract yield of 118,000 ac-ft in 2004. Projects developed by the member agencies without Metropolitan funding provided an additional 155,000 ac-ft. In addition, between 1990 and 2003 Metropolitan and its member agencies invested a total of $290 million in conservation programs. Metropolitan estimates that conservation reduced the region's 2003 demand by 654,000 ac-ft, compared to the 1996 IRP goal of 571,000 ac-ft. As a large purchaser of Metropolitan water, GSWC has helped fund many of these programs.

Colorado River Region. Under the existing agreement, over 800,000 ac-ft of water is currently available to Metropolitan's service area in dry-years from the Colorado River region. This amount includes 30,000 ac-ft of the eventual 200,000 ac-ft transfer agreement between the San Diego County Water Authority and the Imperial Irrigation District. Additional programs are currently being studied.

State Water Project Region. Metropolitan has continued to explore out-of-region water storage and transfer programs. Current water storage agreements provide for dry-year supplies of almost 400,000 ac-ft. Transfer programs provide additional water, but this amount varies from year-to-year. Additional programs that could supply 125,000 ac-ft are under development. In addition, Metropolitan's SWP contract allows it to store up to 220,000 ac-ft of carryover water in SWP storage reservoirs.

Regional Storage. Metropolitan has undertaken a number of projects to increase the level of in-region water storage to compensate for the reduced availability of its imported water supply. The key projects are summarized below:

- Diamond Valley Lake was filled for the first time by early 2002. Completion of this project added 800,000 ac-ft of storage to Metropolitan's mix of resources, of which 400,000 ac-ft are available for use as regulatory/carryover storage.
- In 1995, Metropolitan entered into an agreement with Calleguas Municipal Water District (CMWD) to jointly develop the North Las Posas Conjunctive Use Program. Phases 1 and 2 of this program are expected to be operational and come on-line by 2005, with facilities to manage the full 210,000 ac-ft of storage due to be operational by 2010.
- Metropolitan has expanded groundwater storage in the region. Five contractual storage programs signed to date will provide 181,000 ac-ft of storage. Three additional contracts (City of Compton, Three Valleys Municipal Water District, and the City of Long Beach) currently being finalized may provide an additional 8,900 ac-ft for a total of` approximately 190,000 ac-ft of dry-year storage capacity. The legal standing of the Long Beach storage agreement has not yet been acknowledged by DWR as Watermaster in the Central Basin but is expected to be resolved in accordance with amendments to the court Judgments that are anticipated to be filed after agreements are reached as part of

ongoing discussions with DWR. GSWC also expects to enter into agreements for contractual storage programs in the Central and West Coast Basins.

- Metropolitan is also continuing to work with its member agencies in the Pasadena area to develop an additional 66,000 ac-ft of storage in the underlying Raymond Basin.

Together these programs will provide capability to store 866,000 ac-ft of supplies for dry years.

CBMWD's Water Supply Programs

CBMWD has proposed development of certain water supply projects to increase reliability within its service area (see CBMWD's 2005 UWMPs for details). Details on proposed recycled water and desalination projects are documented in Chapters 8 and 6, respectively.

GSWC's Groundwater Supply Reliability

GSWC has a total APA of 16,439 ac-ft/yr in the Central Basin that is divided between all of their systems in the Basin. GSWC maintains a legal right to pump their Central Basin APA each year. GSWC also has historically leased up to 7,500 ac-ft/yr in the Central Basin. If GSWC's actual demands exceed the adjudicated limits, GSWC can use the leased rights to increase their allowed pumping. GSWC obtains leases for additional groundwater in the Central Basin annually, on an as-needed basis and to benefit their rate payers.

Three agencies work together with GSWC and other groundwater producers to ensure that the APA is available to be pumped by the pumpers in the Central Basin. These agencies include the Los Angeles County Department of Public Works (LACDPW), the Water Replenishment District of Southern California (WRDSC), and CBMWD. LACDPW operates and maintains the Rio Hondo and San Gabriel spreading grounds in the Montebello Forebay. LACDPW diverts and recharges storm flows from the Rio Hondo and San Gabriel Rivers, highly treated wastewater from the Los Angeles County Sanitation Districts (Whittier and San Jose Wastewater Reclamation Plants), and imported water from Metropolitan (including both State Water Project water and Colorado River water). LACDPW, in conjunction with Orange County Water District, operates and maintains the Alamitos Barrier Project to recharge imported water into this injection barrier, which is designed to prevent seawater intrusion into the Central Basin. WRDSC collects a replenishment assessment from all groundwater producers in the Basin to pay for water supplies to replenish the Basin. Annually, by statute, WRDSC is required to determine replenishment requirements. WRDSC pays CBMWD for imported and recycled water for recharge into the Central Basin.

The use of recycled water assists in meeting demand for non-potable applications such as landscape irrigation, commercial and industrial processes, and seawater barriers (CBMWD, 2005). CBMWD currently delivers an average of 3,800 ac-ft/yr of recycled water and is planning to increase recycled water deliveries to 10,500 ac-ft/yr by 2010 and to 15,500 ac-ft/yr by 2030. WRDSC provides recycled water to LACDPW for recharge as part of the Montebello Forebay Groundwater Recharge Project. LACDPW recharges up to 45,000 ac-ft/yr of recycled water annually through the spreading grounds. In addition, WRDSC plans to reduce imported water use at the Alamitos Barrier by 3,000 ac-ft/yr by replacing it with

the delivery of recycled water through WRDSC's Leo Vander Lans Recycling facilities in Long Beach (CBMWD, 2005). Given the high cost of recycled water and the low cost of storage programs, it is possible that other purchasers of the recycled water may be found if regional needs are otherwise met in a groundwater management program to be developed according to the terms of an amended judgment.

As mentioned above, the California Department of Water Resources, acting as the court appointed Watermaster, has determined that stored water above the pumping allocation has no legal standing under the Central Basin Judgment. Any water extracted from the Central Groundwater Basin requires water rights. Over the past three years, the groundwater producers, cities and regulated water utilities, who have extraction rights in the Central and West Coast Groundwater Basins have been working with the California Department of Water Resources and other regional water agencies to develop an integrated water storage plan for conjunctive use in both basins. The plan, which requires court approval, would allow for conjunctive use water storage and recovery programs. The exact amount of water available to any groundwater producer through such a storage program is undetermined at this time. However, preliminary projections of total storage space available may be equal to or exceed the allowable extraction under the judgment.

Artesia System's Water Supply Reliability

Supply reliability for the Artesia System depends upon 1) adjudicated groundwater rights in the Central basin; 2) benefits of conjunctive use storage programs to be developed in accordance with amendments to the court Judgment that are anticipated at some time in the future; 3) water supplies available from the supplemental supplier, CBMWD (the Metropolitan pass through agency), which it projects will be 100 percent reliable; and 4) the availability of recycled water, as discussed above.

Table 3-6 presents water supply projections for imported water, recycled water, and groundwater sources during a normal year, single-dry year, and multiple-dry years for the Artesia System for 2030. The normal-year supply represents the expected supply under average hydrologic conditions, the dry-year supply represents the expected supply under the single driest hydrologic year, and the multiple-dry year supply represents the expected supply during a period of three consecutive dry years.

As described above, purchased water supplies, whether from Metropolitan or other parties in conjunctive use storage programs that are anticipated to be developed are expected to be 100 percent reliable to meet demands through 2030. Therefore, the imported water supply projections for a normal water year, single-dry year, and multiple-dry years are taken as the 2030 projection, which is equivalent to the imported water demand projected for 2030. It is assumed that the single-dry year and multiple-dry year supplies are the same as those for the normal years because available supplies are sufficient to meet projected demands under all anticipated hydrologic conditions – whether it be from water transfers stored in conjunctive use storage programs anticipated to be developed or core or buffer water supplies of Metropolitan. Recycled water is expected to be available during all hydrologic conditions because it is not subject to hydrologic variations.

Table 3-6
Supply Reliability for the Artesia System for Year 2030 in ac-ft/yr

Source	Normal Water Year	Single-Dry Water Year	Multiple-Dry Water Years		
			Year 1	Year 2	Year 3
Imported Water	2,849	2,849	2,849	2,849	2,849
Groundwater (2)	4,500	4,500	4,500	4,500	4,500
Recycled water	120	120	120	120	120
Total	7,469	7,469	7,469	7,469	7,469
Percent of Normal		100	100	100	100

Notes
1. Reliability based on GSWC's water rights and on share of groundwater rights
2. Table format based on DWR Guidance Document Table 8

Groundwater from the Central Basin is expected to be 100 percent reliable also, as it has been in the past. The Central Basin has substantial storage capacity to provide a buffer during droughts and to accept recharge of surplus waters during times of available supplies (e.g., storm water, highly treated recycled water, and imported water). Continued diligence by the pumpers, WRDSC, LACDPW, and CBMWD is expected to ensure the reliability of the Central Basin groundwater supply.

Table 3-7 lists single-dry year and multiple-dry year periods for both groundwater and imported water supplies. As discussed earlier, the City of Cerritos receives water from Metropolitan, through CBMWD. Therefore, the single-dry year and multiple-dry year periods are based on CBMWD's analysis on the lowest average precipitation for a single year and the lowest average precipitation for a consecutive multiple-year period, respectively. CBMWD's estimates suggest that FY 2000-01 represents a normal water year based on average rainfall over the last 100 years, FY 2001-02 represents the single-dry year, and the years of FY 2001-02, 2002-03, and 2003-04 represent the driest three consecutive years. CBMWD has determined that they can meet their projected water demands for these years, so the supply is equal to the projected demands. Moreover, effective management of the Central Basin in accordance with amendments to the existing court Judgment which are anticipated in the future will greatly enhance the entire region's water supply reliability, allowing programs to be implemented at a lower cost.

Again, the Central Basin storage is used and the basin is operated to store surplus waters (storm water, recycled water, and imported water) when these waters are available and then to draw down the basin in drier years to meet the requirements of the APA established under the Central Basin Judgment. The Basin has proven to be very reliable under extreme climate conditions over the last 40+ years and is expected to remain reliable through 2030.

Table 3-7
Basis of Water Year Data

Water Year Type	Base Year(s)	Historical Sequence
	Imported Water and Groundwater	
Normal Water Year	2000-01	100 years
Single-Dry Water Year	2001-02	
Multiple-Dry Water Years	2001-02, 2002-03 and 2003-04	

Notes
1. Analysis of precipitation data was provided by CBMWD
2. Table format based on DWR Guidance Document Table 9

Factors Resulting in Inconsistency of Supply

Table 3-8 presents factors that could potentially result in inconsistency of supply for the Artesia System. As described above, GSWC's water rights are adjudicated and its lease rights are contractual. While there is legal uncertainty regarding the terms under which storage programs can be implemented in the Central Basin, this legal uncertainty is ultimately expected to be resolved through amendments to the existing court Judgment based upon the outcome of ongoing discussions with the DWR. While the legal uncertainty regarding storage affects the cost of water, it does not affect the reliability of the regional supply as a result of Metropolitan's core and buffer water supply programs which are stated to assure the region, including GSWC customers, of 100 percent reliability.

GSWC has legal rights to pump up to the amounts listed in Table 3-8. GSWC also has agreements in place to lease water rights on an annual basis.

Table 3-8
Factors Resulting in Inconsistency of Supply

Name of Supply	Legal	Environmental	Water Quality	Climatic
City of Cerritos and CBMWD(1)	N/A	N/A	N/A	N/A
Groundwater (Central Basin)	Adjudicated APA of 16,439 acre-feet for all GSWC systems in the Central Basin. GSWC also has lease agreements in place to supplement pumping above 16,439 ac-ft/yr.	N/A	None foreseeable	N/A

Notes
1. No further constraints affecting the Artesia System's supply. CBMWD's and Metropolitan's supplies already accounted for these factors (see CBMWD's UWMP and Metropolitan's UWMP)
2. Table format based on DWR Guidance Document Table 10

Transfers and Exchanges

GSWC has historically leased up to approximately 7,500 ac-ft/yr in the Central Basin. The average annual amount of GSWC's leased rights in the Central Basin was 3,550 ac-ft/yr between 1991 and 2005. If GSWC's actual demands exceed their APA, GSWC can use the leased rights to increase their allowed pumping. GSWC obtains leases for additional groundwater in the Central Basin annually, on an as-needed basis, and after an evaluation of the economic benefits to their rate payers. Table 3-9 presents the unused APA in the Central Basin, as reported by the Central Basin Watermaster, from 2000 to 2004. In each year, between 17,014 and 21,466 ac-ft/yr of available APA has not been pumped. This unpumped water could be available for GSWC to purchase, on an annual basis, to augment their Central Basin APA and further increase their water supply reliability. Water transfers and exchanges may also be undertaken as part of conjunctive use storage programs to be developed.

Table 3-9
Annual Unused APA in Central Basin

Fiscal Year	Unused APA (ac-ft/yr)
1999 - 2000	17,014
2000 - 2001	21,104
2001 - 2002	19,975
2002 - 2003	19,966
2003 - 2004	21,466

Notes
1. Table format based on DWR Guidance Document Table 11
2. Total APA for Central Basin for these years is 217,367 ac-ft/yr
3. Fiscal year is July 1 through June 30
4. Data reported in annual Watermaster reports

There are no specifically identified transfer or exchange opportunities in the Artesia System at this time; therefore, Table 3-10 has been left blank.

Table 3-10
Transfer and Exchange Opportunities

Source Transfer Agency	Transfer or Exchange	Short Term	Proposed Quantities	Long term	Proposed Quantities
GSWC	N/A	N/A	N/A	N/A	N/A

Notes
1. Table format based on DWR Guidance Document Table 11

Planned Water Supply Projects and Programs

Table 3-11 presents planned water supply projects and programs for the Artesia System.

Table 3-11
Future Water Supply Projects in ac-ft

Project Name	Normal Year	Single Dry Year	Multiple Dry Years		
			Year 1	Year 2	Year 3
Centralia No. 6	3,225	N/A	N/A	N/A	N/A
Roseton No. 2	2,420	N/A	N/A	N/A	N/A

Notes
1. This table is based on the DWR Guidebook Table 17.
2. Normal Year supply values are based on design well capacities. Due to variations in demand, changes in water levels, and well servicing, the actual supply capacity will likely be lower than these values.
3. Well supply capacity is affected by legal restrictions and conditions in the groundwater basin.

GSWC plans to purchase and store water in the Central Basin in accordance with amendments to the existing court Judgment, the terms of which are presently unknown. Implementation of storage programs may involve constructing new wells and other infrastructure improvements. In addition, GSWC will construct new wells, pipelines, and treatment systems as part of its normal operations and maintenance. Such efforts are part of GSWC's ongoing Capital Investment Program to maintain its supply and meet distribution system requirements. CBMWD has also planned water supply projects to increase reliability. Details of these plans can be found in CBMWD's 2005 Urban Water Management Plan.

Wholesale Agency Supply Data

Table 3-12 provides existing and planned water sources, including recycled water available to the Artesia System.

Table 3-12
Existing and Planned Water Sources Available to the Artesia System

Wholesaler Sources	2010		2015		2020		2025		2030	
	Existing	Planned	Existing	Planned	Existing	Planned	Existing	Planned	Existing	Planned
CBMWD (Imported Water)	2,320	N/A	2,459	N/A	2,590	N/A	2,726	N/A	2,849	N/A
CBMWD (Recycled Water)	100	N/A	100	N/A	100	N/A	110	N/A	120	N/A

Notes
1. Table format based on DWR Guidance Document Table 20

Table 3-13 demonstrates the reliability of wholesale water supply to meet annual water demand of the Artesia System. The table includes a single-dry year and multiple-dry year supplies for 2030. The available supply from Metropolitan, through CBMWD, is higher than the supply needed to meet demands during various hydrologic conditions. It should also be noted that the available active connection capacity for imported water is much more than the supply quantities required to meet the projected water demands during various hydrologic conditions.

Table 3-13
Reliability of Wholesale Supply for Year 2030 in ac-ft/yr

		Multiple-Dry Water Years		
Wholesaler	**Single Dry**	**Year 1**	**Year 2**	**Year 3**
CBMWD	2,969	2,969	2,969	2,969
Percent of Normal	100	100	100	100

Notes
1. Table format based on DWR Guidance Document Table 21

Table 3-14 lists factors affecting wholesale supply for the Artesia System. Metropolitan plans are intended to provide 100 percent supply reliability to CBMWD, which in turn provides 100 percent reliability of supply to the Artesia System.

Table 3-14
Factors Affecting Wholesale Supply

Name of Supply	Legal	Environmental	Water Quality	Climatic
CBMWD[(1)]	N/A	N/A	N/A	N/A

Notes
1. No further constraints affecting wholesale supply. Metropolitan's supplies already accounted for these factors (see Metropolitan's UWMP)
2. Table format based on DWR Guidance Document Table 22

Chapter 4. Water Use

Section 10631 (e) of the Act requires that an evaluation of water use be performed for the Artesia System. The Act states the following:

Section 10631

(e)

(1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water- use sectors including, but not necessarily limited to, all of the following uses:

(A) Single-family residential

(B) Multifamily

(C) Commercial

(D) Industrial

(E) Institutional and governmental

(F) Landscape

(G) Sales to other agencies

(H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof

(I) Agricultural.

(2) The water-use projections shall be in the same five-year increments described in subdivision (a).

In addition, Section 10631 (k) directs urban water suppliers to provide existing and projected water-use information to wholesale agencies from which water deliveries are obtained. The Act states the following:

Section 10631

(k) Urban water suppliers that rely upon a wholesale agency for a source of water, shall provide the wholesale agency with water-use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c), including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

As part of the Urban Water Management Plans, California regulation requires water suppliers to quantify past and current water use and to project the total water demand for

the water system. Projections of future water demand allow a water supplier to analyze if future water supplies are adequate, as well as help the agency when sizing and staging future water facilities. Water use and production records, combined with population and employment projections, provide the basis for estimating future water requirements. This chapter presents an analysis of water use data and the resulting projections for future water needs in the Artesia System.

Historical and Projected Water Use

Historical water use data from 1980 to 2004 was analyzed in order to estimate the future water demands for the Artesia System. Projections for the number of service connections and future water use were calculated for the year 2005 through 2030 in five-year increments. Future water demands were estimated using two different methods, a population-based approach and a historical-trend approach, in order to present a projection range. Detailed descriptions of how the population-based and historical-trend projections were calculated are provided below.

The population-based projections resulted in estimated future water demands in excess of those calculated using historical-trend projections. This is due to the fact that SCAG's projected growth rates exceed the actual growth rates experienced within the Artesia System's service area over the past twenty years. GSWC has opted to use the population-based projections for future water demand estimates even though it is considered unlikely that actual demand increases will reach the levels predicted. Using these more conservative numbers will ensure that a reliable water supply is available should future water demands within the Artesia System exceed the levels anticipated based on historic water use.

The range established between these two approaches is intended as supplemental information; all recommendations are based on the population-based projections. The historical-trend projections are provided as ancillary information only.

Figure **4-1** shows the historical and projected number of metered service connections for the Artesia System from 1980 through 2030. Figure 4-2 shows the historical and projected water use for the Artesia System from 1980 until 2030.

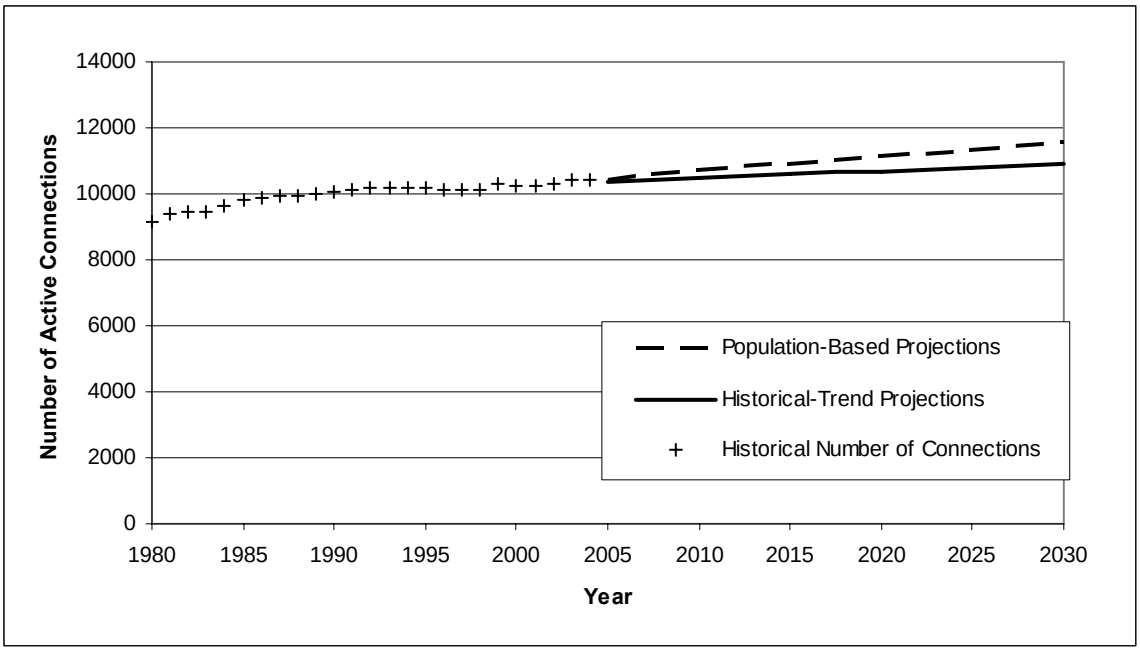

Figure 4-1 Historical and Projected Number of Metered Service Connections

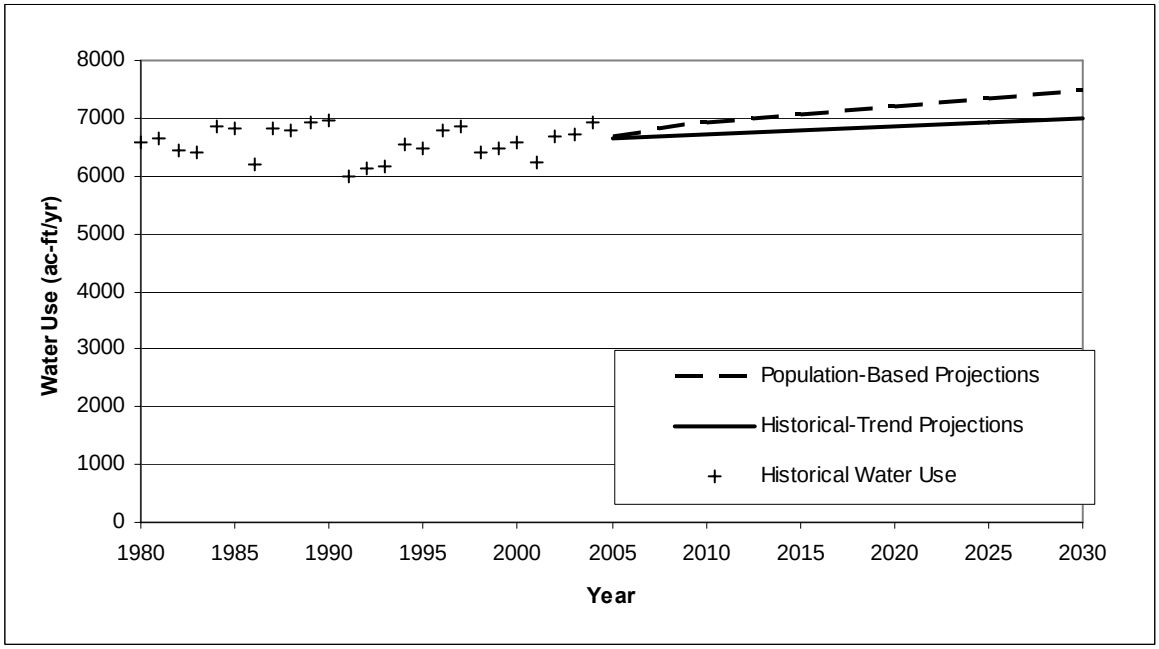

Figure 4-2 Historical Water Use and Future Water Use Projections

In order to generate estimates of future water demands, historical water use records from 1980 through 2004 were analyzed. The customer billing data for the system consists of annual water sales data. The water sales data was sorted by customer type using the assigned North American Industry Classification System (NAICS) codes. Then the sorted

water sales data was further grouped into the following 8 categories: single family, multi-family, industrial, commercial, institutional/government, landscape, agriculture, and others.

For each category, a water use factor was calculated in order to quantify the average water used per metered connection. For a given customer type, the unit water use factor is calculated as the total water sales for the category divided by the number of active service connections for that category. The unit water use factors for each customer type were averaged over the data range from 1999 through 2004 in order to obtain a representative water use factor that can be used for water demand projections by customer type.

The population-based water use projections are based on the population, housing, and employment projections developed for the Artesia System using the Southern California Association of Governments (SCAG) data. SCAG recently updated its projections for population, household, and employment growth through the year 2030 using 2000 U.S. Census data. SCAG's methodology and the derivation of population projections for the Artesia System are discussed in more detail in Chapter 2.

SCAG household projections were used to determine the growth in single-family and multi-family service connections for the years 2005, 2010, 2015, 2020, 2025, and 2030. For example, the ratio between the household projections for the year 2015 and the year 2000 was multiplied by the number of service connections in 2000 to obtain a projection of the number of connections in the year 2015. Similarly, employment growth projections were used to determine the growth for commercial, industrial, institutional/government, landscape, and agriculture service connections. The population-based projected water use was then calculated by multiplying the number of projected active service connections for each customer category with the corresponding customer average water use factor calculated above.

The historical-trend water use projections are not based on SCAG projections but are instead based on a linear projection of the historical number of metered service connections. To establish the historical trend, the data from 1989 through 2004 was used because the growth rate in number of connections decreased after 1989.

The average growth rate established by this historical trend was applied to the number of connections in each customer category to project the future number of service connections. The historical-trend projected water use was then calculated by multiplying the number of projected active service connections for each customer category with the corresponding customer average water use factor calculated above.

Figure 4-3 shows the average of the population-based and historical-trend water use projections by customer type, as well as the total water demand. The error bars provide the range of the total water demand projections for that year. The population-based and historical-trend projections of the number of service connections, and the resulting water demand, are provided in Table 4-1 and Table 4-2, respectively.

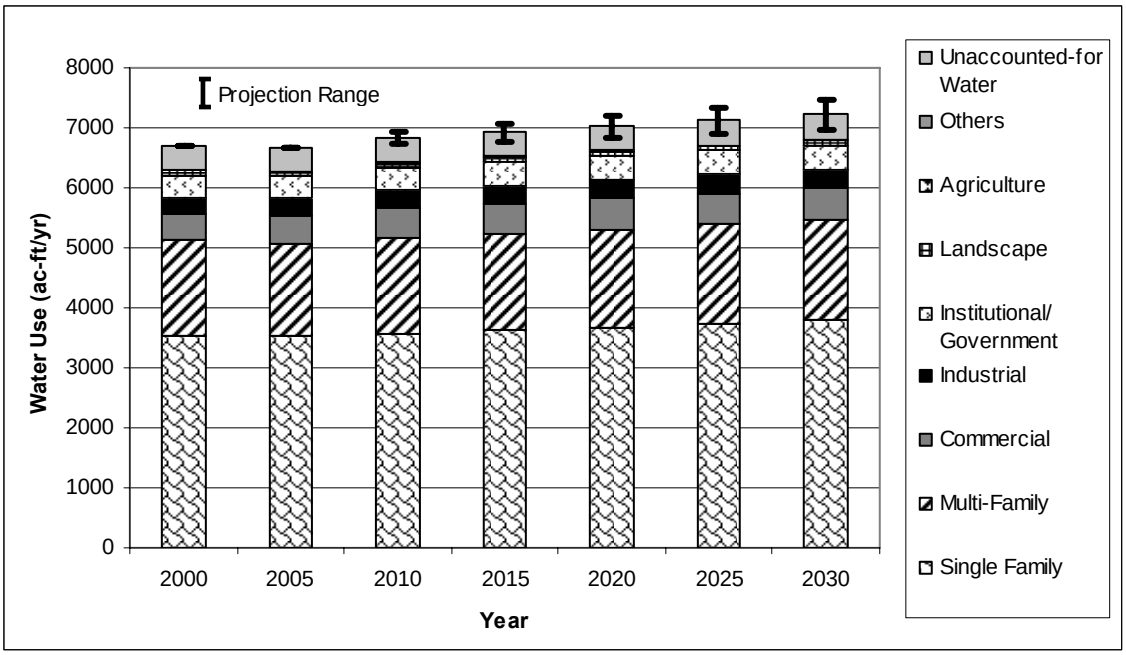

Figure 4-3 Water Use by Customer Type

Table 4-1
Population-Based and Historical-Trend Projections of the Number of Metered Service Connections for the Artesia System

		Accounts by Type								
Year	**Projection Type**	**Single Family**	**Multifamily**	**Commercial**	**Industrial**	**Institutional/ Government**	**Landscape**	**Agriculture**	**Other[3]**	**Total**
2000[2]	*N/A*	9,253	551	257	71	96	37	2	2	10,269
2005	*Population-Based*	9,419	561	259	72	97	37	2	2	10,448
	Historical-Trend	9,358	557	260	72	97	37	2	2	10,386
2010	*Population-Based*	9,645	574	281	78	105	40	2	2	10,728
	Historical-Trend	9,451	563	262	73	98	38	2	2	10,489
2015	*Population-Based*	9,827	585	288	80	108	41	2	2	10,933
	Historical-Trend	9,544	568	265	73	99	38	2	2	10,591
2020	*Population-Based*	10,015	596	295	81	110	42	2	2	11,145
	Historical-Trend	9,636	574	268	74	100	39	2	2	10,694
2025	*Population-Based*	10,199	607	301	83	112	43	2	2	11,351
	Historical-Trend	9,729	579	270	75	101	39	2	2	10,797
2030	*Population-Based*	10,383	618	307	85	115	44	2	2	11,556
	Historical-Trend	9,821	585	273	75	102	39	2	2	10,900

Notes
1. This table is based on the DWR Guidebook Table 12.
2. Based on calendar year.
3. Other accounts for any service connections not included in any other category, including idle or inactive connections.

Table 4-2
Population-Based and Historical-Trend Projections of Water Deliveries for Service Connections for the Artesia System in ac-ft/yr

		Accounts by Type								
Year	**Projection Type**	**Single Family**	**Multifamily**	**Commercial**	**Industrial**	**Institutional/ Government**	**Landscape**	**Agriculture**	**Other[3]**	**Total**
2000[2]	*N/A*	3,550	1,595	437	265	367	78	16	0	6,308
2005	*Population-Based*	3,530	1,565	466	291	358	73	13	1	6,297
	Historical-Trend	3,507	1,555	467	292	359	73	13	1	6,268
2010	*Population-Based*	3,615	1,602	505	316	388	79	14	1	6,521
	Historical-Trend	3,542	1,570	472	295	363	74	13	1	6,330
2015	*Population-Based*	3,683	1,633	518	324	398	81	15	1	6,652
	Historical-Trend	3,577	1,586	476	298	366	75	14	1	6,392
2020	*Population-Based*	3,753	1,664	530	331	408	83	15	1	6,785
	Historical-Trend	3,612	1,601	481	301	370	75	14	1	6,453
2025	*Population-Based*	3,823	1,694	541	338	416	85	15	1	6,913
	Historical-Trend	3,646	1,616	485	304	373	76	14	1	6,515
2030	*Population-Based*	3,892	1,725	551	344	424	86	16	1	7,038
	Historical-Trend	3,681	1,632	490	306	377	77	14	1	6,577

Notes
1. This table is based on the DWR Guidebook Table 12.
2. Based on calendar year.
3. Other accounts for any service connections not included in any other category, including idle or inactive connections.

Sales to Other Agencies

There are no sales to other agencies for the Artesia System; therefore, Table 4-3 has intentionally been left blank.

Table 4-3
Sales to Other Agencies in ac-ft/yr

Water Distributed	2000 (2)	2005	2010	2015	2020	2025	2030
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes
1. This table is based on the DWR Guidebook Table 13.
2. Based on calendar year.

Other Water Uses and Unaccounted-for Water

In order to accurately predict total water demand, other water uses, as well as any water lost during conveyance, must be added to the customer demand. California regulation requires water suppliers to quantify any additional water uses not included as a part of water use by customer type (Table 4-4). There are no other water uses in addition to those already reported in the Artesia System.

Unaccounted-for water must be incorporated when projecting total water demand. Unaccounted-for water is defined as the difference between annual production and supply and annual sales. Included in the unaccounted-for water are system losses (due to leaks, reservoir overflows, or inaccurate meters), and water used in operations. In the Artesia System, from 1999 through 2004, unaccounted-for water has averaged 5.77 percent of the total production. Table 4-4 provides a summary of unaccounted-for water in the Artesia System.

Table 4-4
Additional Water Uses and Losses in ac-ft/yr

Water-Use Type	2000 (2)	2005	2010	2015	2020	2025	2030
Other Water Uses	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Unaccounted-for System Losses(3)	386	385	399	407	415	423	431
Total	386	385	399	407	415	423	431

Notes
1. This table is based on the DWR Guidebook Table 14.
2. Based on calendar year.
3. Unaccounted-for water includes system losses due to leaks, reservoir overflows, and inaccurate meters, as well as water used in operations.

Total Water Demand

As mentioned above, other water uses, as well as any water lost during conveyance, must be added to the customer demand in order to project water demand for the Artesia System. Although there are no other water uses contributing to the total water demand in the Artesia System, unaccounted-for water must be incorporated into the total water demand (refer to the previous section for a definition of unaccounted-for water). Table 4-5 summarizes the projections of water sales, unaccounted-for water, and total water demand through the year 2030. The projected water sales in the remainder of the analysis, including Table 4-5, are calculated using the population-based projections for water use.

The water demand projections below do not include any reduction due to future implementation of Demand Management Measures (DMM). More information regarding the status of demand reduction measures is available in Chapter 5.

Table 4-5
Projected Water Sales, Unaccounted-for System Losses, and Total Water Demand in ac-ft/yr

Year	Projected Water Sales	Unaccounted-for System Losses	Total Water Demand
2000[(2)]	6,308	386	6,694
2005	6,297	385	6,682
2010	6,521	399	6,920
2015	6,652	407	7,059
2020	6,785	415	7,200
2025	6,913	423	7,336
2030	7,038	431	7,469

Notes
1. This table is based on the DWR Guidebook Table 15.
2. Based on calendar year.

Data Provided to Wholesale Agency

GSWC provided the following projected water use data to Central Basin Municipal Water District (CBMWD), its wholesale water supplier for the Artesia System, as summarized in Table 4-6.

Table 4-6
Summary of Artesia System Data Provided to CBMWD in ac-ft/yr

Wholesaler	2010	2015	2020	2025	2030
CBMWD	2,320	2,459	2,590	2,726	2,849

Notes
1. This table is based on the DWR Guidebook Table 19.

Chapter 5. Demand Management Measures

The evaluation of Demand Management Measures (DMMs) occupies a significant portion of the Act. The Act states:

Section 10631

(f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:

(1) A description of each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following:

(A) Water survey programs for single-family residential and multifamily residential customers.

(B) Residential plumbing retrofit.

(C) System water audits, leak detection, and repair.

(D) Metering with commodity rates for all new connections and retrofit of existing connections.

(E) Large landscape conservation programs and incentives.

(F) High-efficiency washing machine rebate programs.

(G) Public information programs.

(H) School education programs.

(I) Conservation programs for commercial, industrial, and institutional accounts.

(J) Wholesale agency programs.

(K) Conservation pricing.

(L) Water conservation coordinator.

(M) Water waste prohibition.

(N) Residential ultra-low-flush toilet replacement programs.

(2) A schedule of implementation for all water demand management measures proposed or described in the plan.

(3) A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.

(4) An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.

(g) An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following:

(1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors.

(2) Include a cost-benefit analysis, identifying total benefits and total costs.

(3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost.

(4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.

(j) Urban water suppliers that are members of the California Urban Water Conservation Council and submit annual reports to that Council in accordance with the ''Memorandum of Understanding Regarding Urban Water Conservation in California,'' dated September 1991, may submit the annual reports identifying water demand management measures currently being implemented, or scheduled for implementation, to satisfy the requirements of subdivisions (f) and (g).

10631.5. The department shall take into consideration whether the urban water supplier is implementing or scheduled for implementation, the water demand management activities that the urban water supplier identified in its urban water management plan, pursuant to Section 10631, in evaluating applications for grants and loans made available pursuant to Section 79163. The urban water supplier may submit to the department copies of its annual reports and other relevant documents to assist the department in determining whether the urban water supplier is implementing or scheduling the implementation of water demand management activities.

This chapter presents a summary of Golden State Water Company's (GSWC) past, current and future water conservation activities for the Artesia System in compliance with the above listed sections of the Act.

The water conservation practices, as defined by the Act, are comprised of 14 DMMs. The DMMs are functionally equivalent to urban water conservation best management practices (BMPs) administered by the California Urban Water Conservation Council (Council). Table 5-1 lists the BMPs.

The Council was formed as part of an effort by the Department of Water Resources (DWR) working jointly with water utilities, environmental organizations, and other interested groups to develop and administer urban best management practices (BMPs) for conserving water. In 1991 the Council issued a Memorandum of Understanding Regarding Urban Water Conservation in California (MOU) which formalized the agreement to implement BMPs to reduce the consumption of California's water resources. As a signatory of the MOU, GSWC has agreed to implement the BMPs that are determined to be cost beneficial to its ratepayers and to complete such implementation in accordance with the schedule assigned to each BMP. GSWC files bi-annual reports with the Council on BMPs implementation progress.

Table 5-1
Water Conservation Best Management Practices

1	Water Survey Programs for Single-Family Residential and Multifamily Residential Customers
2	Residential Plumbing Retrofits
3	System Water Audits, Leak Detection, and Repair
4	Metering with Commodity Rates for All New Connections and Retrofit of Existing Connections
5	Large-Landscape-Conservation Programs and Incentives
6	High-Efficiency-Washing-Machine Rebate Programs
7	Public Information Programs (1)
8	School Education Programs (1)
9	Conservation Program for Commercial, Industrial, Institutional (CII) Accounts
10	Wholesale-Agency Assistance Programs (1)
11	Conservation Pricing (1)
12	Water Conservation Coordinator (1)
13	Water Waste Prohibition (1)
14	Residential Ultra-Low-Flush-Toilet (ULFT) Replacement Programs

Notes
1. Economic benefits of these BMPs are considered nonquantifiable.

BMP Implementation Status

GSWC implements water conservation programs for all systems in Region II together rather than for each individual system. Because of this, water conservation was evaluated for the Region II customer service areas (CSAs), which consist of the Artesia, Bell-Bell Gardens, Culver City, Florence Graham, Hollydale, Norwalk, Southwest, and Willowbrook systems.

The BMPs implementation status was assessed based on information provided in BMP activity reports for the years 2001 to 2004 that were filed with the Council. Historically, the BMP forms for the Region II CSAs have been 100 complete, including the reports filed for 2001 to 2004. In addition, the BMP coverage reports were used to assess whether the target implementation schedule, as defined by the Council, for each BMP is met. The 2004 Activity Report and Coverage Report are included in Appendix D. Based on Section 10631 (j) the Council reports meet the requirements of Water Code Section 10631 (f) and (g). A summary of these reports is presented in Table 5-2 and Table 5-3.

Table 5-2 presents a summary of the past water conservation activities in the Region II CSAs. It should be noted GSWC takes credit for water conservation activities completed under programs jointly offered by GSWC and other agencies in its service area.

Table 5-3 presents a description of the offered programs and implementation status in the Region II CSAs for all BMPs. GSWC is currently not meeting coverage requirements as defined by the Council for BMPs 1, 2, 5, 6, and 9. In order to determine if implementation of these BMPs for the Region II CSAs should continue, a benefit-cost analysis was performed on these BMPs.

Table 5-2
Summary of Water Conservation Activities [1]

Year	BMP 1: Residential Surveys	BMP 2: Residential Retrofits	BMP 3: Pre-Screening System Water Audit	BMP 5: Large Landscape Surveys	BMP 7: Public Information Programs	BMP 8: School Programs Students Reached	BMP 9: CII Surveys	BMP 14: Residential ULFT
Pre 2000	2090	6272	Yes	6	Yes	891	11	18221
2000	5833	10498	Yes	49	Yes	3320		7849
2001	3037	8998	Yes	49	Yes	2160		2566
2002		800	Yes	49	Yes	160		
2003		5000	Yes		Yes	4144		
2004		7500	Yes		Yes	7000		
Meeting Coverage Requirements	No	No	Yes	No	Yes	Yes	No	No

Notes
1. BMPs 4, 6, 11, 12, and 13 are fully implemented. BMP 10 is not applicable as this system does not provide wholesale water to other agencies.

Table 5-3
Summary of Best Management Practice Implementation

	BMP	Summary of Activities	Coverage Implementation [2] Status
1	Residential Water Surveys	GSWC secures Metropolitan funding and then bids and hires a contractor to implement the survey program. The contractor is responsible for tracking the survey results for each customer, and entering the information into a database.	Coverage requirements are not met.
2	Residential Plumbing Retrofits	Since 1996, GSWC has developed direct mail flyers to residents in the Metro District service area advertising low-flow fixture programs.	Coverage requirements are not met.
3	System Water Audits, Leak Detection, and Repair	GSWC will conduct a water audit on affected systems in the event unaccounted for water exceeds 7%. All hydrants, valves and service connections are serviced on a regular basis. All large production meters are tested for accuracy.	Coverage requirements are being met.
4	Metering	All accounts in the Region II CSAs are metered and are billed by volume.	Fully implemented.
5	Large-Landscape-Conservation Program	GSWC\partners with Metropolitan's member agencies to identify and retrofit GSWC's customers for recycle water use. Information regarding the efficient use of landscape water is provided to new customers via a customer guide that is available in all customer service offices.	Coverage requirements are not met.
6	High-Efficiency-Washing-Machine Rebate Program	Rebates for high-efficiency washers are not offered by energy utility providers. GSWC partners with Metropolitan's member agencies, to offer rebate programs to GSWC customers.	Coverage requirements are being met.
7	Public Information Program [1]	Region II CSAs has a public information program. GSWC issues press releases, publishes quarterly newsletters and uses door tags and bill inserts to notify the public of various conservation programs.	Coverage requirements are being met.
8	School Education Program [1]	GSWC participates in Water Wise School Education that is accepted by CUWCC as "at least as effective" measure for this BMP.	Coverage requirements are being met.
9	Conservation Program CII Accounts	GSWC participates in Metropolitan "Save-a-Buck" rebate program tailored for commercial sector.	Coverage requirements are not met.
10	Wholesale-Agency Program [1]	Not applicable.	Not applicable
11	Conservation Pricing [1]	GSWC has adopted conservation pricing, including using water rates that are developed to recover the cost of providing service and billing customers for metered water use. GSWC has uniform water rate structure (i.e. no rate increase/decrease based on the quantity of water used).	Fully implemented.
12	Water Conservation Coordinator [1]	GSWC has a water conservation coordinator on staff to work with member agencies and contractors to develop and implement conservation programs.	Coverage requirements are being met.
13	Water Waste Prohibition [1]	There is a water waste prohibition ordinance in effect in the Region II CSAs (CPUC Tariff Rule No. 14.1).	Fully implemented.
14	Residential-Ultra-Low-Flush-Toilet-Replacement Program	GSWC partners with Metropolitan member agencies to secure funding for programs. GSWC has a ULFT replacement program that includes marketing, cooperation with local high schools and contractors.	Coverage requirements are not met.

Notes
1. Benefits of these DMM's are considered non-quantifiable.
2. "Implementation" means achieving and maintaining the staffing, funding, and priority levels necessary to achieve the level of activity required to satisfy the target commitment as described in the MOU.

Cost Benefit Analysis

A benefit-cost economic analysis was completed for the quantifiable BMPs that are not meeting coverage requirements (BMP 1, 2, 3, 5, 9 and 14). The benefit-cost analysis was completed with the consideration of economic factors. Noneconomic factors, including environmental, social, health, customer impacts, and new technology, are not believed to be significant and were not considered in the analysis.

The basis and assumptions used in the economic analysis of each BMP, as well as detailed calculations are included in Appendix D. Common assumption for all BMPs is the real discount rate of 6.71 percent and $546 per acre-foot for the value of conserved water. The value of conserved water provided by GSWC for the Region II CSAs is estimated based on the cost incurred for the next increment of purchased water from Central Basin Municipal Water District (CBMWD). The real discount rate is based on GSWC's calculated nominal interest rate of 8.79 percent less the assumed inflation rate of 2.06 percent. The analysis assumes that BMPs 1 and 2 (Residential Water Surveys and Plumbing Retrofits) would be done concurrently. Other assumptions with supporting references are described in Table D-1 (Appendix D).

The economic analysis was performed using a spreadsheet program developed by the Council. A separate, customized worksheet for each BMP is presented in Table D-2 (Appendix D). Each BMP economic analysis spreadsheet projects on an annual basis the number of interventions and the dollar values of the benefits and costs that would result from fully implementing a particular BMP. The definition of terms and formulas that are common to all worksheets are presented in Table D-3 (Appendix D).

Table 5-4 summarizes the results of the economic analysis. The table presents the total discounted costs and benefits, the benefit-cost ratio, the simple pay-back period, the discounted cost per acre-foot of water saved, and the net present value (NPV) per acre-foot of water saved for each BMP.

The economic analysis shows that all BMPs with the exception of BMP 2 yield benefit-cost ratios greater than one, which indicates that the conservation measures are cost effective. Based on this, GSWC should continue efforts to implement BMPs 1, 3 5, 9, and 14 that appear to be cost effective.

BMP 2 Residential Plumbing Retrofits results in slightly higher costs when compared to the value of water that is saved, and a benefit cost ratio of less than one. Signatories of the MOU are not required to implement BMPs that are not cost beneficial. Therefore, GSWC is not required to continue implementation of BMP 2, and should pursue an exemption from implementing this measure with the Council.

Based on the results of the benefit-cost analysis an implementation program was developed for the cost effective BMPs.

Table 5-4
Results of Economic Analysis for BMPs Currently not Meeting Coverage Requirements

	BMP Description	Total Discounted Cost (1)	Total Discounted Benefits (2)	Total Water Saved (Ac-ft) (3)	Benefit / Cost Ratio (4)	Simple Payback Analysis (years) (5)	Discounted Cost / Water Saved ($/ac-ft) (6)	Net Present Value / Water Saved ($/ac-ft) (7)
1	Water Survey Programs for Residential Customers	$318,540	$432,862	865	1.4	4	$368	$132
2	Residential Plumbing Retrofits	$2,297,694	$1,972,079	4,970	0.9	15	$462	-$66
3	System Water Audits, Leak Repair	$373,524	$591,306	1,744	1.6	7	$214	$125
5	Large Landscape Conservation Programs and Incentives	$404,472	$1,171,462	2,514	2.9	2	$174	$327
9	Conservation Program for CII Accounts	$573,203	$1,649,812	3,297	2.9	2	$174	$327
14	Residential ULFT Replacement Program	$5,013,776	$16,112,003	40,667	3.2	9	$123	$273

Notes
1. Present value of the sum of financial incentives and operating expenses - using discount rate of 6.71%.
2. Present value of the sum of avoided energy and purchased water costs - using discount rate of 6.71%.
3. Achieved water savings for the implemented BMP.
4. Total discounted benefits divided by total discounted costs.
5. Time horizon in years required for benefits to pay back costs of the BMP.
6. Total discounted costs divided by total water saved.
7. Total of discounted benefits less discounted costs divided by total water saved.

Recommended Conservation Program

GSWC should continue efforts to implement BMPs that are assessed to be cost beneficial (benefit-cost ratio equal or greater than one), and to achieve the target implementation coverage by the end of the implementation period assigned to each BMP.

BMP 1, 3, 5, 9, and 14 were identified as cost beneficial in the Region II CSAs; therefore, an implementation program was developed for these BMPs. The program is based on achieving the target coverage requirements, as per the MOU.

Table 5-5 presents the proposed implementation program, including the number of annual interventions required for each BMP to comply with defined coverage requirements; the total annual expenditures necessary to support the interventions; and the estimated annual water savings. The expenditures for BMPs take into consideration the existing programs offered by other agencies in the service area, and reflect only the incremental cost to GSWC to implement BMPs to meet the coverage requirements.

BMPs 7, 8, 10, 11, 12, and 13 were not included in the proposed implementation program because they are considered non-quantifiable. These BMPs have no specific level of effort defined in the MOU, therefore water savings and costs associated with these BMPs were not included in the analysis. The cost for BMP 12 is contained in GSWC overhead. BMPs 4 and 6 are already implemented, and, therefore, have no additional cost associated with them. BMP 13 has no associated cost unless initiated by a water shortage condition.

When implementing water conservation programs, GSWC is subject to economic and legal constraints that need to be considered as they may affect the proposed BMPs implementation schedule.

Economic Considerations

As a private utility, GSWC is subject to the rules and regulations of the California Public Utilities Commission (CPUC). The CPUC approve GSWC's water rate structure and the capital and operating budget, including the budget for implementation of water conservation measures. GSWC is often constrained in the funding available to implement programs. GSWC implements cost effective water conservation programs that have been approved by the CPUC.

While GSWC is fully committed to optimizing its available water resources and implementation of BMPs and DMMs, the Company is currently limited in its ability to do so by certain ratesetting practices of the CPUC. As noted above, the CPUC's draft "Water Action Plan" has as one of its major objectives strengthening water conservation programs to a level comparable to those of energy utilities. While implementation measures have not yet been identified by the CPUC, GSWC has proposed specific changes to current CPUC ratesetting practices which will, as a practical matter, support implementation of the WAP conservation objectives and greatly enhanced DMMs.

The cost of water is an important economic factor that needs to be considered when implementing conservation programs. Higher cost of water increases the economic viability of BMP implementation. Currently there are no water projects planned in the Region II CSAs that would result in higher unit cost of water, thus increasing the economic feasibility of water conservation measures. However, the marginal cost of water is based on purchased water from the CBMWD, which is likely to increase with time.

Legal Considerations

GSWC has the legal authority to implement cost beneficial BMPs that were approved by the CPUC in its capital/operating budget. When developing programs that advance water conservation, GSWC can offer financial incentives, information or educational programs in its service area; however, GSWC has no legal authority to enforce urban codes or plumbing codes for new or existing connections that pertain to implementation of efficient devices, or reduction of water use.

Ordinances that prohibit water waste (BMP 13) are jointly developed by CPUC and GSWC. Ordinances are enacted by the CPUC only during water shortage. As a water retailer, GSWC has no legal authority to enact or enforce waste water prohibition ordinances without CPUC approval.

Cost Share Partners

In an effort to expand the breadth of offered programs GSWC partners with wholesale suppliers, energy utilities, and other agencies that support conservation programs. Joint participation offers opportunity for cost sharing and development of more effective conservation strategies.

GSWC obtains water from the Metropolitan Water District of Southern California (Metropolitan) through the CBMWD and actively participates in programs offered by this wholesaler. Metropolitan has a mandate to provide financial incentives or other resources, as appropriate, to the retail water agency customers to further cost effective water conservation efforts. Metropolitan offers the following conservation programs in the Region II CSAs that provide GSWC an opportunity for cost sharing:

- Rebate program for high-efficiency toilets (BMP 2)
- Rebates for high-efficiency clothes washers, in cooperation with energy utilities (BMP 6)
- Adult education programs (BMP 7)
- Financial incentives for CII sector under its “Save-a-Buck” program (BMP 9).

The GSWC participates in these programs by providing additional funding or resources to implement offered programs. The additional funding may include additional rebate offers, program advertising, or sharing of costs related to organizing events in its service area.

GSWC is a member of the Water Education Water Awareness Committee (WEWAC). WEWAC, which comprises local water agencies, forms partnerships with educators and institutions within its service territory and assists in incorporating the water conservation message into the regular curriculum, development of education workshops and other tools.

GSWC is committed to continue efforts to implement cost effective BMPs that are approved by the CPUC, and to achieve target implementation coverage by the end of the implementation period assigned to each BMP.

Table 5-5
Results of Economic Analysis for BMPs Currently not Meeting Coverage Requirements

	BMP 1: Residential Water Surveys			BMP 3: System Audits and Repair			BMP 5: Large Landscape Conservation Programs		
Year	Interven-tions	Water Saved (ac-ft/yr)	Cost ($/yr)	Interven-tions	Water Saved (ac-ft/yr)	Cost ($/yr)	Interven-tions	Water Saved (ac-ft/yr)	Cost ($/yr)
2006	4698	108	$164,440	32	19	$32,300	468	301	$200,059
2007	4698	216	$154,100	32	39	$32,300	468	602	$200,059
2008	0	216	$0	32	58	$32,300	129	612	$19,366
2009	0	216	$0	32	78	$32,300	129	621	$19,366
2010	0	108	$0	32	97	$32,300	50	324	$7,449
2011	0	0	$0	32	97	$32,300	50	26	$7,449
2012	0	0	$0	32	97	$32,300	0	17	$0
2013	0	0	$0	32	97	$32,300	0	7	$0
2014	0	0	$0	32	97	$32,300	0	4	$0
2015	0	0	$0	32	97	$32,300	0	0	$0
2016	0	0	$0	32	97	$32,300	0	0	$0
2017	0	0	$0	32	97	$32,300	0	0	$0
2018	0	0	$0	32	97	$32,300	0	0	$0
2019	0	0	$0	32	97	$32,300	0	0	$0
2020	0	0	$0	32	97	$32,300	0	0	$0
2021	0	0	$0	32	97	$32,300	0	0	$0
2022	0	0	$0	32	97	$32,300	0	0	$0
2023	0	0	$0	32	97	$32,300	0	0	$0
2024	0	0	$0	32	97	$32,300	0	0	$0
2025	0	0	$0	32	97	$32,300	0	0	$0
2026	0	0	$0	32	97	$32,300	0	0	$0
2027	0	0	$0	32	97	$32,300	0	0	$0
2028	0	0	$0	32	97	$32,300	0	0	$0
2029	0	0	$0	32	97	$32,300	0	0	$0
2030	0	0	$0	32	97	$32,300	0	0	$0
Total	9,397	865	$318,540	646	1,744	$807,500	1,294	2,514	$453,749

Table 5-5 (continued)
Results of Economic Analysis for BMPs Currently not Meeting Coverage Requirements

	BMP 9: CII Conservation			BMP 14: Residential ULFT Replacement Program			Total		
Year	Interven-tions	Water Saved (ac-ft/yr)	Cost ($/yr)	Interven-tions	Water Saved (ac-ft/yr)	Cost ($/yr)	Interven-tions	Water Saved (ac-ft/yr)	Cost ($/yr)
2006	326	412	$295,905	12,443	1,213	$982,958	17,697	2,054	$1,675,662
2007	326	824	$295,905	12,443	1,581	$982,958	17,697	3,263	$1,665,322
2008	0	824	$0	0	1,949	$0	161	3,659	$51,666
2009	0	824	$0	0	1,949	$0	161	3,688	$51,666
2010	0	412	$0	0	1,949	$0	82	2,890	$39,749
2011	0	0	$0	0	1,949	$0	82	2,072	$39,749
2012	0	0	$0	0	1,949	$0	32	2,062	$32,300
2013	0	0	$0	0	1,949	$0	32	2,053	$32,300
2014	0	0	$0	0	1,949	$0	32	2,049	$32,300
2015	0	0	$0	0	1,949	$0	32	2,046	$32,300
2016	0	0	$0	0	1,949	$0	32	2,046	$32,300
2017	0	0	$0	0	1,949	$0	32	2,046	$32,300
2018	0	0	$0	0	1,949	$0	32	2,046	$32,300
2019	0	0	$0	0	1,949	$0	32	2,046	$32,300
2020	0	0	$0	0	1,949	$0	32	2,046	$32,300
2021	0	0	$0	0	1,949	$0	32	2,046	$32,300
2022	0	0	$0	0	1,949	$0	32	2,046	$32,300
2023	0	0	$0	0	1,949	$0	32	2,046	$32,300
2024	0	0	$0	0	1,949	$0	32	2,046	$32,300
2025	0	0	$0	0	1,949	$0	32	2,046	$32,300
2026	0	0	$0	0	1,949	$0	32	2,046	$32,300
2027	0	0	$0	0	1,949	$0	32	2,046	$32,300
2028	0	0	$0	0	1,949	$0	32	2,046	$32,300
2029	0	0	$0	0	1,949	$0	32	2,046	$32,300
2030	0	0	$0	0	1,949	$0	32	2,046	$32,300
Total	651	3,297	$591,810	24,885	37,872	$1,965,915	37,034	46,293	$4,137,514

Chapter 6. Desalination

The Act requires that desalination opportunities be discussed in the UWMP. The Act states:

Section 10631

(i) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

Per requirements of California Water Code Section 10631(i), this chapter presents opportunities to use desalinated water as a future water supply source for the Artesia System. While the reliability of water supply for the Artesia System could be further augmented by the desalination of seawater plans of Metropolitan and its member agencies, it is likely that conjunctive use storage opportunities in the Central Basin, if implemented, will be sufficient to meet the long term needs of the Artesia System at a potentially lower cost. The following discussion summarizes the desalination plans of the wholesale suppliers.

Metropolitan and its member agencies view seawater desalination as a future component of a diversified water supply portfolio. Recent and continuous breakthroughs in membrane technology have helped to reduce desalination costs, warranting consideration among alternative resource options outlined in Metropolitan's 2003 Integrated Resources Plan (IRP) Update. Metropolitan's IRP Update includes a target goal of up to 150,000 ac-ft/yr (ac-ft/yr) of seawater desalination by 2025. This is an important component of the total estimated water supply production for the region.

To achieve the long term goals, Metropolitan initiated the Seawater Desalination Program (SDP) in 2001. As part of the program, Metropolitan is providing support for projects in its service area that would deliver desalted water up to 50,000 ac-ft/yr, including financial assistance of up to $250 per ac-ft of water for supplies that have been developed developed and delivered to the Metropolitan's distribution system for a period of up to 25 years. In addition, Metropolitan has an established a desalination research program. As part of this program, the agency is providing $250,000 to five member agencies to conduct research and investigation in various aspects of seawater desalination. Metropolitan is also involved in efforts to assess current desalination projects and to compare project features and applicability to Southern California. Furthermore, Metropolitan, in association with member agencies, is involved in assessing established and emerging desalination treatment technologies, pretreatment alternatives, and brine disposal issues, as well as the permitting and regulatory approvals associated with the delivery of desalinated seawater to regional and local distribution systems.

Table 6-1 provides a summary of opportunities for water desalination. Any future desalination projects of Metropolitan and CBMWD would increase the reliability of water supply for the region.

Table 6-1
Summary of Opportunities for Water Desalination

Source of Water	Yield (ac-ft/yr)	Start Date	Type of Use	Other
Seawater (Metropolitan)	150,000	2025	Potable water	N/A

Notes
1. Table format based on DWR Guidance Document Table 18

Chapter 7. Water Shortage Contingency Plan

Section 10632 of the Act details the requirements of the water-shortage contingency analysis. The Act states the following:

Section 10632. The plan shall provide an urban water-shortage contingency analysis that includes each of the following elements that are within the authority of the urban water supplier:

(a) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions, which are applicable to each stage.

(b) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.

(c) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.

(d) Additional, mandatory prohibitions against specific water-use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.

(e) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water-use reduction consistent with up to a 50 percent reduction in water supply.

(f) Penalties or charges for excessive use, where applicable.

(g) An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.

(h) A draft water shortage contingency resolution or ordinance.

(i) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

This chapter documents GSWC's Water Shortage Contingency Plan for the Artesia System per requirements of Section 10632 of the Act. The Water Shortage Contingency Plan is based on Rule No. 14.1 Mandatory Water Conservation, Restrictions and Ratings Program adopted by GSWC. Appendix F contains the full text of the rule.

The purpose of the Water Shortage Contingency Plan is to provide a plan of action to be followed during the various stages of a water shortage. The plan includes the following elements: action stages, estimate of minimum supply available, actions to be implemented during a catastrophic interruption of water supplies, prohibitions, penalties and consumption reduction methods, revenue impacts of reduced sales, and water use monitoring procedures.

Action Stages

The Act requires documentation of actions to be undertaken during a water shortage. GSWC has developed actions to be undertaken in response to water supply shortages, including up to a 50 percent reduction in water supply. Implementation of the actions is dependent upon approval of the California Public Utilities Commission (CPUC), especially for implementing mandatory water use restriction. CPUC has jurisdiction over GSWC because GSWC is an investor-owned water utility. Section 357 of the California Water Code requires that suppliers that are subject to regulation by the CPUC secure its approval before imposing water consumption regulations and restrictions required by water supply shortage emergencies. GSWC has proposed that the CPUC support implementation of water shortage allocation policies by amending Commission Rule 14.1 to (a) adopt specific rationing rates and restrictor valve removal fees; and (b) provide for a shortened authorization period to implement emergency measures such as mandatory conservation and rationing in order to effectively manage water shortages.

GSWC has grouped the actions to be taken during a water shortage into four stages, I through IV, that are based on the water supply conditions. Table 7-1 describes the water supply shortage stages and conditions. The stages will be implemented during water supply shortages according to shortage level, ranging from 5 percent shortage in Stage I to 50 percent shortage in Stage IV. The stage determination and declaration during a water supply shortage will be made by the Regional Vice President Customer Service.

Table 7-1
Water Supply Shortage Stages and Conditions

Stage No.	Water Shortage Supply Conditions	Shortage Percent
I	Minimum	5 -10
II	Moderate	10 - 20
III	Severe	20 – 35
IV	Critical	35 - 50

Notes
1 This table is based on the DWR Guidebook Table 23.

The actions to be undertaken during each stage include, but are not limited to, the following:

Stage I (5 - 10 percent shortage) - Water alert conditions are declared and voluntary conservation is encouraged. The drought situation is explained to the public and governmental bodies. GSWC explains the possible subsequent water shortage stages in order to forecast possible future actions for the customer base. The activities performed by GSWC during this stage include, but are not limited to:

- Public information campaign consisting of distribution of literature, speaking engagements, bill inserts, and conversation messages printed in local newspapers
- Educational programs in area schools

- Conservation Hotline, a toll free number with trained Conservation Representatives to answer customer questions about conservation and water use efficiency

Stage II (10 - 20 percent shortage) – Stage II will include actions undertaken in Stage I. In addition, GSWC may propose voluntary conservation allotments and/or require mandatory conservation rules. The severity of actions depends upon the percent shortage. The level of voluntary or mandatory water use reduction requested from the customers is also based on the severity. It needs to be noted that prior to implementation of any mandatory reductions, GSWC must obtain approval from CPUC. If necessary, GSWC may also support passage of drought ordinances by appropriate governmental agencies.

Stage III (20 - 35 percent shortage) – Stage III is a severe shortage that entails or includes allotments and mandatory conservation rules. This phase becomes effective upon notification by the GSWC that water usage is to be reduced by a mandatory percentage. GSWC implements mandatory reductions after receiving approval from CPUC. Rate changes are implemented to penalize excess usage. Water use restrictions are put into effect, i.e. prohibited uses can include restrictions of daytime hours for watering, excessive watering resulting in gutter flooding, using a hose without a shutoff device, use of non-recycling fountains, washing down sidewalks or patios, unrepaired leaks, etc. GSWC monitors production weekly for compliance with necessary reductions. Use of flow restrictors is implemented, if abusive practices are documented.

Stage IV (35 - 50 percent shortage) – This is a critical shortage that includes all steps taken in prior stages regarding allotments and mandatory conservation. All activities are intensified and production is monitored daily by GSWC for compliance with necessary reductions.

Minimum Supply

The Act requires an estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for GSWC's water supply.

Table 7-2 summarizes the minimum volume of water available from each source during the next three years based on multiple-dry water years and normal water year. The driest three-year historic sequence is provided in Chapter 3. The water supply quantities for 2006 to 2008 are calculated by linearly interpolating the projected water supplies of 2005 and 2010. The water supplies for 2005 and 2010 are presented in Chapter 3. It is assumed that the multiple-dry year supplies will be the same as those for the normal years because –purchased water supplies will meet projected imported water demands under all anticipated hydrologic conditions. It should be noted that the active connection capacity to deliver imported water is significantly higher than the projected imported water supply that is expected to meet these demands.

GSWC's supply is expected to be 100 percent reliable from 2005 to 2008. This reliability is a result of, 1) adjudicated groundwater rights in the Central Basin, 2) anticipated benefits of conjunctive use storage programs in accordance with the terms of amendments to the existing court Judgment to be developed, 3) the projected reliability of Metropolitan water supplies purchased through CBMWD, which are expected to be 100 percent reliable, and 4) the availability of recycled water (see Chapters 3 and 10 for details).

Table 7-2
Three-Year Estimated Minimum Water Supply in ac-ft/yr

Source	2006	2007	2008	2005 Average year
Purchased water	2,130	2,177	2,225	2,082
Groundwater	4,500	4,500	4,500	4,500
Recycled water	100	100	100	100
Total	6,730	6,777	6,825	6,682

Notes
1. This table is based on the DWR Guidebook Table 24.

Catastrophic Supply Interruption Plan

The Act requires documentation of actions to be undertaken by the water supplier to prepare for, and implement during a catastrophic interruption of water supplies. A catastrophic interruption constitutes a proclamation of a water shortage and could be any event (either natural or man-made) that causes a water shortage severe enough to classify as either a Stage III or Stage IV water supply shortage condition.

In order to prepare for catastrophic events, GSWC has prepared an Emergency Response Plan (ERP) in accordance with other state and federal regulations. The purpose of this plan is to design actions necessary to minimize the impacts of supply interruptions due to catastrophic events.

The ERP coordinates overall company response to a disaster in any and all of its districts. In addition, the ERP requires each district to have a local disaster plan that coordinates emergency responses with other agencies in the area. The ERP also provides details on actions to be undertaken during specific catastrophic events. Table 7-3 provides a summary of actions cross-referenced against specific catastrophes for three of the most common possible catastrophic events: regional power outage, earthquake, and malevolent acts.

In addition to specific actions to be undertaken during a catastrophic event, GSWC performs maintenance activities, such as annual inspections for earthquake safety, and budgets for spare items, such as auxiliary generators, to prepare for potential events.

Table 7-3
Summary of Actions for Catastrophic Events

Possible Catastrophe	Summary of Actions
Regional power outage	• Isolate areas that will take the longest to repair and/or present a public health threat. Arrange to provide emergency water. • Establish water distribution points and ration water if necessary. • If water service is restricted, attempt to provide potable water tankers or bottled water to the area. • Make arrangements to conduct bacteriological tests, in order to determine possible contamination. • Utilize backup power supply to operate pumps in conjunction with elevated storage.
Earthquake	• Assess the condition of the water supply system. • Complete the damage assessment checklist for reservoirs, water treatment plants, wells and boosters, system transmission and distribution. • Coordinate with OES utilities group or fire district to identify immediate fire fighting needs. • Isolate areas that will take the longest to repair and/or present a public health threat. Arrange to provide emergency water. • Prepare report of findings, report assessed damages, advise as to materials of immediate need and identify priorities including hospitals, schools and other emergency operation centers. • Take actions to preserve storage. • Determine any health hazard of the water supply and issue any “Boil Water Order” or “Unsafe Water Alert” notification to the customers, if necessary. • Cancel the order or alert information after completing comprehensive water quality testing. • Make arrangements to conduct bacteriological tests, in order to determine possible contamination.
Malevolent acts	• Assess threat or actual intentional contamination of the water system. • Notify local law enforcement to investigate the validity of the threat. • Get notification from public health officials if potential water contamination • Determine any health hazard of the water supply and issue any “Boil Water Order” or “Unsafe Water Alert” notification to the customers, if necessary. • Assess any structural damage from an intentional act. • Isolate areas that will take the longest to repair and or present a public health threat. Arrange to provide emergency water.

Notes
1. This table is based on the DWR Guidebook Table 25.

Prohibitions, Penalties, and Consumption Reduction Methods

The Act requires an analysis of mandatory prohibitions, penalties, and consumption reduction methods against specific water use practices which may be considered excessive during water shortages. Given that GSWC is an investor owned entity, it does not have the authority to pass any ordinances enacting specific prohibitions or penalties. In order to enact or rescind any prohibitions or penalties, GSWC would seek approval from CPUC to enact or rescind Rule No. 14.1, Mandatory Conservation and Rationing, which is presented in Appendix F. When Rule No. 14.1 has expired or is not in effect, mandatory conservation and rationing measures will not be in force.

Rule No. 14.1 details the various prohibitions and sets forth water use violation fines, charges for removal of flow restrictors, as well as establishes the period during which mandatory conservation and rationing measures will be in effect. The prohibitions on various wasteful water uses, include, but are not limited to, the hose washing of sidewalks and driveways using potable water, and cleaning for filling decorative fountains. Table 7-4 summarizes the various prohibitions and the stages during which the prohibition becomes mandatory.

Table 7-4
Summary of Mandatory Prohibitions

Examples of Prohibitions	Stage When Prohibition Becomes Mandatory
Uncorrected plumbing leaks	II, III, IV
Watering which results in flooding or run-off in gutters, waterways, patios, driveway, or streets	II, III, IV
Washing aircraft, cars, buses, boats, trailers, or other vehicles without a positive shut-off nozzle on the outlet end of the hose	II, III, IV
Washing buildings, structures, sidewalks, walkways, driveways, patios, parking lots, tennis courts, or other hard-surfaced areas in a manner which results in excessive run-off	II, III, IV
Irrigation of non-permanent agriculture	II, III, IV
Use of water for street watering with trucks or for construction purposes unless no other source of water or other method can be used	II, III, IV
Use of water for decorative fountains or the filling or topping off of decorative lakes or ponds	II, III, IV
Filling or refilling of swimming pools	II, III, IV

Notes
1. This table is based on the DWR Guidebook Table 26.

In addition to prohibitions during water supply shortage events requiring a voluntary or mandatory program, GSWC will make available to its customers water conservation kits as required by GSWC's Rule No. 20. GSWC will notify all customers of the availability of conservation kits.

In addition to prohibitions, Rule No. 14.1 provides penalties and charges for excessive water use. The enactment of these penalties and charges is contingent on approval of Rule 14.1 implementation by the CPUC. When the rule is in effect, violators receive one verbal and one written warning after which a flow-restricting device may be installed in the violator's service for a reduction of up to 50 percent of normal flow or 6 ccf per month, whichever is greater. Table 7-5 summarizes the penalties and charges and the stage during which they take effect.

Table 7-5
Summary of Penalties and Charges for Excessive Use

Penalties or Charges	Stage When Penalty Takes Effect
Penalties for not reducing consumption	III, IV
Charges for excess use	III, IV
Flat fine; Charge per unit over allotment	III, IV
Flow restriction	III, IV
Termination of Service	III, IV

Notes
1. This table is based on the DWR Guidebook Table 28.

In addition to prohibitions and penalties, GSWC can use other consumption reduction methods to reduce water use up to 50 percent. Based on the requirements of the Act, Table 7-6 summarizes the methods that can be used by GSWC in order to enforce a reduction in consumption, where necessary.

Finally, GSWC has requested that the CPUC support implementation of water shortage allocation policies by amending Commission Rule 14.1 to (a) adopt specific rationing rates and restrictor valve removal fees; and (b) provide for a shortened authorization period to implement emergency measures such as mandatory conservation and rationing in order to effectively manage water shortages.

Revenue Impacts of Reduced Sales

Section 10632(g) of the Act requires an analysis of the impacts of each of the actions taken for conservation and water restriction on the revenues and expenditures of the water supplier. Because GSWC is an investor owned water utility and, as such, is regulated by the CPUC, the CPUC authorizes it to establish memorandum accounts to track expenses and revenue shortfalls caused by both mandatory rationing and voluntary conservation efforts. Utilities with CPUC-approved water management plans are authorized to implement a surcharge to recover revenue shortfalls recorded in their drought memorandum accounts. Table 7-7 provides a summary of actions with associated revenue reductions; while

Table 7-8 provides a summary of actions and conditions that impact expenditures. Table 7-9 summarizes the proposed measures to overcome revenue impacts. Table 7-10 provides a summary of the proposed measures to overcome expenditure impacts.

Table 7-6
Summary of Consumption Reduction Methods

Consumption Reduction Method	Stage When Method Takes Effect	Projected Reduction Percentage
Demand reduction program	All Stages	N/A
Reduce pressure in water lines; Flow restriction	III, IV	N/A
Restrict building permits; Restrict for only priority uses	II, III, IV	N/A
Use prohibitions	II, III, IV	N/A
Water shortage pricing; Per capita allotment by customer type	II, IV	N/A
Plumbing fixture replacement	All Stages	N/A
Voluntary rationing	II	N/A
Mandatory rationing	III, IV	N/A
Incentives to reduce water consumption; Excess use penalty	III, IV	N/A
Water conservation kits	All Stages	N/A
Education programs	All Stages	N/A
Percentage reduction by customer type	III, IV	N/A

Notes
1. This table is based on the DWR Guidebook Table 27.

Table 7-7
Summary of Actions and Conditions that Impact Revenue

Type	Anticipated Revenue Reduction
Reduced sales	Reduction in revenue will be based on the decline in water sales and the corresponding quantity tariff rate
Recovery of revenues with CPUC approved surcharge	Higher rates may result in further decline in water usage and further reduction in revenue

Notes
1. This table is based on a DWR Guidebook table on page 59.

Table 7-8
Summary of Actions and Conditions that Impact Expenditures

Category	Anticipated Cost
Increased staff cost	Salaries and benefits for new hires required to administer and implement water shortage program
Increased O&M[(2)] cost	Operating and maintenance costs associated with alternative sources of water supply
Increased cost of supply and treatment	Purchase and treatment costs of new water supply

Notes
1. This table is based on a DWR Guidebook table on page 59.
2. Operations and maintenance.

Table 7-9
Proposed Measures to Overcome Revenue Impacts

Names of Measures	Summary of Effects
Obtain CPUC approved surcharge	Allows for recovery of revenue shortfalls brought on by water shortage program
Penalties for excessive water use	Obtain CPUC approval to use penalties to offset portion of revenue shortfall

Notes
1. This table is based on the DWR Guidebook Table 29.

Table 7-10
Proposed Measures to Overcome Expenditure Impacts

Names of Measures	Summary of Effects
Obtain CPUC approved surcharge	Allows for recovery of increased expenditures brought on by water shortage program
Penalties for excessive water use	Obtain CPUC approval to use penalties to offset portion of increased expenditures

Notes
1. This table is based on the DWR Guidebook Table 30.

Water-Use Monitoring Procedures

The Act asks for an analysis of mechanisms for determining actual reduction in water use when the Water Shortage Contingency Plan is in effect. Table 7-11 lists the possible mechanisms used by GSWC to monitor water use and the quality of data expected.

Table 7-11
Water-Use Monitoring Mechanisms

Mechanisms for Determining Actual Reductions	Type and Quality of Data Expected
Customer meter readings	Hourly/daily/monthly water consumption data for a specific user depending on frequency of readings
Production meter readings	Hourly/daily/monthly water production depending on frequency of readings; correlates to water use plus system losses

Notes
1. This table is based on the DWR Guidebook Table 31.

In addition to the specific actions that GSWC can undertake to verify level of conservation, GSWC can monitor long-term water use through regular bi-monthly meter readings, which gives GSWC the ability to flag exceptionally high usage for verification of water loss or abuse.

Chapter 8. Recycled Water Plan

Section 10633 details the requirements of the Recycled Water Plan to be included in the Act. The Act states the following:

Section 10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area and shall include all of the following:

(a) A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.

(b) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.

(c) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.

(d) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.

(e) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of ac-ft of recycled water used per year.

(f) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

Coordination

Table 8-1 summarizes the role of the agencies that participated in the development of recycled water plans that affect the Artesia customer service area (CSA) of the Golden State Water Company (GSWC).

Table 8-1
Role of Participating Agencies in the Development of the Recycled Water Plan

Participating Agencies	Role in Plan Development
Water agencies	GSWC provides data to CBMWD for its use in planning a potential recycled water distribution system expansion and identifying additional recycled water customers. The CBMWD, acting as the recycled water wholesaler, has sole decision-making authority regarding the implementation of the recycled water plan and distribution network.
Wastewater agencies	The Sanitation Districts of Los Angeles County provide a reliable supply of recycled water that meets California recycled water quality standards set forth in Title 22 of the California Code of Regulations.
Groundwater agencies	Not applicable for this CSA.
Planning agencies[(2)]	The city governments affected by any future recycled water projects may play a role in conducting economic analysis, data assessment, customer assessment, analyzing community impacts, defining customer involvement, establishing conceptual pipeline routes, and estimating costs.

Notes
1. This table is based on the DWR Guidebook Table 32.
2 The role of planning agencies is solely defined by CBMWD, the owner and operator of the recycled water distribution network affecting the Artesia System.

Wastewater Quantity, Quality, and Current Uses

Wastewater in the Artesia System is collected by gravity sewers and lift stations owned by the City of Artesia, as well as by the Sanitation Districts of Los Angeles County (LACSD). The wastewater is transported through trunk sewers to LACSD's Los Coyotes Water Reclamation Plant (WRP) in Cerritos and San Jose Creek WRP in Whittier for treatment.

The Los Coyotes WRP provides primary, secondary, and tertiary treatment for an average dry weather flow (DWF) of 32 million gallons of wastewater per day (mgd); the design capacity is 37.5 mgd. The plant serves a population of approximately 321,500 people. Of the total water treated, 5 mgd of the treated water is reused at 246 reuse sites. These reuse sites include irrigation of schools, golf courses, parks, nurseries and greenbelts and industrial use at local companies for carpet dying and concrete mixing. The remaining effluent (27 mgd) is discharged into the San Gabriel River.

The San Jose Creek WRP provides primary, secondary, and tertiary treatment for an average DWF of 84 mgd; the design capacity is 100 mgd. The plant serves a largely residential population of approximately 914,000 people. An average of 47.7 mgd is reused at 25 different sites. These reuse sites include groundwater recharge, industrial use, and agricultural and landscape irrigation. The remaining effluent (36.3 mgd) is discharged into the San Gabriel River.

Because the Los Coyotes and San Jose Creek WRPs treat wastewater for a larger population than is accounted for in the Artesia System, an estimated per capita wastewater generation factor was used to calculate the volume of wastewater generated by the customers in the

Artesia System. The wastewater generation factor is based on the populations served and the average wastewater treatment rates for the San Jose Creek and Los Coyotes WRPs. The San Jose Creek WRP serves approximately 914,000 residents and treats an average of 84 mgd, making the average per capita wastewater generation factor for San Jose Creek WRP 92 gallons per day (gpd). The Los Coyotes WRP serves approximately 321,500 residents and treats an average of 32 mgd, making the average per capita wastewater generation factor for the Los Coyotes WRP 100 gpd. Because the volume of wastewater treated at the San Jose Creek WRP is much larger than at Los Coyotes WRP, a population-based weighted average of the wastewater generation factors was used to estimate the wastewater generation in the Artesia System. The weighted per capita wastewater generation factor used to estimate the wastewater generation in the Artesia System was 94 gpd. Table 8-2 summarizes the estimates of existing and projected volumes of wastewater collected and treated in the Artesia System.

Because all of the effluent from Los Coyotes and San Jose Creek WRPs is treated to meet Title 22 recycled water standards, 100 percent of the treated effluent is included in Table 8-2 as meeting such standards. However, out of the combined wastewater effluent (116 mgd) from these two treatment plants, 52.7 mgd of the treated water is actively reused throughout the region. Therefore, the assumption is that 45 percent of the treated wastewater that is collected in the Artesia System is actively reused throughout the region and the remaining 55 percent is discharged into the unlined portions of the San Gabriel River. Although the majority of the water that is discharged into the San Gabriel River will contribute to groundwater recharge through the river bed, LACSD does not consider this an active recycled water use and is therefore included in Table 8-3 as a discharge volume. Of the wastewater collected in the Artesia System, Table 8-3 lists the estimates of existing and projected volumes of treated effluent that will be discharged into the San Gabriel River.

Region-wide, 45 percent of the combined wastewater from the Los Coyotes and San Jose Creek WRPs is actively reused for a variety of applications. Therefore, the estimate is that 45 percent of the wastewater generated in the Artesia System will be reused somewhere in the region. In 2004, the actual volume of recycled water used within the boundaries of the Artesia System was 104 ac-ft/yr used for landscape irrigation (refer to Table 8-4). Therefore, the volume of recycled water used within the boundaries of the Artesia System accounts for only 2 percent of the total volume of wastewater generated in the system.

Table 8-2
Estimates of Existing and Projected Wastewater Collection and Treatment in ac-ft/yr (mgd) for the Artesia System

	2000[2,3]	2005[3]	2010	2015	2020	2025	2030
Projected population in service area	52,166	54,541	55,204	55,803	56,396	56,958	57,497
Wastewater collected & treated in service area	5,506 (4.9 mgd)	5,756 (5.1 mgd)	5,826 (5.2 mgd)	5,890 (5.2 mgd)	5,952 (5.3 mgd)	6,012 (5.4 mgd)	6,068 (5.4 mgd)
Quantity that meets recycled water standard	5,506 (4.9 mgd)	5,756 (5.1 mgd)	5,826 (5.2 mgd)	5,890 (5.2 mgd)	5,952 (5.3 mgd)	6,012 (5.4 mgd)	6,068 (5.4 mgd)

Notes
1. This table is based on the DWR Guidebook Table 33.
2. Based on actual year.
3. Values of wastewater collected and treated are estimated. For a description of the methodology, refer to the text.

Table 8-3
Estimates of Existing and Projected Disposal of Wastewater In ac-ft/yr (mgd) for the Artesia System

Method of Disposal	Treatment Level	2000[2]	2005	2010	2015	2020	2025	2030
River/Creek Discharge	Tertiary	3,028 (2.7)	3,166 (2.8)	3,205 (2.9)	3,239 (2.9)	3,274 (2.9)	3,306 (2.9)	3,338 (3.0)

Notes
1. This table is based on the DWR Guidebook Table 34.
2. Based on actual year.
3. Volumes of effluent discharged are estimated. For a description of the methodology, refer to the text.

Table 8-4
Existing Recycled Water Use in the Artesia System

Type of Use	Treatment Level	2004 Use[2] (ac-ft/yr)
Landscape Irrigation	Tertiary	104

Notes
1. This table is based on the DWR Guidebook Table 35a.
2. Based on GSWC sales of recycled water in the Artesia System.

Potential and Projected Use

The Central Basin Municipal Water District (CBMWD) is the agency that acquires, controls, distributes, and sells recycled water to several cities, agencies, and customers in the greater Los Angeles area. CBMWD owns and operates the recycled water distribution infrastructure in its service area. The Artesia System currently receives recycled water from CBMWD as part of the district's Central Basin Recycled Water Project (CBRWP). CBRWP consists of two interconnected distribution systems (the E. Thornton Ibbetson Century Recycled Water

Project and the Esteban Torres Rio Hondo Recycled Water Project). CBRWP distributes about 3.6 mgd of recycled water to its network of commercial, industrial, and landscape irrigation uses. CBRWP receives reclaimed water from LACSD's Los Coyotes and San Jose Creek WRPs. For more information on LACSD's Los Coyotes and San Jose Creek WRPs, refer to the Wastewater Quantity, Quality, and Current Uses section above. In addition to GSWC, CBRWP provides recycled water to more than 150 industrial, commercial, and landscape irrigation sites throughout southeast Los Angeles County.

CBMWD does not plan to expand its recycled water distribution networks within the boundaries of the Artesia System at this time. CBMWD owns one existing recycled water pipeline that falls within the boundaries of the Artesia System. The recycled water line is located on the border between the City of Cerritos and the City of Lakewood, and travels from the intersection of Del Amo Boulevard and Norwalk Boulevard to the intersection of 207th Street and Hawaiian Avenue. The pipeline is the terminus of a main distribution line that serves the City of Cerritos recycled water system; however, the pipeline segment that falls within the boundaries of the Artesia System is owned by CBMWD and serves four existing recycled water connections in the Artesia System. From 1999 through 2004, the average recycled water use for these four connections was 90 ac-ft/yr; during this time period, the maximum recycled water used by these four connections was 113 ac-ft/yr in the year 2002. The maximum (113 ac-ft/yr) is categorized as the current potential recycled water use for the Artesia System, given that this demand was met in 2002. The recycled water use for the Artesia System, from 1999 through 2004, is shown in Figure 8-1.

Of the four existing recycled water connections, one connection is for the City of Lakewood Recreation and Community Services department as an irrigation line for the Palms Park. In addition to the recycled water connection, the department has three potable water connections that are classified as irrigation lines and are located along the recycled water pipeline alignment. There is a potential, therefore, to convert this potable water use into an additional recycled water use for the Artesia System; thereby reducing the demand on potable water supplies. From 1999 to 2004, the average water use for these three potable water connections was approximately 3 ac-ft/yr; this volume is categorized as the additional potential recycled water use for the Artesia System. Therefore, the total potential recycled water use in the future for the Artesia System is the sum of the existing potential recycled water use (113 ac-ft/yr) and the additional potential recycled water use (3 ac-ft/yr), rounded to the nearest multiple of 10, for an approximate potential recycled water use of 120 ac-ft/yr. This total recycled water demand is categorized as the potential recycled water use and is summarized in Table 8-5.

However, in their draft UWMP for the year 2005, CBMWD reports that, although there is the potential to increase recycled water use in their service area, there are challenges and limitations in connecting customers. CBMWD lists proximity to recycled water pipelines, capacity and pressure to serve, and retrofit cost-feasibility as the challenges that limit the extent of recycled water distribution in the Central Basin (CBMWD 2005). These limitations are reflected in the historical recycled water use for the Artesia System. For example, the potential recycled water use identified in the 2000 UWMP for the Artesia System in the year 2005 was 140 ac-ft/yr; however, based on the historical data shown in Figure 8-1, the updated projection of the recycled water use for the year 2005 was assumed to be 100 ac-ft/yr based on the projection of the historical trend (rounded to the nearest multiple of 10).

The difference between the potential and projected recycled water use is partly due to the limitations listed above. Because the increase from the current use to the potential use may happen gradually as the additional connections for the Palms Park are converted to recycled water connections, the projections of recycled water assume a continuation of the historical trend up until the 120 ac-ft/yr maximum is reached in the year 2030 (refer to Table 8-6). There are additional potential customers located within a one-mile radius which could also be connected to the recycled water pipeline if, and when, funding to construct recycled water laterals becomes available. If and when CBMWD plans to construct recycled water laterals in this area, the additional recycled water demand will need to be updated in future UWMPs for the Artesia System.

The historical recycled water use and the projections of recycled water use are shown in Figure 8-1. Refer to Table 8-7 for a comparison of the updated projection of recycled water use in 2005 versus the projections made in the 2000 UWMP for the year 2005.

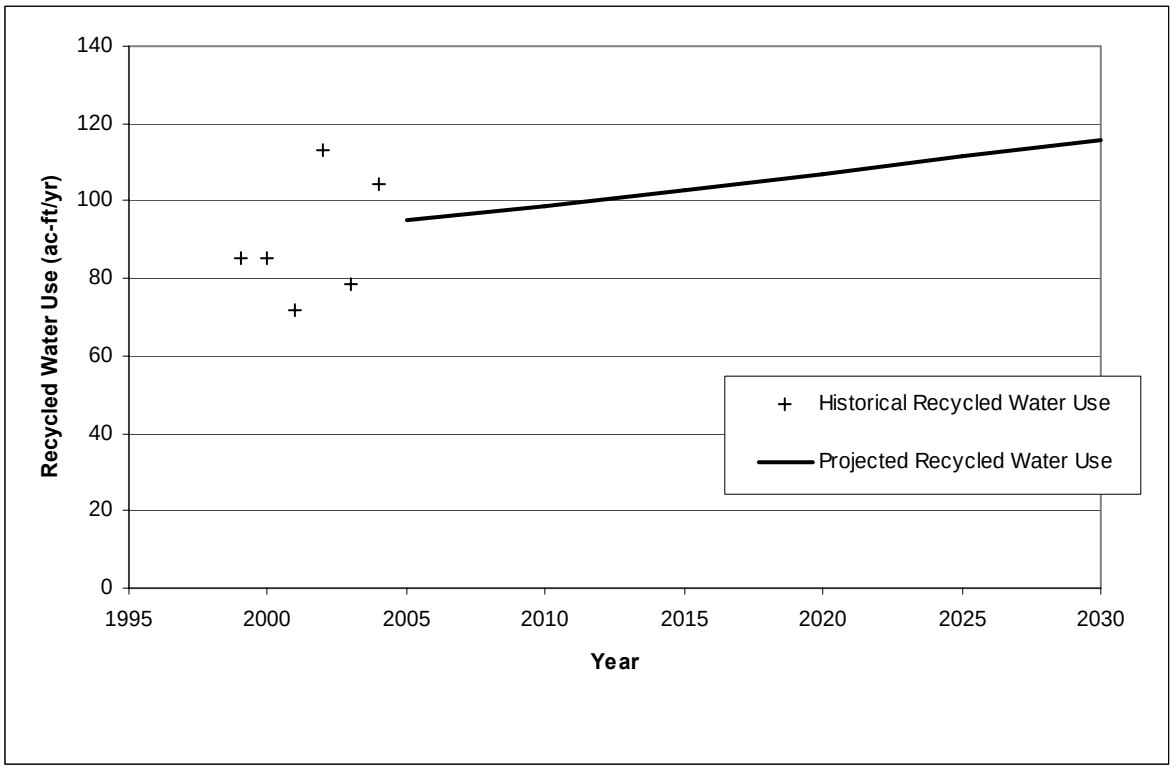

Figure 8-1 Historical and Projected Recycled Water Use in ac-ft/yr for the Artesia System

Table 8-5
Potential Future Recycled Water Uses in ac-ft/yr

Type of Use	Treatment Level	2010[2]	2015	2020	2025	2030
Landscape Irrigation	Tertiary	120	120	120	120	120

Notes
1. This table is based on the DWR Guidebook Table.
2. Based on actual year.
3. Potential recycled water use volumes have been rounded to the nearest multiple of 10.

Table 8-6
Projected Future Recycled Water Use in Service Area in ac-ft/yr

Type of Use	2010[2]	2015	2020	2025	2030
Landscape Irrigation	100	100	110	110	120

Notes
1. This table is based on the DWR Guidebook Table 36.
2. Based on actual year.
3. Projected recycled water use volumes have been rounded to the nearest multiple of 10.

Table 8-7
Comparison of Recycled Water Uses—Year 2000 Projections versus 2005 Actual

Type of Use	2000 Projection for 2005	2005 Updated Projection[2]
Landscape Irrigation	140	100

Notes
1. This table is based on the DWR Guidebook Table 37.
2. Data for 2005 was not available as of the writing of this report; therefore the projection of the trend in the recycled water use from 1999 through 2004 was used as the updated projection for 2005.

Optimization and Incentives for Recycled Water Use

GSWC provides data to CBMWD for planning system expansion and identifying potential recycled water customers. Once identified, GSWC works with the wholesaler in meeting with and explaining the benefits of using recycled water.

The wholesaler then leads the way in securing a contract and implementing retro-fit installations for conversion to recycled water. GSWC participates in the local workshops held by the wholesalers, has submitted a recycled water tariff approved by the CPUC, distributes conservation materials and literature which includes discussion of recycled water and its benefits at local community events. GSWC has developed a special recycled water tariff approved by the CPUC, and provides a discount from the potable water rates.

Table 8-8 provides a summary of the actions performed by GSWC to encourage recycled water use and the resulting projected use. For the Artesia System, the assumption is that the financial incentives of using recycled water account for 100 percent of the recycled water sales in the system.

Table 8-8
Methods to Encourage Recycled Water Use and the Resulting Projected Use in ac-ft/yr

Actions	2010	2015	2020	2025	2030
Financial Incentives	100	100	110	110	120

Notes
1. This table is based on the DWR Guidebook Table 38.

Chapter 9. Water Quality

Section 10634 of the Act requires an analysis of water quality issues and their impact to supply reliability. The Act states as follows:

Section 10634. The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631 and the manner in which water quality affects water management strategies and supply reliability.

GSWC Measures for Water Quality Regulation Compliance

To facilitate full compliance with water quality laws and regulations, GSWC maintains a water quality department that has independent lines of reporting authority within the organization. The water quality department is headed by a company officer specifically assigned to oversee and manage the company's water quality program. The Vice President of Water Quality has a staff of three managers, located in each of the company's regional offices. Water quality managers, in turn, manage a staff of water quality engineers and technicians that are assigned to district offices. Each district office is assigned one water quality engineer and at least one water quality technician to provide direct support to the local drinking water systems within the district.

The district water quality engineer is the main point of contact for the Department of Health Services as well as other regulatory agencies. The water quality engineer also is responsible for coordinating compliance measures through scheduling required sample collection, preparing water quality related plans, maintaining a water quality database, providing training to operations, implementing a cross connection control program, and preparing and submitting monitoring reports, permit applications and other regulatory related correspondence.

As a whole, the water quality department monitors and participates in the development of new water quality related laws and regulations. Through routine department meetings and training, the district water quality engineers are kept up to date with changing water quality regulations and related technology. These efforts contribute towards maintaining a pool of trained water quality professionals that can be utilized throughout the company. This provides the company the ability to respond to a wide variety of water quality issues or emergencies.

Current and Proposed Water Quality Regulations

Environmental Protection Agency (EPA) and the State of California have established, or will develop, the following key primary water quality regulations under the Safe Drinking Water Act (SDWA). The Current and proposed water quality regulations listed below are discussed in the following paragraphs. These regulations apply to community and non-community water systems, which includes those of Golden State Water Company (GSWC)

and may affect the GSWC water treatment facilities, treatment processes used, and monitoring requirements. See Table 9-1 for the status of current and proposed water quality regulations.

- Total Coliform Rule (TCR)
- Surface Water Treatment Rules
  - Surface Water Treatment Rule (SWTR)
  - *Cryptosporidium* Action Plan
  - Interim Enhanced SWTR (IESWTR)
  - Long Term 1 Enhanced SWTR (LT1ESWTR)
  - Long Term 2 Enhanced SWTR (LT2ESWTR)
- Disinfectant/Disinfection By-Product Rules
  - Total Trihalomethanes (TTHMs) Rule
  - Disinfectant/Disinfection By-Product (D/DBP) Rule Stage 1
  - Disinfectant/Disinfection By-Product (D/DBP) Rule Stage 2
- Volatile Organic, Synthetic Organic and Inorganic Chemical Rules
  - Volatile Organic Chemicals Rule
  - Phase IIA Fluoride Rule
  - Phase IIA Synthetic Organic Chemicals and Inorganic Chemicals Rule
  - Phase V Synthetic Organic Chemicals and Inorganic Chemicals Rule
- Groundwater Rule
- Filter Backwash Rule
- Lead and Copper Rule
- Arsenic Rule
- Radionuclide Rule
- Radon Rule
- Drinking Water Candidate Contaminant List

Safe Drinking Water Act (SDWA)

Under the federal SDWA of 1974, EPA established drinking water regulations for 23 contaminants. The SDWA Amendments of 1986 required EPA to set maximum contaminant levels (MCLs) for 83 specific constituents and to set MCLs for an additional 25 constituents every 3 years, indefinitely. The 1996 SDWA amendments retained the requirement to regulate the 83 contaminants imposed by the 1986 amendments but removed the requirement for 25 additional contaminants every 3 years and established a different process for selecting contaminants for regulation.

Under the 1996 SDWA amendments, EPA must:

- Publish a list of contaminants that may require regulation under the SDWA no later than February 6, 1998, and every 5 years thereafter
- Consult with the scientific community, including the Science Advisory Board, when preparing the list
- Provide notice and opportunity for public comment on the list

- Establish an occurrence database to be considered when EPA makes decisions to regulate contaminants that are known or anticipated to occur in public water systems
- Decide whether to regulate no fewer than five listed contaminants, no later than August 6, 2001, and every 5 years thereafter

To regulate a contaminant, EPA must find that the contaminant has an adverse effect on human health, that it occurs or is likely to occur in public water systems at a frequency and at concentrations of public health concern, and that regulation of the contaminant presents a meaningful opportunity to reduce health risks for those served by public water systems.

The status of the regulations, including the final rules and those that are still being formulated, are discussed below and summarized in Table 9-1. The current national primary drinking water standards, which are those standards related to health, are shown in Table 9-2. EPA considers compliance with secondary standards, which are those standards related to the aesthetic quality of water, to be optional; but, in California, secondary standards are mandatory unless the population served consents otherwise. The California secondary drinking water standards are shown in Table 9-3.

Primacy

EPA has delegated primary enforcement responsibility for drinking water program implementation and enforcement to the state of California. To maintain primacy (authority to enforce drinking water regulations) under the SDWA, the state must adopt drinking water regulations at least as stringent as the federal regulations and meet other relevant criteria. State drinking water regulations may be more stringent than the federal regulations, but not less stringent. In California, the California Department of Health Services (CDHS) is the primacy agency for drinking water regulations.

Table 9-1
Status of Drinking Water Regulations

Regulation	Contaminants	Status
Final Rules		
NIPDWR	18 original contaminants	Rule final 1975
Interim Radionuclides	4 additional radionuclides	Rule final 1976
Total Trihalomethanes	Sum of four trihalomethanes	Rule final 1979
Revised Fluoride	Fluoride	Rule final 1986
VOCs (Phase I)	8 VOCs	Rule final 1987
SWTR	Treatment tech. (*Giardia* and viruses)	Rule final 1989
TCR	Total coliforms, fecal coliforms, *E. coli*	Rule final 1989
Lead and Copper Rule	Lead, copper	Rule final 1991
SOCs, IOCs (Phase II)	36 IOCs, SOCs, and pesticides	MCLs final 1991
SOCs, IOCs (Phase IV)	5 IOCs, 18 SOCs	MCLs final 1992
D/DBP Rule Stage 1	Disinfectants, disinfection by-products	Rule final 1998
IESWTR	Treatment Tech. (*Cryptosporidium*)	Rule final 1998
Radionuclides	Radionuclides (other than Radon)	Rule final 2000
Arsenic[1]	Arsenic	Rule final 2001, new MCL of 10 µg/L effective January 23, 2006

Table 9-1
Status of Drinking Water Regulations

Regulation	Contaminants	Status
LT1ESWTR	Extends IESWTR to small utilities	Rule final 2001
Filter Backwash Rule	Regulate Filter Backwash recycle	Rule final 2001
Methyl Tertiary Butyl Ether	MTBE	Rule final 2001
Drinking Water Contaminant Candidate List[1]	No less than 5 Contaminants	Decision to regulate in 2001, revised DWCCL in 2003 and every 5 years thereafter
Proposed Rules		
LT2ESWTR[1]	Revision of IESWTR to control *Cryptosporidium*	Proposed August 2003, missed May 2002 SDWA deadline. Final rule expected 2005
D/DBP Rule Stage 2[1]	Revision of D/DBP Rule Stage 1 for distribution system monitoring	Proposed August 2003, missed May 2002 SDWA deadline. Final rule expected 2005
Groundwater Rule[1]	Virus, groundwater disinfection	Proposed May 2000, missed May 2002 SDWA deadline. Final rule expected 2005
Future Rules		
Radon[1]	Radon	Proposed November 1999, EPA has not indicated a final schedule for promulgation
TCR Revisions[1]	Distribution System Issues	Potentially proposed mid-2006, final rule by 2008

Notes
1. Regulation with potential future impact to GSWC.

Table 9-2
Current Federal Drinking Water Standards

Parameter	mg/L (except as noted)
Inorganic Contaminants	**MCL**
Antimony	0.006
Arsenic[1]	0.05
Asbestos	7×10^6 Fibers/L
Barium	2
Beryllium	0.004
Bromate	0.010
Cadmium	0.005
Chlorite	0.8
Chromium	0.1
Cyanide	0.2
Fluoride	4
Mercury	0.002
Nickel	0.1
Nitrate (as N)	10
Nitrite (as N)	1

Table 9-2
Current Federal Drinking Water Standards

Parameter	mg/L (except as noted)
Nitrate plus Nitrite (both as N)	10
Selenium	0.05
Thallium	0.002
Inorganic Contaminants	**Treatment Technique**
Copper	1.3 (Action Level)
Lead	0.015 (Action Level)
Organic Contaminants	**MCL**
Alachlor	0.002
Benzene	0.005
Benzo (a) pyrene	0.0002
Carbon Tetrachloride	0.005
Carbonfuran	0.04
Chlordane	0.002
2,4-D	0.07
Dalapon	0.2
Di (2-ethylhexyl) adipate	0.4
Di (2-ethylhexyl) phthalate	0.006
1,2-Dibromo-3-chloropropane (DBCP)	0.0002
p-Dichlorobenzene	0.075
o-Dichlorobenzene	0.6
1,2-Dichloroethane	0.005
1,1-Dichloroethylene	0.007
cis-1,2-Dichloroethylene	0.07
trans-1,2-Dichloroethylene	0.1
Dichloromethane	0.005
1,2-Dichloropropane	0.005
Dinoseb	0.007
Diquat	0.02
Endothall	0.1
Endrin[h]	0.002
Ethylbenzene	0.7
Ethylene Dibromide	0.00005
Glyphosate	0.7
Haloacetic Acids (sum of 5 [HAA%])	0.060
Heptachlor	0.0004
Heptachlor epoxide	0.0002
Hexachlorobenzene	0.001
Hexachlorocyclopentadiene	0.05
Lindane	0.0002
Methoxychlor	0.04

Table 9-2
Current Federal Drinking Water Standards

Parameter	mg/L (except as noted)
Monochlorobenzene	0.1
Oxamyl (vydate)	0.2
Pentachlorophenol	0.001
Picloram	0.5
Polychlorinated biphenyls (PCBs)	0.0005
Simazine	0.004
Styrene	0.1
2,3,7,8-TCDD (dioxin)	5×10^{-8}
Tetrachloroethylene	0.005
Toluene	1
Toxaphene (revised)[f]	0.003
2,4,5-TP (silvex)	0.05
1,2,4-Trichlorobenzene	0.07
1,1,1-Trichloroethane	0.20
1,1,2-Trichlororethane	0.005
Trichloroethylene	0.005
Trihalomethanes (sum of 4 [TTHM])	0.080
Vinyl Chloride	0.002
Xylenes (total)	10
Organic Contaminants	**Treatment Technique**
Acrylamide	Restrictions in polymer use
Epichlorohydrin	Restrictions in material use
Microorganisms	**Standard**
Cryptosporidium	Treatment Tech (99% removal/inactivation)
Escherichia coli	Treatment Tech (0 cfu/100 mL)
Fecal Coliforms	Treatment Technique (0 cfu/100 mL)
Giardia lamblia	Treatment Tech (99.9% removal/inactivation)
Heterotrophic Bacteria	Treatment Tech (500 cfu/mL at end of distribution system or measurable chlorine residual)
Legionella	Treatment Tech
Total Coliforms	5% (presence/absence)
Turbidity	Performance Std (0.3 NTU, 95%)
Viruses	Treatment Tech (99.99% removal/inactivation)
Radionuclides	**MCL**
Beta-particle and photon emitters	4 mrem
Alpha emitters	15 pCi/L
Radium 226 + 228	5 pCi/L
Uranium	0.030

Notes
1. Arsenic has been proposed at 10 µg/L in the new rule that is currently being reviewed.

Table 9-3
Current State Secondary Drinking Water Regulations

Parameter	mg/L (except as noted)		
Contaminants	**SMCL or SMCL Ranges**		
Aluminum	0.2		
Color	15 Color Units		
Copper	1.0		
Corrosivity	Noncorrosive		
Foaming Agents (MBAs)	0.5		
Iron	0.3		
Manganese	0.05		
Methyl tertiary butyl ether (MTBE)	0.005		
Odor	3 Threshold Odor Number		
Silver	0.1		
Thiobencarb (Bolero)	0.001		
Turbidity	5 units		
Zinc	5		
	Recommended	**Upper**	**Short Term**
Total Dissolved Solids	500	1,000	1,500
Specific Conductance, micromhos	900	1,600	2,200
Chloride	250	500	600
Sulfate	250	500	600

Total Coliform Rule (TCR)

The TCR is the latest version of one of the oldest drinking water regulations. Coliform bacteria are organisms that have one or more biochemical reactions similar to Esherichia coli (E. coli). E. coli are bacteria that are commonly found in the digestive tract of warm-blooded animals. The total coliform test, then, is a test for bacteria, with similar biochemistry to E. coli, but which are capable of growing at 35 degrees Celsius (ºC). The total coliform group includes several genera of bacteria belonging to the family Enterobacteriaciae. Some of these bacteria are not pathogenic. Total coliform testing is commonly used in drinking water treatment to determine the effectiveness of source water, treatment, and distribution system barriers to bacterial contamination.

The TCR was promulgated by the EPA in 1989 and DHS enacted its companion TCR that became effective on June 30, 1992. The TCR changed the basic principle of regulating bacterial quality. Instead of having an MCL based on average concentrations, total coliforms are now regulated based on presence/absence. For systems that collect 40 or more samples per month (more than 33,000 population) to be in compliance, no more than 5 percent of the samples taken for coliforms in a month can be coliform positive. A sample is considered positive if 1 of the 10 tubes is positive.

Other significant provisions of the TCR are:

- In the event of a coliform-positive sample, the utility must resample that location as well as the nearest upstream and downstream services for coliforms the following day and continue to analyze on consecutive days until either all three samples are negative, or the TCR is violated.
- Coliform-positive samples must be further examined for the presence of fecal coliforms or *E. coli*.
- If two consecutive samples from the same sample point are positive and one of those samples is positive for fecal coliforms, the system is out of compliance for that month.

All distribution system zones must be included in the routine sampling program, and some of the sample locations must be rotated throughout the year.

TCR Potential Revisions and Distribution System Requirements

The 1996 amendments to the SDWA require EPA to review and revise, as appropriate, each national primary drinking water regulation at least every 6 years. EPA published as part of its National Primary Drinking Water Regulation (NPDWR) Review its decision to revise the TCR in July, 2003.

EPA is in the process of reviewing available data and research on distribution system risks. These efforts will result in the review and possible revision of the TCR, as well as the potential for requirements for finished water quality in the distribution system. The potential rule revisions could be proposed in 2006 with the rule final by 2008.

EPA has been working with distribution system experts to compile existing information regarding potential health risks that may be associated with distribution systems in "white papers" on the following nine distribution system issues:

- Intrusion
- Cross-connection control
- Aging infrastructure and corrosion
- Permeation and leaching
- Nitrification
- Biofilms/growth
- Covered storage
- Decay in water quality over time
- New or repaired watermains

EPA is also involved in the development of a series of ten TCR issue papers on the following issues:

- Distribution system indicators of water quality
- The effectiveness of disinfectant residuals in the distribution system
- Analysis of compliance and characterization of violations of the TCR
- Evaluating HACCP strategies for distribution system monitoring, hazard assessment and control
- Inorganic contaminant accumulation in distribution systems

- Distribution system inventory and condition assessment
- Optimization of distribution system monitoring strategies
- Effect of treatment on nutrient availability
- Causes of Total Coliform positive samples and contamination events in distribution systems
- Total Coliform sample invalidation

Distribution system white papers and TCR issue papers are intended to inform EPA and stakeholders of areas of potential TCR revisions and distribution system requirements.

Surface Water Treatment Rules

A series of rules has been or is currently being developed to provide control of microbial contaminants from surface water or groundwater that is under the direct influence of surface water.

The Surface Water Treatment Rule (SWTR)

The SWTR is primarily a microbiological regulation and codified the use of the multiple barrier concept for control of pathogenic organisms. The SWTR became effective in June 1993, and required all but the most pristine water sources to provide filtration of their surface water (or groundwater under the direct influence of surface water). It also required all systems having a surface water source to provide some level of disinfection.

In further defining the physical barrier of filtration, the SWTR reduced the MCL for finished water turbidity from 1 NTU to 0.5 NTUs (95 percent of the monthly samples, measured daily), and set a limit of 5 NTUs on the maximum finished water turbidity.

For disinfection, the SWTR required 99.9 percent (3-logs) for the combination of removal and inactivation of *Giardia* cysts and 99.99 percent (4-logs) for the combination of removal and inactivation of enteric viruses. The SWTR gave credit for 99.7 percent (2½-logs) removal of *Giardia* cysts and 99 percent (2-logs) removal of viruses in a "well-operated" conventional surface water treatment plant. The SWTR, then, required an additional ½-log of inactivation of *Giardia* cysts and an additional 2-logs of inactivation of viruses. Credit for the inactivation (or disinfection) requirements for *Giardia* and viruses was given for chlorine, chloramines, ozone, and chlorine dioxide. The credit was based upon achieving the product of disinfectant concentration and contact time, known as CT. The concentration (C) used was normally the concentration exiting the reactor used for primary disinfection and the time (T) was the time it took for 10 percent of the influent flow to exit the reactor (T_{10}). T_{10} was to be determined using tracer testing in the plants using different flow rates. Tables of CT required for each of the disinfectants at different temperatures, and in some cases, different pH values were published in the *Guidance Manual for Compliance with the Filtration and Disinfection Requirements for Public Water Systems Using Surface Water Sources* (American Water Works Association, Denver, CO, 1991).

As an additional barrier to organisms, the SWTR required that a measurable disinfectant residual be present or heterotrophic plate counts be less than 500 colony-forming units at the farthest ends of the distribution system. The measurable residual was defined as a minimum of 0.2 mg/L of free or combined chlorine.

Cryptosporidium Action Plan

In April 1995, the California DHS adopted a *Cryptosporidium* Action Plan that is intended to facilitate comprehensive compliance with the SWTR. The plan does not include any requirements beyond the existing regulations but, instead, clarifies the existing requirements to optimize the treatment process and reduce the risk of a waterborne illness outbreak. The plan includes six elements:

1. Conduct watershed sanitary surveys
2. Submission of available data to CDHS
3. Review of alternative technologies
4. Prepare operations plan/optimized treatment
5. Prepare reliable removal treatment processes
6. Inform the public

The plan acknowledges that seasonal raw water turbidity and coliform data are a necessary part of any watershed sanitary survey. If cattle, sheep, or other livestock are allowed on a watershed, the survey must identify their location and number as well as steps that are taken to prevent contamination from the animal waste. Measures that will prevent runoff from any animal containment site reaching the water source should also be identified.

As part of the plan, the DHS completed a comprehensive review of the operations by water systems that use an alternative treatment system. The review focused on compliance with the turbidity standard during normal operations and after backwashing or other interruptions in service. It also included a review of the engineering report required 60 days after the first year of operation.

The *Cryptosporidium* Action Plan states that DHS "agrees with and endorses" the American Water Works Association (AWWA) goal of 0.1 NTU for effluent turbidity from all surface water treatment plants. The plan recommends that all water systems with a surface water supply "adopt a philosophy of always optimizing their surface water treatment plant operations in a manner designed to achieve the maximum turbidity removal." CDHS believes that, by striving to meet these goals, water systems will be minimizing their customers' risk of exposure to pathogens, including *Cryptosporidium*. The plan identifies the following elements that should be included in the operations plan of a system for treatment optimization:

- Including a statement at the beginning of the operations plan stating that it is the goal of the water utility to optimize plant performance and maximize turbidity removal.
- Monitoring all unit processes closely and responding immediately to any malfunction.
- Operating unit processes at hydraulic loading rates to meet optimization goals.
- Establishing procedures to optimize coagulation, flocculation, and sedimentation to enable maximum turbidity removal in the pretreatment units with a turbidity goal of 1 to 2 NTUs in the sedimentation basin effluent at all times. The proper pretreatment chemical and dose should be determined from results of jar tests or particle counters.

- Expanding turbidity monitoring of individual filters on both a continuous basis and intermittent grab samples and, if possible, turbidity monitoring of all sedimentation processes.
- Calibrating turbidimeters frequently.
- Establishing procedures for optimizing filter operations to avoid turbidity spikes after service interruptions and attempting to achieve turbidity values of 0.3 NTU or less after backwash.
- Operating the plant to avoid sudden increases in flow through a filter.
- Optimizing the performance of backwash water recovery systems. Establishing a goal of less than 2.0 NTUs for the reclaimed backwash water and sludge reclamation system effluent.

The *Cryptosporidium* Action Plan states that all water treatment plants should install a continuous turbidity analyzer and chart recorder to monitor the plant effluent. The monitor should be inspected and standardized regularly. Additionally, all water utility systems should be capable of quickly replacing or repairing failed equipment including:

- Filter media and filter underdrains
- Backwash pumps and surface wash systems
- Pretreatment chemical feed and mixing facilities
- Turbidity monitoring units

Finally, the CDHS suggests that water utilities should provide an informational notification to its customers if they do not have a treatment process in place that provides for physical removal of pathogens. Those plants that are hydraulically overloaded or unable to achieve the effluent turbidity goals until improvements are made may also inform the customers of the system.

Interim Enhanced Surface Water Treatment Rule

The two main purposes of the IESWTR are to improve control of microbial pathogens in drinking water, particularly for the protozoan, *Cryptosporidium*, and to guard against significant increases in microbial risk that might otherwise occur when systems implement the Stage 1 D/Disinfectant By-Product (DBP) Rule (discussed below). The IESWTR was finalized in December 1998, but enforcement began in 2002.

Because of the resistance of *Cryptosporidium* oocysts to inactivation by chlorine and chloramine and a lack of data concerning other disinfectants, the IESWTR concentrated its efforts on improving the physical barrier (filtration). This was done by further reducing the MCL for finished water turbidity from 0.5 NTU to 0.3 NTU and the maximum single sample finished water turbidity limit was reduced to 1 NTU. A facility is deemed to be in compliance with the MCL if 95 percent of the daily values per month are at or below 0.3 NTU. Since the limit is 0.3 NTU and not 0.30 NTU, the plant is in compliance as long as the values stay at or below 0.34 NTU. Additionally, individual filter monitoring was required and exception reports to the state are required for:

- Any individual filter with a turbidity level greater than 1.0 NTU based on two consecutive measurements 15 minutes apart, and
- Any individual filter with a turbidity greater than 0.5 NTU at the end of the first 4 hours of filter operation based on the two consecutive measurements 15 minutes apart

Also, if an individual filter turbidity level is greater than 1.0 NTU, based on two consecutive measurements 15 minutes apart at any time in each of 3 consecutive months, the system must provide an exceptions report (within 30 days of the exceedance) and conduct a self-assessment of the filter (according to the EPA guidance for Comprehensive Performance Evaluation). And, if an individual filter has turbidity greater than 2.0 NTU, based on two consecutive measurements 15 minutes apart at any time in each of 2 consecutive months, the system must provide an exceptions report (within 30 days of the exceedance) and arrange for a Comprehensive Performance Evaluation (CPE) by the state or a third party approved by the state.

To guard against an increase in microbial risk due to implementation of the DBP Rule, disinfectant profiling and benchmarking are required. Systems having total trihalomethane (TTHM) concentrations exceeding 0.064 mg/L or total haloacetic acid (HAA5) concentrations exceeding 0.048 mg/L are required to produce disinfectant profiles for 3 years of existing data showing the CT that was actually achieved, divided by the CT required for inactivation of *Giardia* and viruses. If the data do not exist, the system was required to collect 1 year of data by March 16, 2000. The data were analyzed; and the month having the lowest ratio of CT to CT required became the "critical period," and the average value of the ratio became the "benchmark." Systems have to consult with the state before changing disinfection practices, which could result in a log inactivation less than the benchmark value.

Long Term 1 Enhanced Surface Water Treatment Rule

The LT1ESWTR extends the IESWTR to systems serving fewer than 10,000 people.

Long Term 2 Enhanced Surface Water Treatment Rule

The LT2ESWTR is also designed to control risk from *Cryptosporidium*. An Agreement in Principle was reached by the Federal Advisory Committee for this rule and the Disinfectant/Disinfection By-Product Rule Stage 2 (discussed below) in August 2003. In this Agreement, the major microbial issues were addressed as follows:

- Monitoring for Bin Classification. A two year monitoring program is required for systems serving 10,000 or more people for *Cryptosporidium*, *E. coli*, and turbidity. The water system will be classified into a bin for *Cryptosporidium* risk based upon this monitoring.
- Action Bins. Table 9-4 illustrates the bin classification system for *Cryptosporidium* risk.
- Toolbox. A toolbox approach was recommended that would receive log-credit given in Table 9-5.
- Reassessment and Future Monitoring. Systems that provide a total of 2.5-logs of treatment (99.7 percent) for *Cryptosporidium* in addition to conventional treatment are

exempt from reassessment and future monitoring. Six years after initial bin characterization, another round of monitoring will be held.

- Unfiltered Systems. Unfiltered systems must continue to meet filtration avoidance criteria, provide 4-log virus inactivation, 3-log *Giardia* inactivation, and 2-log *Cryptosporidium* inactivation.

Table 9-4
Bin Requirements Table (from Microbial/Disinfection Byproducts [M/DBP] Federal Advisory Committee Stage 2 M-DBP Agreement in Principle)

Bin Number	Average *Cryptosporidium* Concentration	Additional treatment requirements for systems with conventional treatment that are in full compliance with the IESWTR
1	*Cryptosporidium* <0.075/L	No Action
2	0.075/L ≤ *Cryptosporidium*< 1.0/L	1-log treatment (systems may use any technology or combination of technologies from toolbox as long as total credit is at least 1-log)
3	1.0/L ≤ *Cryptosporidium* < 3.0/L	2.0-log treatment (systems must achieve at least 1-log of the required 2-log treatment using ozone, chlorine dioxide, UV, membranes, bag/cartridge filters, or in-bank filtration)
4	*Cryptosporidium* ≥ 3.0/L	2.0-log treatment (systems must achieve at least 1-log of the required 2.5-log treatment using ozone, chlorine dioxide, UV, membranes, bag/cartridge filters, or in-bank filtration)

Disinfectant/Disinfection By-Product Rules

Total Trihalomethanes (TTHM) Rule

The TTHM Rule was the first rule to recognize that a risk of cancer may be connected to the use of chlorine to inactivate pathogenic organisms. The TTHM Rule was effective in 1981.

Chlorine reacts with naturally occurring organic matter (NOM) present in water to form chlorinated organic compounds. Four of these—chloroform, dichlorobromo-methane, dibromochloromethane, and bromoform—were selected to serve as indicators for the cancer risk due to chlorinated disinfection by-products. The MCL for the total of these four compounds was set at 0.1 mg/L. This historic rule changed the manner in which many water plants in the U.S. performed disinfection. Prior to the rule, chlorine was added liberally to raw water to improve plant operations which maximized contact time available through the treatment plant. After this rule took effect, many utilities changed to applying chlorine after much of the NOM had been removed through coagulation, flocculation, and sedimentation. Also, the use of chloramines, which limit the formation of trihalomethanes, was increased as a disinfectant for the distribution system.

Table 9-5
Microbial Toolbox Components (from Microbial/Disinfection Byproducts [M/DBP] Federal Advisory Committee Stage 2 M-DBP Agreement in Principle)

	Potential Log Credit			
APPROACH	**0.5**	**1**	**2**	**>2.5**
Watershed Control				
Watershed Control Program[1]	X			
Reduction in oocyst concentration[3]		As Measured		
Reduction in viable oocyst concentration[3]		As Measured		
Alternative Source				
Intake Relocation[3]		As Measured		
Change to Alternative Source of Supply[3]		As Measured		
Mgmt. of Intake to Reduce Capture of Oocysts in Source Water[3]		As Measured		
Managing Timing of Withdrawal[3]		As Measured		
Managing Timing of Withdrawal in Water Column[3]		As Measured		
Pretreatment				
Off-Stream Raw Water Storage w/Detention ~ X days[1]	X			
Off-Stream Raw Water Storage w/Detention ~ Y weeks[1]		X		
Presettling Basin w/Coagulant[1]	X	--►		
Lime Softening[1]	----------►			
In-Bank Filtration[1]		X	---------►	
Improved Treatment				
Lower Finished Water Turbidity (0.15 NTU 95%tile Combined Filter Effluent)	X			
Slow Sand Filters[1]				X
Roughing Filters([1]	X	----------►		
Membranes (MF, UF, NF, RO)[1]				X
Bag Filters[1]		X	---------►	
Cartridge Filters[1]			X	
Improved Disinfection				
Chlorine Dioxide[2]	X	X		
Ozone[2]	X	X	X	
UV[2]				X
Peer Review/Other Demo./Validation or System Performance				
Peer Review Program (ex. Partnership Phase IV)		X		
Performance Studies demonstrating reliable specific log removals for technologies not listed above. This provision does not supersede other inactivation requirements.		As demonstrated		

Notes

X Indicates potential log credit based on proper design and implementation in accordance with EPA guidance. Arrow indicates estimation of potential log credit based on site-specific or technology-specific demonstration of performance.

1 Criteria to be specified in guidance to determine allowed credit

2 Inactivation dependent on dose and source water characteristics

3 Additional monitoring for *Cryptosporidium* after this action would determine new bin classification and whether additional treatment is required.

Disinfectant/Disinfection By-Product (D/DBP) Rule Stage 1

Stage 1 of the D/DBP Rule was enacted to reduce the health risk due to disinfection practice. To accomplish this, the Rule reduced the MCL for TTHM, enacted MCLs for haloacetic acids (HAA5) (Table 9-6), bromate (an ozone by-product), and chlorite (a chlorine dioxide by-product), enacted maximum residual disinfectant levels (MRDLs) for chlorine, chloramines, and chlorine dioxide (Table 9-7), and enacted a treatment technique called "enhanced coagulation" (EC) to limit the amount of unknown by-products that may be formed during chlorination.

Table 9-6
Disinfection By-Product MCLs from Stage 1 of the D/DBP Rule

Compound or Group	MCL, mg/L
Trihalomethanes (TTHM)	0.08
Haloacetic Acids (HAA5)	0.06
Bromate	0.01
Chlorite	1.0

Table 9-7
Disinfectant MRDLs from Stage 1 of the D/DBP Rule

Compound or Group	MCL, mg/L
Chlorine	4.0
Chloramines	4.0
Chlorine Dioxide	0.8

EC defines a requirement for removal of total organic carbon (TOC) in the coagulation, flocculation, sedimentation portion of the conventional treatment plant. A system does not have to implement enhanced coagulation if any of the following are true:

- Source water TOC is less than 2.0 mg/L.
- Treated water TOC is less than 2.0 mg/L.
- Source water TOC < 4.0 mg/L, raw water alkalinity > 60 mg/L as $CaCO_3$, distribution system TTHM and HAA5 concentrations are less than or equal to 40 mg/L and 30 mg/L, respectively.
- Distribution system TTHM and HAA5 concentrations are less than or equal to 40 mg/L and 30 mg/L, respectively, and the system uses only free chlorine for disinfection.
- Source-water-specific ultraviolet absorbance (SUVA) is less than 2.0 L/mg-m. SUVA is calculated by dividing UV absorbance (m^{-1}) at 254 nm by the concentration (mg/L) of dissolved organic carbon (DOC).

- Treated water SUVA is less than 2.0 L/mg-m.

If none of these conditions are met, Step 1 of EC takes effect. Step 1 establishes targets for additional precursor removals to be achieved based on raw water TOC and alkalinity. These targets are shown in Table 9-8. If a utility can satisfy the TOC percent removals specified in Step 1, the EC criterion for Stage 1 is satisfied.

Table 9-8
Required Removal of TOC by Enhanced Coagulation, Step 1

	Source Water Alkalinity , mg/L as $CaCO_3$		
Source Water TOC mg/L	**0 to 60**	**>60 to 120**	**>120**
>2.0 to 4.0	35	25	15
>4.0 to 8.0	45	35	25
>8.0	50	40	30

If a system is unable to meet the Step 1 TOC removal requirements, an alternative percent TOC removal requirement may be selected by Step 2 procedures as follows:

1. Bench or pilot tests are performed in which alum or an equivalent dose of ferric coagulant is added in 10-mg/L increments until the pH is lowered to the target pH value. The target pH values are given in Table 9-9 for varying source water alkalinity.
2. Once the bench or pilot test is complete, the TOC removal (mg/L) is then plotted versus coagulant dose (mg/L).
3. The alternative TOC removal percentage is set at the point on the TOC versus coagulant dose plot where the slope changes from greater than 0.3 mg TOC/L / 10 mg alum/L to less than 0.3/10 and remains less than 0.3/10.

If the TOC removal versus coagulant dose plot does not reach this point of diminishing returns, the water is considered not amenable to enhanced coagulation; and a waiver from the enhanced coagulation requirements must be obtained from the state.

Table 9-9
Target pH Values for Enhanced Coagulation, Step 2 Bench Testing

Raw Water Alkalinity, mg/L as $CaCO_3$	Target pH
0 to <60	5.5
60 to <120	6.3
120 to <240	7.0
240	7.5

D/DBP Rule Stage 2

Stage 2 of the D/DBP Rule is designed to reduce DBP occurrence peaks in the distribution system. An Agreement in Principle was reached by the Federal Advisory Committee for this rule and the Long Term 2 Enhanced Surface Water Treatment Rule (discussed above) in August 2003. This rule is expected to be finalized in 2005. In this Agreement, the major DBP issues were addressed as follows:

- Compliance monitoring will be preceded by an initial distribution system monitoring study to select optimal sampling points for capturing peaks.
- Compliance with each MCL (TTHM and HAA5) will be determined based upon a Locational Running Annual Average (a running annual average calculated at each sample location).
- Systems will comply with the Stage 2 D/DBP Rule in two phases—3 years after promulgation all systems must comply with a 120 µg/L TTHM / 100 µg/L HAA5 locational running annual average based on Stage 1 monitoring sites and continue to comply with the 80 µg/L TTHM / 60 µg/L HAA5 system running annual average from Stage 1.
- Six years after rule promulgation (with an additional 2-year extension available for systems requiring capital improvements) large and medium systems must comply with an 80 µg/L TTHM /60 µg/L HAA5 based upon the new sample sites identified in the initial distribution system monitoring described above.
- Small systems must comply with the 80 µg/L TTHM /60 µg/L HAA5 locational running annual average in either 7.5 or 8.5 years (with an additional 2-year extension available for systems requiring capital improvements) depending upon whether the system is required to do *Cryptosporidium* monitoring as part of the LT2ESWTR.
- The bromate MCL will remain at 0.010 mg/L. EPA commits to review the bromate MCL as part of the 6-year review to determine whether the bromate MCL should be reduced to 0.005 mg/L or a lower concentration.

Volatile Organic, Synthetic Organic and Inorganic Chemical Rules

Volatile Organic Chemicals Rule

The Phase I Volatile Organic Chemicals (VOCs) Rule established MCLGs and MCLs for eight VOCs. The rule was promulgated in July 1987 and became effective in January 1989. All public water systems (PWS) were required to complete initial VOC monitoring by December 1991. Monitoring requirements include sampling at each entry point to the distribution system. If no VOCs were detected during the initial monitoring, repeat monitoring is required every three to five years, depending on the vulnerability of the source. If VOCs are detected, quarterly samples must be analyzed. Compliance requires that VOC levels be lower than the MCLs, based on the annual average of quarterly samples.

The Phase I VOC Rule also required monitoring of 51 additional unregulated VOCs. All systems were required to complete the initial monitoring for these contaminants by December 1991. Repeat monitoring is required every five years; however, USEPA revises

the list of unregulated contaminants thereby changing the constituents to be monitored. Monitoring requirements for Phase I contaminants were revised in the Phase II Synthetic Organic Chemicals and Inorganic Chemicals Rule (Phase II SOC/IOC Rule) to conform with the standardized monitoring.

Phase IIA Fluoride Rule

The Phase IIA Fluoride Rule applies to all public water systems. The rule was finalized in April 1986 and became effective in October 1987. The primary purpose of the Phase IIA Fluoride Rule was to protect the public from crippling skeletal fluorosis. The rule established an MCLG and MCL for fluoride at 4 mg/L. A secondary contaminant level (SMCL) of 2 mg/L was established to protect against dental fluorosis. Monitoring of fluoride concentration is required yearly for surface water sources and every three years for groundwater sources. For systems practicing fluoridation, daily monitoring of fluoride at the entrance to the distribution system is recommended.

Phase II Synthetic Organic Chemicals and Inorganic Chemicals Rule

The Phase II SOC/IOC Rule applies to all public water systems. The rule was promulgated in June 1991 (33 contaminants) and July 1991 (5 contaminants). This rule established MCLs and treatment techniques for 38 contaminants. Monitoring for the Phase II contaminants occurs in a standardized 3 year cycle, which began in January 1993. Compliance with the Phase II MCLs is based on the average of quarterly samples.

Phase V Synthetic Organic Chemicals and Inorganic Chemicals Rule

The Phase V Rule was promulgated in July 1992 and set MCLGs and MCLs for 23 contaminants. Compliance monitoring for these contaminants follows the same standardized monitoring framework introduced with the Phase II rule. Some of the Phase V contaminants were previously on the unregulated contaminants monitoring (UCM) lists under other rules. To eliminate duplication, these contaminants were withdrawn from the UCM lists.

Groundwater Rule

The EPA is currently in the process of developing the Groundwater Rule (GWR), formerly known as the Groundwater Disinfection Rule. The rule name was changed to reflect a more holistic regulatory approach to addressing ground water issues. The rule applies to public ground water systems and to systems that mix surface water and ground water if the ground water is added directly to the distribution system and provided to consumers without treatment. This includes untreated stand-alone ground water wells and untreated ground water plants that have their own entry points to the distribution system as well as untreated groundwater blended with treated surface water prior to the entry point to the distribution system. Treatment in this case is defined as 4-log inactivation/removal of viruses.

The proposed Groundwater Rule was published in the Federal Register on May 10, 2000. The final rule is expected in late 2005. Specific requirements proposed in the rule include:

1. System sanitary surveys conducted by the state and identification of significant deficiencies.

2. Hydrogeologic sensitivity assessments for undisinfected systems.
3. Source water microbial monitoring by systems that do not disinfect and draw from hydrogeologically sensitive aquifers or have detected fecal indicators within the system's distribution system.
4. Corrective action by any system with significant deficiencies or positive microbial samples indicating fecal contamination.
5. Compliance monitoring for systems which disinfect to ensure that they reliably achieve 4-log inactivation or removal of viruses.

EPA missed the May 2002 deadline to promulgate, and the final rule was expected in early 2005, but was withdrawn for further review. The schedule for the release of the final GWR is uncertain at this time.

Filter Backwash Rule

The Filter Backwash Rule is a regulation for filtered surface water supplies that recycle some or all of filter backwash into the plant. The purpose of the rule is to require systems to review their recycle practices and, where appropriate, work with the State to make any necessary changes to current practices that may compromise microbial control. The proposed rule was published in April 2000, with the final rule promulgated in April 2001. It will apply to all systems that use filter recycle streams. The final rule contained the following key provisions:

- Return of all recycle flows prior to the point of the primary coagulant addition.
- Direct filtration plants to provide information to the state on their current recycle practice.
- A requirement for systems meeting criteria to perform a one-time self assessment of their recycle practice and consult with their primacy agency to address and correct high risk recycle operations.

The first element would require that all systems using surface water or groundwater under the direct influence of surface water return all recycle flows to the process prior to the point of the primary coagulant addition. Waivers to this requirement would be available from state primacy agencies for unique treatment conditions.

The second element would require all direct filtration plants to report to the state primacy agency whether flow equalization or treatment is provided for recycle flow prior to its return to the treatment process. The state would use that information to determine the plants that need to change their current recycle practice in order to provide additional public health protection.

The third element would require that all plants using 20 or fewer filters and directly recycling flows to the treatment process without any form of treatment on the recycle flow complete a self-assessment. The self-assessment would be used to determine the effect of untreated recycle flows to the plant process. The State primacy agency would use the results of the self-assessment to determine the appropriate level of treatment of recycle flows.

Systems were to notify the State of their recycle practices by October 2003, modify their recycle return location as required by June 2004, and complete the necessary capital improvements to comply with all rule requirements by June 2006.

Lead and Copper Rule

The Lead and Copper Rule was promulgated in June 1991 and went into effect in December 1992, with minor revisions released in April 2000. The rule applies to all community and non-transient non-community water systems. The rule developed MCLGs and action levels for both lead and copper in drinking water. The major difference between this regulation and most others is that the water is to be monitored at the customer's tap, not the treatment plant discharge point. Lead and copper must be monitored at the customer's taps every 6 months and twice each calendar year at the highest risk locations. The highest risk locations are defined as:

- Piping with lead solder installed after 1982,
- Lead water service lines,
- Lead interior piping.

For compliance, the samples at the customer's tap must not exceed the following action levels:

- Lead concentration of 0.015 mg/L detected in the 90th percentile of all samples.
- Copper concentration of 1.3 mg/L detected in the 90th percentile of all samples.

If action levels are exceeded, water systems must collect source water samples and submit all data to the state with a treatment recommendation to reduce concentrations below the action level. In addition, the water system must also provide a public education program to its customers within 60 days of the action level exceedance. The education program must be continued until the samples are found to be below the lead action levels.

All water systems that exceed the lead or copper action levels are also required to conduct a corrosion control study. Corrosion control studies must compare the effectiveness of pH and alkalinity adjustment, calcium adjustment, and addition of a phosphate or silica-based corrosion inhibitor. Large and medium systems are also required to monitor many other water quality parameters at the plant discharge and customer's tap.

After a corrosion control study is completed, a water system must develop a corrosion control program and submit it for approval to the primacy agency. Once approval of the plans is received, water systems have 24 months to install and implement the treatment methods for corrosion control and 12 additional months to collect follow-up samples. After this time, the water system must comply with the action levels for both lead and copper.

In 2000, minor revisions to the lead and copper rule were promulgated to streamline requirements and reduce some burdens on water systems. No changes to the MCLs or the MCLGs were made. Small changes were made to reduce the frequency of monitoring for systems with low lead and copper tap levels and to update the analytical methods used for compliance. Further revisions to the lead and copper rule are expected to be proposed in late 2005, but no information as to what will be included in the potential revisions to the rule has been released.

Arsenic Rule

The original arsenic MCL of 50 µg/L was set by the EPA in 1975 based on Public Health Service Standard originally published in 1942. A new proposed Arsenic Rule was released in June 2000. The EPA was originally under a court-imposed deadline to promulgate this rule by November 1992. However, the EPA has received extensions to examine health effects and occurrence data. EPA succeeded in finalizing the Arsenic Rule on January 16, 2001, during the final days of the Clinton administration. The final rule was published in the Federal Register on January 22, 2001 and became effective on February 22, 2002.

The following is a summary of the major provisions and requirements of the rule:

- A MCLG for arsenic in drinking water is set at zero.
- The MCL for arsenic is revised from 50 µg/L down to 10 µg/L by January 23, 2006.
- Beginning with Consumer Confidence Reports (CCRs) due by July 1, 2002, all community water systems (CWSs) will begin providing health information and arsenic concentrations in the annual reports for water that exceeds 5 µg/L (one half of the MCL).
- Both CWSs and non-transient non-community water systems (NTNCWSs) are required to meet the revised arsenic standard.
- Two compliance requirements for inorganic contaminants (IOCs), volatile organic contaminants (VOCs), and synthetic organic contaminants (SOCs). Specifically, when a system fails to collect the required number of samples, compliance averages will be based on the actual number of samples collected. Also, new public water systems and systems using new sources of water must demonstrate compliance within state-specified time and sampling frequencies. These provisions apply to arsenic.

All CWSs and NTNCWSs that exceed the MCL of 10 µg/L are required to come into compliance 5 years after the publication of the final rule.

Radionuclide Rule

The original Radionuclide Rule was proposed in July 1991, but court action delayed its final promulgation. The final Radionuclides Rule was published in the Federal Register on December 7, 2000. The rule became effective in December 2003. New monitoring requirements have been phased-in the publication date of the final rule and the beginning of the next Standardized Monitoring Framework period on December 31, 2007. “Phased-in monitoring” refers to the fact that States will require some fraction of water systems to complete their initial monitoring requirements each year of the period between the effective date (December 8, 2003) and the beginning of the new cycle (December 31, 2007). Water systems will determine initial compliance under the new monitoring requirements using the average of four quarterly samples or, at state discretion, using appropriate grandfathered data. Compliance will be determined immediately based on the annual average of the quarterly samples for that fraction of systems required by the state to monitor in any given year or based on the results from the grandfathered data. Water systems with existing radionuclides monitoring data demonstrating that the system is out of compliance with new provisions will be out of compliance on the effective date of December 8, 2003.

In the final rule, EPA set the MCL for uranium at 30 µg/L, using its authority under the SDWA for the first time to set a standard at a higher than the feasible level based on cost-benefit considerations. The standard for combined radium-226/228 remains at 5 picoCuries per liter (pCi/L). However, the rule requires improved monitoring for radium. The final rule retains the interim standards for gross alpha particles at 15 pCi/L and for beta and photon emitters at 4 millirems (mrem).

A summary of the final Radionuclides Rule is provided below. Table 9-10 also lists the existing (1979) and the revised MCLs of the final Radionuclide Rule.

- Affected Systems: Community Water Systems (CWSs); non-CWSs, including transient and non-transient, are exempt.
- MCL Goals (MCLGs) for radionuclides: MCLGs of zero; includes combined radium-226/228; gross alpha, beta particle and photon radioactivity, and uranium
- Radium MCL: Combined Ra-226 and Ra-228 MCL of 5 pCi/L; based on new risk levels.
- Beta/Photon Radioactivity MCL:
  - ≤ 4 mrem/yr to the total body or any given internal organ except for H-3 and Sr-90
  - H-3 = 20,000 pCi/L; Sr-90 = 8 pCi/L
  - Total dose from co-occurring beta/photon emitters must be ≤ 4 mrem/yr to the total body of any internal organ;
  - This MCL will be reviewed within 2 to 3 years based on a need for further re-evaluation of the risk management issues.
- Gross alpha MCL: 15 pCi/L excluding uranium and radon, but including Ra-226; maintain current MCL.
- Uranium MCL: 30 µg/L; new MCL.
- Polonium-210: Part of gross alpha; monitoring required under the UCMR rule; further action may be proposed at a later date.
- Lead-210: Not regulated; monitoring required under the UCMR rule; further action may be proposed at a later date.

Table 9-10
Existing and Revised MCLs for Radionuclides

Contaminant	1979 MCLs	2000 Radionuclide Rule MCLs
Radium 226/228	5 piC/L	5 piC/L
Uranium	N/A	30 piC/L
Gross Alpha	15piC/L	15 piC/L
Beta Particles and Photon Emitters	4 mrems	4 mrem

Radon Rule

Radon is a naturally occurring, carcinogenic, radioactive gas. Radon in drinking water increases risk to public health, primarily from inhalation of radon discharged through normal household use, such as showering, but also from ingestion of water. The proposed Radon Rule applies to all community water systems that use groundwater or mixed groundwater and surface water supply sources.

On November 2, 1999, the long anticipated and heavily debated Radon Rule was formally proposed, but EPA missed the SWDA deadline of August 2000 promulgation. EPA has not indicated a final schedule for the promulgation of the Radon Rule at this time.

The rule includes a two-option approach that allows states and water suppliers to reduce radon risks in indoor air while protecting public health from the highest levels of radon in drinking water. The proposed rule includes the following provisions:

- MCLG zero
- MCL 300 pCi/L
- Alternative MCL (AMCL) 4,000 pCi/L

The AMCL provision of the rule applies to water systems that adopt and comply with a multimedia mitigation (MMM) program aimed at reducing household indoor/air health risks from the soil as well as the tap water. The AMCL of 4,000 pCi/L is based on the National Research Council recommended estimate of 10,000 to 1 as the transfer factor from water to air and the national average outdoor radon concentration of 0.4 pCi/L in air. Thus, an estimate of 0.4 pCi/L in air would be equivalent to 4,000 pCi/L in water.

If a state develops an MMM program that is approved by the EPA, public water systems in that state will be able to comply with the AMCL rather than the MCL. Alternatively, if a state chooses not to adopt its own MMM program or a state's MMM program does not meet EPA approval, an individual public water supplier can submit an MMM program for approval. The 1996 SDWA Amendments require that the EPA evaluate MMM programs every 5 years.

Drinking Water Contaminant Candidate List

As amended in 1996, the SWDA requires the EPA to establish a list of contaminants that are known or anticipated to occur in public water systems and may require regulation under the SWDA. The first Contaminant Candidate List (CCL) was published in the Federal Register in March 1998 and included 60 contaminants under consideration for regulation. A second version of the CCL was published in February 2005. The second version of the CCL carries forward 51 of the original 60 unregulated contaminants from the first version of the CCL. The CCL includes both microbiological and chemical contaminants. The CCL published in February 2005 includes 42 chemical contaminants and 9 microbiological contaminants/contaminant groups. Table 9-11 lists the contaminants published in the CCL in February 2005.

Contaminants included in the CCL are studied to develop analytical methods for detecting the contaminants, determine whether they occur in drinking water, and evaluate treatment technologies to remove them from drinking water. In addition, the health effects of the

contaminants are studied to help determine if actions such as drinking water guidance, health advisories, or regulation need to be developed. The CCL alone does not impose any requirements on public water system.

Table 9-11
Contaminant Candidate List (CCL)

Microbiological Contaminants
Adenoviruses
Aeromonas hydrophila
Caliciviruses
Coxsackieviruses
Cyanobacteria (blue-green algae), other freshwater algae, and their toxins
Echoviruses
Helicobacter pylori
Microsporidia (Enterocytozoon & Septata)
Mycobacterium avium intracellulare (MAC)
Chemical Contaminants
1,2,2,2-tetrachloroethane
1,2,4-trimethylbenzene
1,1-dichloroethane
1,1-dichloropropene
1,2-diphenylhydrazine
1,3-dichloropropane
1,3-dichloropropene
2,4,6-trichlorophenol
2,2-dichloropropane
2,4-dichlorophenol
2,4-dinitrophenol
2,4-dinitrotoluene
2,6-dinitrotoluene
2-methyl-Phenol (o-cresol)
Acetochlor
Alachlor ESA & other acetanilide pesticide degradation products
Aluminum
Boron
Bromobenzene

Table 9-11
Contaminant Candidate List (CCL)

DCPA mono-acid degradate
DCPA di-acid degradate
DDE
Diazinon
Disulfoton
Diuron
EPTC (s-ethyl-dipropylthiocarbamate)
Fonofos
p-Isopropyltoluene (p-cymene)
Linuron
Methyl bromide
Methyl-t-butyl ether (MTBE)
Metolachlor
Molinate
Nitrobenzene
Organotins
Perchlorate
Prometon
RDX
Terbacil
Terbufos
Triazines and degradation products of triazines (including, but not limited to Cyanazine, and atrazine-desethyl)
Vanadium

Water Quality Issues

Surface Water Quality

Surface water served in the Artesia System is Metropolitan treated water, blended with groundwater from the City of Cerritos and received through inter-connections. Water has to meet all drinking water standards as it leaves the surface water treatment plant and at the inter-connection. So, we assume that Metropolitan and the City will be responsible for any required water treatment. While it is assumed that Metropolitan and the City will be responsible for any required surface water treatment, this may not be the case for parameters monitored in distribution system, such as disinfectant by products.

Groundwater Quality

Table 9-12 summarizes water quality concerns for all the wells in the Artesia System.

Table 9-12
Summary of Assessment

Well	Normal flow (gpm)	Status	Water quality Issue/concern	Existing treatment	Recommendation
Centralia #3	500	Active	Mn, As	Dual media pressure	Continue Treatment
Centralia #4	502	Active	Mn, As	Filter for Mn, As removal	Continue Treatment
Centralia # 6	2000	Pending	Mn, As	Dual media pressure Filter for Mn, As removal	Continue Treatment
Hawaiian #1	531	Active	Mn, As	Currently, the well is sequestered for Mn.	There are plans to install Mn/Arsenic treatment in 2005 (Pyrolusite/Iron-based Adsorption)
Juan #4	300	Active	Mn, As	Pyrolusite Adsorption, Iron-based Adsorption	Continue Treatment
Massinger #1	714	Active	Mn, As	Currently, the well is sequestered for Mn.	There are plans to install Mn/Arsenic treatment in 2005 (Pyrolusite/Iron-based Adsorption)
Roseton #1	699	Active	None	None	
Roseton # 2	1000	Pending	Mn, As, Fe	Dual media pressure Filter for Mn removal	Currently As levels are below 10 µg/L. However, As treatment may be required in the future.

All active wells (including newly drilled wells that have not been put on line as of August 2005) in the Artesia System have concentrations of both Manganese and Arsenic at levels above the MCLs or SMCLs, with the exception of Roseton #1 and Roseton #2. Roseton #2 has Mn above SMCL, however, Arsenic is below MCLs (~ ½ MCL). Manganese and Arsenic are both below SMCLs and MCLs, at Roseton #1.

A dual media filter treatment system was installed for Centralia Wells #3 and #4 in 1998 for Manganese treatment. Additionally, a pilot test was conducted at the site in 2002 to evaluate Arsenic removal. Massinger and Hawaiian wells are currently being sequestered for color control. There are plans to install a Manganese/Arsenic treatment system at Massinger and Hawaiian by December 2005. Manganese treatment system was installed at Juan # 4 in 2001. Arsenic treatment will be provided at the site in 2005.

There are two newly drilled wells in the system (Centralia # 6 and Roseton # 2). Both of these wells will require treatment for iron and manganese before they can be approved for service. Addition of Ferric Chloride to the existing dual-media filter system at Centralia for arsenic removal is planned, and additional dual-media removal treatment is being installed for the new wells Centralia # 6 and Roseton # 2. Centralia # 6 needs arsenic removal, and although

Roseton # 2 does not, the capability for expanded treatment at Roseton # 2 for arsenic is being provided.

Projected Impact of Water Quality

Table 9-13 summarizes the projected impact on water supply due to water quality issues with wells in the Artesia System.

Table 9-13
Summary of Projected Water Supply Percent Changes Due to Water Quality Issues

Water Source	2005	2010	2015	2020	2025	2030
Centralia #3	0	0	0	0	0	0
Centralia #4	0	0	0	0	0	0
Centralia # 6	0	0	0	0	0	0
Hawaiian #1	0	0	0	0	0	0
Juan #4	0	0	0	0	0	0
Massinger #1	0	0	0	0	0	0
Roseton #1	0	0	0	0	0	0
Roseton #2	0	0	0	0	0	0

Notes
1. Table format based on DWR Guidance Document Table 39

Distribution System Water Quality

Distribution system water quality monitoring is performed for several water quality parameters in the Artesia System, including general physical parameters, presence of coliform bacteria, disinfectant and disinfection by-product levels, and corrosivity of the water by monitoring lead and copper levels at customers' water taps. All monitoring parameters and levels currently meet drinking water standards. The ability to continue to meet these standards is not expected to change in the foreseeable future, with one exception. Drinking water standard levels for disinfection by-products may be lowered in the future in accordance with the Stage 2 D-DBP Rule. It is unknown at this time if the increased levels of disinfection by-products will be at levels of concern.

The Artesia System utilizes an approved Sample Siting Plan for the collection, recording, and reporting of all bacteriological analyses. Part of the Artesia System is served primarily by treated surface water from the Metropolitan.

The Artesia System has also established an aggressive cross-connection control program to reduce the hazard associated with backflow and back-siphonage. The program is required to comply with DOHS regulations for Waterworks Standards and Cross Connection Control.

Emerging Water Quality Issues

Perchlorate. Ammonium perchlorate is used as a main component in solid rocket propellant, and can be found in some types of ammunitions and fireworks. The California Legislature had required the CDHS to adopt a new drinking water standard for perchlorate by January 1, 2004. In advance of the requirement, the Office of Environmental Health Hazard Assessment (OEHHA) set a public health goal for perchlorate at 6 µg/L in March 2004. The primary health concern related to perchlorate is its effect on the thyroid gland's ability to produce hormones required for normal growth and development. CDHS anticipates it will establish an MCL for perchlorate during 2005.

All source samples in the system have been collected to test for perchlorate and the results are non-detect for all the wells. Since there are no known sources of the contaminant in the area, the impact of perchlorate could be negligible.

Chromium 6. In 2000, there was significant interest in the detection and possible health effects of chromium 6 in drinking water supplies throughout the state. In 2001, the OEHHA withdrew their previously established Public Health Goal (risk assessment level) of 2.5 µg/L for total chromium. The current MCL enforced by the CDHS is 50 µg/L for total chromium, and OEEHA is in the process of establishing a specific Public Health Goal for chromium 6.

The water system initiated sampling of all its water sources for total chromium and chromium 6 in 2002 and 2003. Total Chromium and chromium-6 were not detected in the Artesia System.

MTBE. Until recently, MTBE was the primary oxygenate in virtually all gasoline used in California. It was introduced to surface water bodies from motor exhaust of recreational watercraft, and into groundwater supplies by leaking underground storage tanks. The CDHS adopted a primary MCL of 13 µg/L for MTBE based on carcinogenicity studies in animals. They also established a secondary MCL for MTBE at 5 µg/L, based on taste and odor concerns.

All source samples in the system have been collected to test for MTBE and the results are ND for all the wells. Since there are no known sources of the contaminant in the area, the impact of MTBE could be negligent. However, this could change in time as MTBE plumes (from leaking underground storage tanks and other sources) find their way into the water system's well water supply.

N-Nitrosodimethylamine (NDMA). Although NDMA is one of the contaminants released from manufacture of liquid rocket propellants, munitions, and fireworks, the recent findings indicated that low level (ppt) of NDMA may be a byproduct of surface water treatment process and/or formed in the distribution system. The treated recycled water also has been detected with NDMA. .

All source samples have been collected to test for NDMA and the results are ND for all the wells. Since there are no known sources of the contaminant in the area, the impact of NDMA could be negligible.

DSWAP. A requirement from the USEPA called for all utilities to complete a Source Water Assessment for all water sources. The water system completed the Assessments in 2003.

The groundwater sources were considered most vulnerable to the following activities not associated with any detected contaminants in the water supply as of this time: gas stations, automobile repair shops, chemical or petroleum pipelines, chemical or petroleum processing or storage, dry cleaners, unauthorized dumping, military installations, historic mining operations, plastics or synthetics producers, sewer collection systems, underground storage tanks confirmed leaking or not yet upgraded, and gas wells.

CPUC Interface. One of the four key principles of the CPUC draft Water Action Plan is to provide safe, high quality water to all regulated water utility customers. Water Plan objectives include maintaining the highest standards of water quality, and, promoting infrastructure investment including investments to protect water quality. Specific proposed actions to support water plan objectives include strengthening inter-agency relations between the CPUC and Department of Health Services, and, developing funding mechanisms to address water quality concerns. GSWC has suggested additional steps that can be taken by the CPUC to ensure water quality including assurances of timely recovery of water pollution clean-up costs.

Chapter 10. Water Service Reliability

Section 10635 of the Act requires that an assessment of water service reliability for various climatic conditions be undertaken. The Act states:

Section 10635

(a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.

(b) The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.

(c) Nothing in this article is intended to create a right or entitlement to water service or any specific level of water service.

(d) Nothing in this article is intended to change existing law concerning an urban water supplier's obligation to provide water service to its existing customers or to any potential future customers.

This chapter provides a water supply and demand assessment for the Artesia System for a normal year, a single-dry year, and multiple-dry years. The following is a summary of the water supply sources and reliability of those sources for the Artesia System. The details of water supply sources and the reliability of these supplies are provided in Chapter 3. Water demand projections are documented in Chapter 4.

The Artesia System currently gets its water supply primarily from local groundwater wells, imported water, and recycled water from CBMWD. Groundwater provides between 60 and 67 percent of the available supply, whereas imported surface water and recycled water makes up about 30 and 1 to 2 percent of total supplies, respectively. Due to these different sources of supplies, conditions in local and distant areas can impact the reliability of supplies. In general, GSWC's supply is expected to be 100 percent reliable through 2030. This reliability is a result of, 1) adjudicated groundwater rights in the Central Basin, 2) anticipated benefits of conjunctive use storage programs in accordance with the terms of amendments to the existing court Judgment to be developed, 3) the projected reliability of Metropolitan water supplies purchased through the City of Cerritos which are expected to be 100 percent reliable, and 4) the availability of recycled water.

Reliability and vulnerability of the imported water supply to seasonal or climatic shortages are currently dependent on the reliability plan of Metropolitan; however, the region can protect itself against current vulnerabilities through the implementation of conjunctive use storage agreements. The Central Basin has substantial storage capacity to provide a buffer

during droughts and to accept recharge of surplus waters during times of available supplies (e.g., storm water, highly treated recycled water, and imported water). Metropolitan's initiatives to ensure supply reliability are discussed in its UWMP and in Chapter 3.

Also see the CBMWD's 2005 UWMP for details of their proposed water supply development projects.

Groundwater from the Central Basin is expected to be 100 percent reliable as it has been in the past. GSWC's continued efforts to ensure the availability of storage to meet the needs of its customers will ensure full reliability of the Central Basin groundwater supply. The Basin has proven to be very reliable under extreme climate conditions over the last 40 plus years and is expected to remain reliable through 2030.

Recycled water is expected to be available during all hydrologic conditions because it is not subject to hydrologic variations.

The following sections present the normal water year, single-dry year, multiple-dry year water supply and demand assessments.

Normal Water Year Analysis

Table 10-1 provides the projected water supply from groundwater, imported water, and recycled water in normal water years (see Chapter 3 for details).

Table 10-1
Projected Normal Water Year Supply in ac-ft/yr

	2010	2015	2020	2025	2030
Total Water Supply	6,920	7,059	7,200	7,336	7,469
Percent of Year 2005	104	106	108	110	112

Notes
1. Table format based on DWR Guidance Document Table 40

Table 10-2 provides water demand projections in normal water years (see Chapter 4 for details).

Table 10-2
Summary of Projected Normal Water Year Demands in ac-ft/yr

	2010	2015	2020	2025	2030
Total Water Demand	6,920	7,059	7,200	7,336	7,469
Percent of Year 2005	104	106	108	110	112

Notes
1. Table format based on DWR Guidance Document Table 41

Table 10-3 summarizes the service reliability assessment for a normal water year based on water supply and water demand projections. As described in Chapter 3, imported water and recycled water provided by CBMWD and local groundwater from the Central Basin are expected to be 100 percent reliable to meet the projected demands through 2030.

Table 10-3
Comparison of Projected Normal Year Supply and Demand in ac-ft/yr

	2010	2015	2020	2025	2030
Water Supply Total	6,920	7,059	7,200	7,336	7,469
Water Demand Total	6,920	7,059	7,200	7,336	7,469
Difference (supply minus demand)	0	0	0	0	0
Difference as Percent of Supply	0	0	0	0	0
Difference as Percent of Demand	0	0	0	0	0

Notes
1. Table format based on DWR Guidance Document Table 42

Single Dry-Year Analysis

GSWC and the many regional water agencies (e.g., Metropolitan, CBMWD, WRDSC, and LACDPW) have undertaken a number of planning initiatives to ensure supply reliability over a range of hydrologic conditions. These initiatives are discussed in Chapter 3. Together, these initiatives provide a plan to manage the water resources to meet the needs of a growing population even under recurrences of the worst historical hydrologic conditions locally and in the key distant watersheds that supply water to the Artesia System.

Table 10-4 presents projected single-dry year water supplies to meet the projected demands. It is assumed that the single-dry year supplies are the same as those for the normal years because imported water, local groundwater, and recycled water will meet projected demands under all anticipated hydrologic conditions; therefore, the supplies are equal to demand and hydrologic conditions are irrelevant.

Table 10-4
Projected Single-Dry Year Water Supply in ac-ft/yr

	2010	2015	2020	2025	2030
Water Supply	6,920	7,059	7,200	7,336	7,469
Percent of Year 2005	104	106	108	110	112

Notes
1. Table format based on DWR Guidance Document Table 43

Table 10-5 provides projected single-dry year water demand. It is assumed that the single-dry year demands are the same as those water demands projected for the normal years.

Table 10-5
Summary of Projected Single-Dry Year Demands in ac-ft/yr

	2010	2015	2020	2025	2030
Water Demand	6,920	7,059	7,200	7,336	7,469
Percent of Year 2005	104	106	108	110	112

Notes
1. Table format based on DWR Guidance Document Table 44

Table 10-6 demonstrates the reliability of water supplies to meet projected annual water demands for the Artesia System in a single-dry year. CBMWD has determined that they can meet their projected water demands in a single-dry year, so the projected combination of imported water, local groundwater, and recycled water supplies are equal to the projected demands.

It should be noted that the active connection capacity to deliver imported water is significantly higher than the projected imported water supply that is needed to meet these demands. Therefore, the imported water supply is generally expected to be much greater than the projected water demands in a single-dry year.

Table 10-6
Comparison of Projected Supply and Demand for Single Dry Year in ac-ft/yr

	2010	2015	2020	2025	2030
Supply Total	6,920	7,059	7,200	7,336	7,469
Demand Total	6,920	7,059	7,200	7,336	7,469
Difference (supply minus demand)	0	0	0	0	0
Difference as Percent of Supply	0	0	0	0	0
Difference as Percent of Demand	0	0	0	0	0

Notes
1. Table format based on DWR Guidance Document Table 45

Multiple Dry-Year Analysis

Table 10-7 presents the projected multiple-dry year water supply and demand assessment. It is assumed that the multiple-dry year water supplies are the same as those for the normal years because Metropolitan (through CBMWD) intends to meet projected imported demands under all anticipated hydrologic conditions. The third year of the multiple-dry year water supply projection represents the end of each 3-year multiple-dry year period as required for the multiple-dry year analysis. CBMWD has determined that they can meet their projected water demands for multiple-dry years, so the water supply is projected to equal the projected demands. It is assumed that the water demand for the preceding two years (of the 3-year multiple-dry year period) will be the same as those in the third year. For

example, the water demand projection for 2010 has been used as the water demands projected in 2009 and 2008.

Table 10-7 demonstrates that the water supplies are sufficient to meet the projected water demand for each multiple-dry year period because:

- CBMWD has determined that they can meet their projected water demands for the multiple-dry year periods (discussed in Chapter 3);
- Groundwater from the Central Basin is expected to be 100 percent reliable in multiple-dry years;
- Recycled water is expected to be available during all hydrologic conditions because it is not subject to hydrologic variations.

It should be noted that the active connection capacity to deliver imported water is significantly higher than the projected imported water supply that is needed to meet these demands. Therefore, the imported water supply is generally expected to be much greater than the expected projected water demands during multiple-dry years.

In summary, GSWC, Metropolitan and CBMWD have implemented and will implement projects to ensure the imported water demands can be met under normal year, single-dry year, and multiple-dry years.

Table 10-7
Projected Multiple-Dry Year Water Supply and Demand Assessment

Year	Supply (ac-ft/yr)	Demand (ac-ft/yr)	Difference	Difference as Percent of Supply	Difference as Percent of Demand
2006					
2007					
2008	6,920	6,920	0	0	0
2009	6,920	6,920	0	0	0
2010	6,920	6,920	0	0	0
2011					
2012					
2013	7,059	7,059	0	0	0
2014	7,059	7,059	0	0	0
2015	7,059	7,059	0	0	0
2016					
2017					
2018	7,200	7,200	0	0	0
2019	7,200	7,200	0	0	0
2020	7,200	7,200	0	0	0
2021					
2022					
2023	7,336	7,336	0	0	0
2024	7,336	7,336	0	0	0
2025	7,336	7,336	0	0	0
2026					
2027					
2028	7,469	7,469	0	0	0
2029	7,469	7,469	0	0	0
2030	7,469	7,469	0	0	0

Notes
1. This assessment is based on the 3-year multiple-dry year period ending in 2010, 2015, 2020, 2025, and 20302. Table format based on DWR Guidance Document Tables 47 through 57

Chapter 11. References

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Appendix A
2005 Urban Water Management Planning Act

Established: AB 797, Klehs, 1983
Amended: AB 2661, Klehs, 1990
AB 11X, Filante, 1991
AB 1869, Speier, 1991
AB 892, Frazee, 1993
SB 1017, McCorquodale, 1994
AB 2853, Cortese, 1994
AB 1845, Cortese, 1995
SB 1011, Polanco, 1995
AB 2552, Bates, 2000
SB 553, Kelley, 2000
SB 610, Costa, 2001
AB 901, Daucher, 2001
SB 672, Machado, 2001
SB 1348, Brulte, 2002
SB 1384 Costa, 2002
SB 1518 Torlakson, 2002
AB 105, Wiggins, 2003
SB 318, Alpert, 2004

CALIFORNIA WATER CODE DIVISION 6
PART 2.6. URBAN WATER MANAGEMENT PLANNING
CHAPTER 1. GENERAL DECLARATION AND POLICY

10610. This part shall be known and may be cited as the "Urban Water Management Planning Act."

10610.2. (a) The Legislature finds and declares all of the following:
(1) The waters of the state are a limited and renewable resource subject to ever-increasing demands.
(2) The conservation and efficient use of urban water supplies are of statewide concern; however, the planning for that use and the implementation of those plans can best be accomplished at the local level.
(3) A long-term, reliable supply of water is essential to protect the productivity of California's businesses and economic climate.
(4) As part of its long-range planning activities, every urban water supplier should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry water years.
(5) Public health issues have been raised over a number of contaminants that have been identified in certain local and imported water supplies.
(6) Implementing effective water management strategies, including groundwater storage projects and recycled water projects, may require specific water quality and salinity targets for meeting groundwater basins water quality objectives and promoting beneficial use of recycled water.

(7) Water quality regulations are becoming an increasingly important factor in water agencies' selection of raw water sources, treatment alternatives, and modifications to existing treatment facilities.
(8) Changes in drinking water quality standards may also impact the usefulness of water supplies and may ultimately impact supply reliability.
(9) The quality of source supplies can have a significant impact on water management strategies and supply reliability.
(b) This part is intended to provide assistance to water agencies in carrying out their long-term resource planning responsibilities to ensure adequate water supplies to meet existing and future demands for water.
10610.4. The Legislature finds and declares that it is the policy of the state as follows:
(a) The management of urban water demands and efficient use of water shall be actively pursued to protect both the people of the state and their water resources.
(b) The management of urban water demands and efficient use of urban water supplies shall be a guiding criterion in public decisions.
(c) Urban water suppliers shall be required to develop water management plans to actively pursue the efficient use of available supplies.

CHAPTER 2. DEFINITIONS
10611. Unless the context otherwise requires, the definitions of this chapter govern the construction of this part.
10611.5. "Demand management" means those water conservation measures, programs, and incentives that prevent the waste of water and promote the reasonable and efficient use and reuse of available supplies.
10612. "Customer" means a purchaser of water from a water supplier who uses the water for municipal purposes, including residential, commercial, governmental, and industrial uses.
10613. "Efficient use" means those management measures that result in the most effective use of water so as to prevent its waste or unreasonable use or unreasonable method of use.
10614. "Person" means any individual, firm, association, organization, partnership, business, trust, corporation, company, public agency, or any agency of such an entity.
10615. "Plan" means an urban water management plan prepared pursuant to this part. A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities. The components of the plan may vary according to an individual community or area's characteristics and its capabilities to efficiently use and conserve water. The plan shall address measures for residential, commercial, governmental, and industrial water demand management as set forth in Article 2 (commencing with Section 10630) of Chapter 3. In addition, a strategy and time schedule for implementation shall be included in the plan.
10616. "Public agency" means any board, commission, county, city and county, city, regional agency, district, or other public entity.
10616.5. "Recycled water" means the reclamation and reuse of wastewater for beneficial use.
10617. "Urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water

supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems subject to Chapter 4 (commencing with Section 116275) of Part 12 of Division 104 of the Health and Safety Code.

CHAPTER 3. URBAN WATER MANAGEMENT PLANS

Article 1. General Provisions

10620.

(a) Every urban water supplier shall prepare and adopt an urban water management plan in the manner set forth in Article 3 (commencing with Section 10640).

(b) Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.

(c) An urban water supplier indirectly providing water shall not include planning elements in its water management plan as provided in Article 2 (commencing with Section 10630) that would be applicable to urban water suppliers or public agencies directly providing water, or to their customers, without the consent of those suppliers or public agencies.

(d)(1) An urban water supplier may satisfy the requirements of this part by participation in area wide, regional, watershed, or basin wide urban water management planning where those plans will reduce preparation costs and contribute to the achievement of conservation and efficient water use.

(2) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.

(e) The urban water supplier may prepare the plan with its own staff, by contract, or in cooperation with other governmental agencies.

(f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.

10621.

(a) Each urban water supplier shall update its plan at least once every five years on or before December 31, in years ending in five and zero.

(b) Every urban water supplier required to prepare a plan pursuant to this part shall notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.

(c) The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).

Article 2. Contents of Plans

10630. It is the intention of the Legislature, in enacting this part, to permit levels of water management planning commensurate with the numbers of customers served and the volume of water supplied.

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:

(a) Describe the service area of the supplier, including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.

(b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a). If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:

(1) A copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.

(2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.

(3) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(c) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following:

(1) An average water year.

(2) A single dry water year.

(3) Multiple dry water years.

For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.

(d) Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

(e)(1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors including, but not necessarily limited to, all of the following uses:

(A) Single-family residential.
(B) Multifamily.
(C) Commercial.
(D) Industrial.
(E) Institutional and governmental.
(F) Landscape.
(G) Sales to other agencies.
(H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.
(I) Agricultural.

(2) The water use projections shall be in the same five-year increments described in subdivision (a).

(f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:

(1) A description of each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following:
(A) Water survey programs for single-family residential and multifamily residential customers.
(B) Residential plumbing retrofit.
(C) System water audits, leak detection, and repair.
(D) Metering with commodity rates for all new connections and retrofit of existing connections.
(E) Large landscape conservation programs and incentives.
(F) High-efficiency washing machine rebate programs.
(G) Public information programs.
(H) School education programs.
(I) Conservation programs for commercial, industrial, and institutional accounts.
(J) Wholesale agency programs.
(K) Conservation pricing.
(L) Water conservation coordinator.
(M) Water waste prohibition.
(N) Residential ultra-low-flush toilet replacement programs.

(2) A schedule of implementation for all water demand management measures proposed or described in the plan.

(3) A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.

(4) An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.

(g) An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower

incremental costs than expanded or additional water supplies. This evaluation shall do all of the following:

(1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors.

(2) Include a cost-benefit analysis, identifying total benefits and total costs.

(3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost.

(4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.

(h) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.

(i) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

(j) Urban water suppliers that are members of the California Urban Water Conservation Council and submit annual reports to that council in accordance with the "Memorandum of Understanding Regarding Urban Water Conservation in California," dated September 1991, may submit the annual reports identifying water demand management measures currently being implemented, or scheduled for implementation, to satisfy the requirements of subdivisions (f) and (g).

(k) Urban water suppliers that rely upon a wholesale agency for a source of water , shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water -year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).

10631.5. The department shall take into consideration whether the urban water supplier is implementing or scheduled for implementation, the water demand management activities that the urban water supplier identified in its urban water management plan, pursuant to Section 10631, in evaluating applications for grants and loans made available pursuant to Section 79163. The urban water supplier may submit to the department copies of its annual reports and other relevant documents to assist the department in determining whether the urban water supplier is implementing or scheduling the implementation of water demand management activities.

10632. The plan shall provide an urban water shortage contingency analysis that includes each of the following elements that are within the authority of the urban water supplier:
(a) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.
(b) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.
(c) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.
(d) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.
(e) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.
(f) Penalties or charges for excessive use, where applicable.
(g) An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.
(h) A draft water shortage contingency resolution or ordinance.
(i) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.
10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area, and shall include all of the following:
(a) A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.
(b) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.
(c) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.
(d) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.

(e) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.
(f) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.
10634. The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.

Article 2.5 Water Service Reliability
10635. (a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.
(b) The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.
(c) Nothing in this article is intended to create a right or entitlement to water service or any specific level of water service.
(d) Nothing in this article is intended to change existing law concerning an urban water supplier's obligation to provide water service to its existing customers or to any potential future customers.

Article 3. Adoption and Implementation of Plans
10640. Every urban water supplier required to prepare a plan pursuant to this part shall prepare its plan pursuant to Article 2 (commencing with Section 10630). The supplier shall likewise periodically review the plan as required by Section 10621, and any amendments or changes required as a result of that review shall be adopted pursuant to this article.
10641. An urban water supplier required to prepare a plan may consult with, and obtain comments from, any public agency or state agency or any person who has special expertise with respect to water demand management methods and techniques.
10642. Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan. Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to

Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area. After the hearing, the plan shall be adopted as prepared or as modified after the hearing.
10643. An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.
10644. (a) An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.
(b) The department shall prepare and submit to the Legislature, on or before December 31, in the years ending in six and one, a report summarizing the status of the plans adopted pursuant to this part. The report prepared by the department shall identify the outstanding elements of the individual plans. The department shall provide a copy of the report to each urban water supplier that has filed its plan with the department. The department shall also prepare reports and provide data for any legislative hearings designed to consider the effectiveness of plans submitted pursuant to this part.
10645. Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.

CHAPTER 4. MISCELLANEOUS PROVISIONS
10650. Any actions or proceedings to attack, review, set aside, void, or annul the acts or decisions of an urban water supplier on the grounds of noncompliance with this part shall be commenced as follows:
(a) An action or proceeding alleging failure to adopt a plan shall be commenced within 18 months after that adoption is required by this part.
(b) Any action or proceeding alleging that a plan, or action taken pursuant to the plan, does not comply with this part shall be commenced within 90 days after filing of the plan or amendment thereto pursuant to Section 10644 or the taking of that action.
10651. In any action or proceeding to attack, review, set aside, void, or annul a plan, or an action taken pursuant to the plan by an urban water supplier on the grounds of noncompliance with this part, the inquiry shall extend only to whether there was a prejudicial abuse of discretion. Abuse of discretion is established if the supplier has not proceeded in a manner required by law or if the action by the water supplier is not supported by substantial evidence.
10652. The California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) does not apply to the preparation and adoption of plans pursuant to this part or to the implementation of actions taken pursuant to Section 10632. Nothing in this part shall be interpreted as exempting from the California Environmental Quality Act any project that would significantly affect water supplies for fish and wildlife, or any project for implementation of the plan, other than projects implementing Section 10632, or any project for expanded or additional water supplies.

10653. The adoption of a plan shall satisfy any requirements of state law, regulation, or order, including those of the State Water Resources Control Board and the Public Utilities Commission, for the preparation of water management plans or conservation plans; provided, that if the State Water Resources Control Board or the Public Utilities Commission requires additional information concerning water conservation to implement its existing authority, nothing in this part shall be deemed to limit the board or the commission in obtaining that information. The requirements of this part shall be satisfied by any urban water demand management plan prepared to meet federal laws or regulations after the effective date of this part, and which substantially meets the requirements of this part, or by any existing urban water management plan which includes the contents of a plan required under this part.
10654. An urban water supplier may recover in its rates the costs incurred in preparing its plan and implementing the reasonable water conservation measures included in the plan. Any best water management practice that is included in the plan that is identified in the "Memorandum of Understanding Regarding Urban Water Conservation in California" is deemed to be reasonable for the purposes of this section.
10655. If any provision of this part or the application thereof to any person or circumstances is held invalid, that invalidity shall not affect other provisions or applications of this part which can be given effect without the invalid provision or application thereof, and to this end the provisions of this part are severable.
10656. An urban water supplier that does not prepare, adopt, and submit its urban water management plan to the department in accordance with this part, is ineligible to receive funding pursuant to Division 24 (commencing with Section 78500) or Division 26 (commencing with Section 79000), or receive drought assistance from the state until the urban water management plan is submitted pursuant to this article.
10657. (a) The department shall take into consideration whether the urban water supplier has submitted an updated urban water management plan that is consistent with Section 10631, as amended by the act that adds this section, in determining whether the urban water supplier is eligible for funds made available pursuant to any program administered by the department.
(b) This section shall remain in effect only until January 1, 2006, and as of that date is repealed, unless a later enacted statute, that is enacted before January 1, 2006, deletes or extends that date.

Appendix B
Public Hearing Notice and Meeting Minutes

Notice of Public Hearing

In conformance with the California Urban Water Management Plan Act, Golden State Water Company (formerly Southern California Water Company) is hosting a public hearing on Tuesday, November 15, at 7:00 p.m. at the Sproul Reception Center (Barn), Norwalk Arts & Sports Complex, 12239 Sproul Street, Norwalk, to solicit comments on the Urban Water Management Plans (UWMP) for the following water systems: Artesia, Bell/Bell Gardens, Florence Graham, and Norwalk. The UWMPs are available for public review prior to the public hearing and can be reviewed during normal business hours at the Customer Service Offices, located at:

Central Basin East Customer Service Office
Golden State Water Company
11469 Rosecrans Avenue
Norwalk, CA 90650

Central Basin West Customer Service Office
Golden State Water Company
7105-D Eastern Avenue
Bell Gardens, CA 90201

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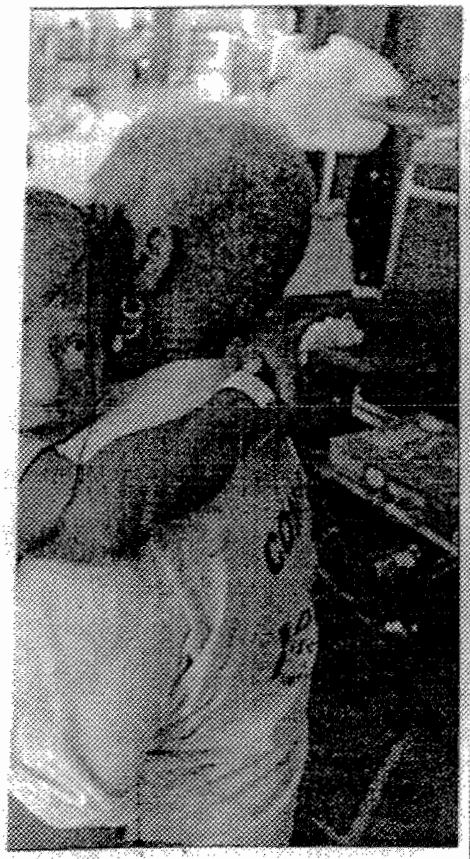

osa Angeletta evacuees from New Orleans, gh School in Bica Raton, Fla. They were stay- pproached. Lois O'Connor / The Palm Beach Post

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nature of the crimes. More charges were expected soon in three others.

William Arthur Gibson, 18, of Compton; Maurice Eugene Stewart, 18, of San Bernardino; and a 17-year-old Carson youth were charged with nine counts of robbery, with five of them alleging a gun was used. Prosecutors will ask that the 17-year-old be tried as an adult, Balo said.

Temple City

Thief takes girl's prosthetic leg

A thief walked off with 16-year-old Melissa Huff's prosthetic leg.

The Arcadia High School sophomore's prosthetic leg was taken from the family home at about 1:30 p.m. Tuesday, her father David Huff said. School fund-raising scrip worth about $1,500, video games and other items were also taken.

"It's not something you can just sell on the street. Something like that, it's just cruel," said Los Angeles County sheriff's Sgt. Tim Phillips.

Melissa's right leg had to be amputated below the knee two years ago after she was struck by a car.

The stolen prosthesis is a special shock-absorbent "sports leg" with a flexible foot that allows Melissa to play softball. She has other prosthetic legs, including the one she was wearing the day of the burglary.

Marder and staff photographer Stephen Carr will appear on cable television's "Straight Talk with Art Levine" today to discuss their recent series on methamphetamine abuse in the Long Beach area.

The Press-Telegram series, which ran in August, focused on recovery efforts.

The program airs on Charter Cable Channel 3 in Long Beach at 6:30 p.m. today and on Channel 18 at noon, 4, 7 and 10 p.m.

For broadcast times in other cities or to view the program on the Internet, visit **www.straighttalk-tv.com**.

Nov 3

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No Meeting Minutes were taken since there was no attendance by the public.

Appendix C
Public Comments on the Draft UWMP

No Public Comments received during Public Review Period.

Appendix D
Economic Analysis of Selected Demand Management Measures

Region II Customer Service Area
Table D-1. Assumptions Used for Economic Analysis

BMP 1 – Water Survey Programs for Single-Family Residential and Multi-Family Residential Customers

Assumptions:

1. Survey 15% of single- and multi-family units within 10 years of the date implementation is to commence. Surveys will be conducted according to the following schedule: 1.5% by end of the first reporting period, 3.6% by end of second reporting period, 6.3% by end of third reporting period, 9.6% by end of fourth reporting period, and 15% by end of the fifth reporting period.

MOU, page 16 and page 17 Section E.d.

2. Single-family outdoor water usage = 132 gpd/unit

Single-family water usage was estimated by analyzing 12 months of billing data. The monthly indoor water use is assumed to be equivalent to 60 percent of average monthly water use. Outdoor water is calculated as the difference between annual total use and the assumed annual indoor water use.

3. Multi-family outdoor water usage = 108 gpd/unit

Multi-family water usage was estimated by analyzing 12 months of billing data. The monthly indoor water use is assumed to be equivalent to 70 percent of average monthly water use.

4. Water savings from indoor leak detection, not including toilet leaks = 4.1 gpd per residence

A & N Technical Services report (2003, page 2-38) (12.4 gpd per household repair; 33 percent of households audited have leaks – based on data from GSWC indoor leak detection program).

5. Water surveys decrease outdoor water use by 15%

MOU estimate is 10% (page 18).

6. Each water survey costs $35.

The estimate includes marketing, contract labor, GSWC labor, overhead and materials. It is assumed that this BMP is done in conjunction with BMP2.

7. The life span of a water survey is four years.

A & N Technical Services report (2003, page 2-38) gives life spans for various components of a water survey. Four years selected as a reasonable average value..

8. Water savings from indoor plumbing retrofits are tracked under BMP 2. Only water savings from decrease in outdoor water use and water savings from indoor leak detection are tracked in BMP 1 to avoid double counting of water savings.

9. Energy Savings of $22 per AC-FT of water conserved.

Based on GSWC data.

Region II Customer Service Area
Table D-1. Assumptions Used for Economic Analysis

BMP 2 – Residential Plumbing Retrofit

Assumptions:

1. Plumbing retrofit devices will be installed at a minimum of 10% of residences per reporting period until it can be demonstrated that 75% of pre-1992 single-family residences and 75% of pre-1992 multi-family residences have low flow showerheads (LFSHs).

MOU, page 19.

2. 27% of single-family and 27% of multi-family residences have low-water-use fixtures.

Based on GSWC data

3. Average number of fixtures per residence includes: 1.4 showers, 2.0 toilets, and 3.6 faucets (1 kitchen faucet and 2.6 other faucets).
4. Water savings from one low-flow showerhead = 5.5 gpd

A & N Technical Services report (2003, page 2-38).

5. Water savings from one faucet aerator = 1.5 gpd

A & N Technical Services report (2003, page 2-38).

6. Water savings from one toilet flapper = 8 gpd; assume 20 percent of toilets leak.

A & N Technical Services report (2003, page 2-38).

7. Water savings from kitchen "flip" faucet aerator = 3.0 gpd.

Based on GSWC data.

8. Indoor water savings = 17.8 gpd/unit

We used the following equation to calculate indoor water savings, based on assumptions 4 through 8:

$$(1.4*5.5) + (1.0*3.0) + (2.6*1.5) + (2.0*8*0.20).$$

9. The BMP will cost an average of $48 per residence.

Based on information provided by GSWC.

10. The life span of the retrofit devices is four years.

A & N Technical Services report (2003, page 2-38) gives life spans for a various components of a water survey. Four years selected as a reasonable average value.

11. Base year dwelling units include 73,225 single-family and 56,616 multi-family units

Region II Customer Service Area
Table D-1. Assumptions Used for Economic Analysis

BMP 5 – Large Landscape Conservation Programs and Incentives

Assumptions:

1. Develop Eto-based water use budgets for 90 percent of the CII accounts with dedicated irrigation meters and provide irrigation water use surveys to15 percent of CII accounts with mixed use meters.

MOU (Page 28)

2. Base year values include 504 dedicated landscape and 6,621 CII mixed use accounts

Based on GSWC account summary data.

3. Dedicated landscape accounts are an average size of 1.7 acres

4. CII mixed use account landscape areas are assumed to be an average of 0.1 acre in size

5. Water use prior to the survey is 4.9 ft per year.

Irrigation allocation is equal to 100 percent of local evapotranspiration (ETo), and the MOU estimates that surveys will reduce water usage by 15 percent. Based on California Irrigation Management Information System data.

6. Surveys will reduce water usage by 15%.

MOU, page 30.

7. The life span of the large landscape water surveys is four years.

A & N Technical Services report (2003) gives a life span of four years for turf audits (page 2-34). Water

surveys for large landscapes are assumed to have a similar life span.

8. Each survey will cost $425 per acre. Minimum cost is $150 per account.

The estimate includes labor, administration, evaluation and overhead.

Region II Customer Service Area
Table D-1. Assumptions Used for Economic Analysis

BMP 9 – Conservation Programs for Commercial, Industrial, and Institutional (CII) Accounts

Assumptions:

1. Provide water-use surveys to10% of CII accounts within 10 years of the date implementation is to commence. *MOU, pages 43 and 44.*

2. The life span of a water survey is four years.

The life span for a CII water survey is the same as the life span for a residential survey.

3. The average annual water savings resulting from a commercial and institutional water survey is 0.83 acre-feet per account.

A & N Technical Services report (2003, page 2-51) gives average annual water savings for three types of surveys; “analyst surveys”, “consultant surveys” and “water efficiency studies”. Analyst surveys are conducted by non-engineers, consultant surveys are conducted by engineers for sites that have process water, and water efficiency studies are conducted at major industrial facilities that use very large quantities of water. For purposes of this economic analysis, only analyst surveys will be conducted for commercial and institutional account surveys. Values for water savings in the A & N report represent the maximum potential water savings that could occur if a customer were to implement every possible water conservation measure. Only 25% of the maximum potential water savings is assumed to be realized.

4. The average annual water savings resulting from an industrial water survey is 1.9 acre-feet per account.

For purposes of this economic analysis, consultant surveys will be conducted for industrial account surveys. Values for water savings in the A & N 2003 report represent the maximum potential water savings that could occur if a customer were to implement every possible water conservation measure. Only 25% of the maximum potential water savings is assumed to be realized.

5. Each analyst survey (for commercial and institutional accounts) will cost an average of $600 and each consultant survey (for industrial accounts) will cost an average of $1,500.

A & N Technical Services report (2003, page 2-53).

Region II Customer Service Area
Table D-1. Assumptions Used for Economic Analysis

BMP 14 – Residential ULFT Replacement Programs
Assumptions: *1.* Water savings from ULFTs are 40.8 gpd/unit for single-family residences and 54.3 gpd/unit for multi-family residences *MOU, Exhibit 6, Table 1 and Table 2.* 2. Homes constructed after 1991 already have ULFTs. As of January 1992, California legislation requires that ULFTs be installed in all newly constructed homes. 3. Natural toilet replacement rate is 4% per year. MOU, page 79. 4. The cost of toilets, advertising, administration, overhead, and toilet recycling is $79 per ULFT. The cost does not include installation, which will be covered by the customer. Based on GSWC cost data.

Table D-2 Region II Customer Service Area
BMP 1. Water Survey Programs for Single-Family and Multi-Family Customers

	Water Saving Calculations								Benefits ($)					Costs ($)					
Calendar Year	Single Family Intervention	Multi-Family Intervention	Percent Units Surveyed	Single-Family Outdoor Savings (ac-ft/yr)	Multi-Family Outdoor Savings (ac-ft/yr)	Total Outdoor Savings (ac-ft/yr)	Total Intdoor Savings (ac-ft/yr)	Annual Water Savings	Avoided Capital Costs	Avoided Variable Costs	Avoided Purchase Costs	Total Undiscounted Benefits	Total Discounted Benefits	Capital Costs	Financial Incentives	Operating Expenses	Total Undiscounted Costs	Total Discounted Costs	New present Value
Pre 2005	10,960	0	8.1%					0.0											
2006	326	4,373	3.5%	7.2	79.34	86.6	21.6	108.1	$0	$2,379	$59,039	$61,418	$61,418	$0	$0	$164,440	$164,440	$164,440	-$103,022
2007	326	4,373	3.5%	7.2	79.34	86.6	21.6	216.3	$0	$4,758	$118,079	$122,836	$115,112	$0	$0	$164,440	$164,440	$154,100	-$38,988
2008								216.3	$0	$4,758	$118,079	$122,836	$107,874	$0					$107,874
2009								216.3	$0	$4,758	$118,079	$122,836	$101,091	$0					$101,091
2010								108.1	$0	$2,379	$59,039	$61,418	$47,367	$0					$47,367
2011																			
2012																			
2013																			
2014																			
2015																			
2016																			
2017																			
2018																			
2019																			
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2021																			
2022																			
2023																			
2024																			
2025																			
2026																			
2027																			
2028																			
2029																			
2030																			
Totals	11,612	8,745	15%	14	159	173	43	865	$0	$19,031	$472,314	$491,345	$432,862	$0	$0	$328,880	$328,880	$318,540	$114,322

Credit Table for Previously Performed Surveys

Year	Single Family Units Surveyed	Multi-Family Units Surveyed	% Credit	Single Family Credits	Multi-Family Credits
Pre-1990			0.0%	0	0
1990			12.5%	0	0
1991			25.0%	0	0
1992			37.5%	0	0
1993			50.0%	0	0
1994			62.5%	0	0
1995			75.0%	0	0
1996	2389		87.5%	2090	0
1997			100.0%	0	0
1998-2004	8870	0	100.0%	8870	0
Total	11259	0		10960	0

Value of conserved water ($/ac-ft) =	546
Discount rate (real) =	6.71%
Indoor water savings (gpd/unit) =	4.1
Outdoor water savings =	15%
Single family outdoor water usage (gpd/unit) =	132
Multi-family outdoor water usage (gpd/unit) =	108
Conservation measure unit cost ($) =	35
1997 Single family units =	77,410
1997 Multi-family units =	58,303
Life span of water survey (years) =	4
Energy savings ($/ac-ft) =	22

Benefit cost ratio =	1.4
Simple pay-back period (years) =	4
Discounted cost/water saved ($acre-feet) =	368
NPV/ water saved (acre-feet) =	132

Table D-2 Region II Customer Service Area
BMP 2. Residential Plumbing Retrofit

	Water Saving Calculations						Benefits ($)					Costs ($)					
Calendar Year	Single-Family Intervention	Multi-Family Intervention	Percent Units Surveyed Single-Family	Percent Units Surveyed Multi-Family	Incremental Water Savings (ac-ft/yr)	Annual Water Savings	Avoided Capital Costs	Avoided Variable Costs	Avoided Purchase Costs	Total Undiscounted Benefits	Total Discounted Benefits	Capital Costs	Financial Incentives	Operating Expenses	Total Undiscounted Costs	Total Discounted Costs	New present Value
Pre 2005			27%	27%													
2006	3661	2831	5.0%	5.0%	129.4	129.4	$0	$2,847	$70,665	$73,512	$73,512	$0	$0	$311,618	$311,618	$311,618	-$238,106
2007	3661	2831	5.0%	5.0%	129.4	258.8	$0	$5,695	$141,330	$147,024	$137,779	$0	$0	$311,618	$311,618	$292,024	-$154,244
2008	3661	2831	5.0%	5.0%	129.4	388.3	$0	$8,542	$211,994	$220,536	$193,673	$0	$0	$311,618	$311,618	$273,661	-$79,988
2009	3661	2831	5.0%	5.0%	129.4	517.7	$0	$11,389	$282,659	$294,048	$241,993	$0	$0	$311,618	$311,618	$256,453	-$14,460
2010	3661	2831	5.0%	5.0%	129.4	517.7	$0	$11,389	$282,659	$294,048	$226,777	$0	$0	$311,618	$311,618	$240,327	-$13,550
2011	3661	2831	5.0%	5.0%	129.4	517.7	$0	$11,389	$282,659	$294,048	$212,517	$0	$0	$311,618	$311,618	$225,215	-$12,698
2012	3661	2831	5.0%	5.0%	129.4	517.7	$0	$11,389	$282,659	$294,048	$199,154	$0	$0	$311,618	$311,618	$211,053	-$11,900
2013	3661	2831	5.0%	5.0%	129.4	517.7	$0	$11,389	$282,659	$294,048	$186,631	$0	$0	$311,618	$311,618	$197,782	-$11,152
2014	3661	2831	5.0%	5.0%	129.4	517.7	$0	$11,389	$282,659	$294,048	$174,895	$0	$0	$311,618	$311,618	$185,346	-$10,450
2015	2197	1698	3.0%	3.0%	77.7	465.9	$0	$10,250	$254,393	$264,643	$147,508	$0	$0	$186,971	$186,971	$104,215	$43,293
2016						336.5	$0	$7,403	$183,728	$191,131	$99,835	$0	$0	$0	$0	$0	$99,835
2017						207.1	$0	$4,556	$113,064	$117,619	$57,573	$0	$0	$0	$0	$0	$57,573
2018						77.7	$0	$1,708	$42,399	$44,107	$20,232	$0	$0	$0	$0	$0	$20,232
2019																	
2020																	
2021																	
2022																	
2023																	
2024																	
2025																	
2026																	
2027																	
2028																	
2029																	
2030																	
Totals	35148	27176	75%	75%	1,242	4,970	$0	$109,336	$2,713,528	$2,822,864	$1,972,079	$0	$0	$2,991,537	$2,991,537	$2,297,694	-$325,615

Percent of Residences Having Low-Water-Use Fixtures		
Year	Single-Family	Multi-Family
Pre-2005	27%	27%
Annual Replacement		
2006	5%	5%
2007	5%	5%
2008	5%	5%
2009	5%	5%
2010	5%	5%
2011	5%	5%
2012	5%	5%
2013	5%	5%
2014	5%	5%
2015	3%	3%
2016	0%	0%

Value of conserved water ($/ac-ft) =	546
Discount rate (real) =	6.71%
Water savings (gpd/unit) =	17.8
Conservation measure unit cost ($) =	48
Percent units receiving retrofits =	5%
1991 Single family units =	73,225
1991 Multi-family units =	56,616
Life span of retrofit devices (years) =	4
Energy savings ($/ac-ft) =	22

Benefit cost ratio =	0.9
Simple pay-back period (years) =	15
Discounted cost/water saved ($acre-feet) =	462
NPV/ water saved (acre-feet) =	-66

Table D-2 Region II Customer Service Area
BMP 3. System Water Audits, Leak Detection, and Repair

	Water Savings		Benefits ($)					Costs ($)					
Calendar Year	Length of Pipe Surveyed (miles)	Annual Water Savings	Avoided Capital Costs	Avoided Variable Costs	Avoided Purchase Costs	Total Undiscounted Benefits	Total Discounted Benefits	Capital Costs	Financial Incentives	Operating Expenses	Total Undiscounted Costs	Total Discounted Costs	New present Value
Pre 1998													
2006	32.3	19.4	$0	$1,628	$10,581	$12,209	$12,209	$0	$0	$32,300	$32,300	$32,300	-$20,091
2007	32.3	38.8	$0	$3,256	$21,163	$24,419	$22,883	$0	$0	$32,300	$32,300	$30,269	-$7,386
2008	32.3	58.1	$0	$4,884	$31,744	$36,628	$32,167	$0	$0	$32,300	$32,300	$28,366	$3,801
2009	32.3	77.5	$0	$6,512	$42,326	$48,838	$40,192	$0	$0	$32,300	$32,300	$26,582	$13,610
2010	32.3	96.9	$0	$8,140	$52,907	$61,047	$47,081	$0	$0	$32,300	$32,300	$24,910	$22,170
2011	32.3	96.9	$0	$8,140	$52,907	$61,047	$44,120	$0	$0	$32,300	$32,300	$23,344	$20,776
2012	32.3	96.9	$0	$8,140	$52,907	$61,047	$41,346	$0	$0	$32,300	$32,300	$21,876	$19,470
2013	32.3	96.9	$0	$8,140	$52,907	$61,047	$38,746	$0	$0	$32,300	$32,300	$20,501	$18,246
2014	32.3	96.9	$0	$8,140	$52,907	$61,047	$36,310	$0	$0	$32,300	$32,300	$19,212	$17,098
2015	32.3	96.9	$0	$8,140	$52,907	$61,047	$34,027	$0	$0	$32,300	$32,300	$18,003	$16,023
2016	32.3	96.9	$0	$8,140	$52,907	$61,047	$31,887	$0	$0	$32,300	$32,300	$16,871	$15,016
2017	32.3	96.9	$0	$8,140	$52,907	$61,047	$29,882	$0	$0	$32,300	$32,300	$15,811	$14,071
2018	32.3	96.9	$0	$8,140	$52,907	$61,047	$28,003	$0	$0	$32,300	$32,300	$14,816	$13,187
2019	32.3	96.9	$0	$8,140	$52,907	$61,047	$26,242	$0	$0	$32,300	$32,300	$13,885	$12,357
2020	32.3	96.9	$0	$8,140	$52,907	$61,047	$24,592	$0	$0	$32,300	$32,300	$13,012	$11,580
2021	32.3	96.9	$0	$8,140	$52,907	$61,047	$23,046	$0	$0	$32,300	$32,300	$12,193	$10,852
2022	32.3	96.9	$0	$8,140	$52,907	$61,047	$21,596	$0	$0	$32,300	$32,300	$11,427	$10,170
2023	32.3	96.9	$0	$8,140	$52,907	$61,047	$20,238	$0	$0	$32,300	$32,300	$10,708	$9,530
2024	32.3	96.9	$0	$8,140	$52,907	$61,047	$18,966	$0	$0	$32,300	$32,300	$10,035	$8,931
2025	32.3	96.9	$0	$8,140	$52,907	$61,047	$17,773	$0	$0	$32,300	$32,300	$9,404	$8,369
2026	32.3	96.9	$0	$8,140	$52,907	$61,047	$16,656	$0	$0	$32,300	$32,300	$8,813	$7,843
2027	32.3	96.9	$0	$8,140	$52,907	$61,047	$15,608	$0	$0	$32,300	$32,300	$8,258	$7,350
2028	32.3	96.9	$0	$8,140	$52,907	$61,047	$14,627	$0	$0	$32,300	$32,300	$7,739	$6,888
2029	32.3	96.9	$0	$8,140	$52,907	$61,047	$13,707	$0	$0	$32,300	$32,300	$7,252	$6,455
2030	32.3	96.9	$0	$8,140	$52,907	$61,047	$12,845	$0	$0	$32,300	$32,300	$6,796	$6,049
Totals	808	2,229	$0	$187,211	$1,216,870	$1,404,081	$664,749	$0	$0	$807,500	$807,500	$412,383	$252,366

Value of conserved water ($/ac-ft) =	546
Discount rate (real) =	6.71%
Annual water savings (ac-ft/mile) =	0.6
Conservation measue unit cost ($) =	1000
Percent of pipe surveyed =	20%
Total length of pipe in system (miles) =	161.5
Life span of leak repairs (years) =	5
Energy savings ($/ac-ft) =	84

Benefit cost ratio =	1.6
Simple pay-back period (years) =	8
Discounted cost/water saved ($acre-feet) =	185
NPV/ water saved (acre-feet) =	113

Table D-2 Region II Customer Service Area
BMP 5. Large Landscape Conservation Programs and Incentives

	Water Saving Calculations						Benefits					Costs					
Calendar Year	CII Accounts w/Dedicated Irr. Meters Interventions	CII Accounts w/Mixed Use Meters Offered Surveys	CII Accounts w/Mixed Use Meters % Surveyed	CII Accounts w/Mixed Use Meters Interventions	Incremental Water Savings (ac-ft/Yr)	Cumulative Water Savings (ac-ft/Yr)	Avoided Capital Costs	Avoided Variable Costs	Avoided Purchase Costs	Total Undiscounted Benefits	Total Discounted Benefits	Capital Costs	Financial Incentives	Operating Expenses	Total Undiscounted Costs	Total Discounted Costs	Net Present Value
		153	2.31%	1													
2005	0	0	0.00%	0	0	0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
2006	227	662	3.64%	241	301	301	$0	$6,625	$164,413	$171,038	$160,283	$0	$0	$200,059	$200,059	$187,479	-$27,197
2007	227	662	3.64%	241	301	602	$0	$13,249	$328,826	$342,075	$300,408	$0	$0	$200,059	$200,059	$175,691	$124,718
2008	0	662	1.95%	129	9	612	$0	$13,458	$334,007	$347,465	$285,954	$0	$0	$19,366	$19,366	$15,938	$270,016
2009	0	662	1.95%	129	9	621	$0	$13,667	$339,189	$352,856	$272,130	$0	$0	$19,366	$19,366	$14,936	$257,194
2010		662	0.75%	50	4	324	$0	$7,123	$176,768	$183,891	$132,903	$0	$0	$7,449	$7,449	$5,383	$127,520
2011		662	0.75%	50	4	26	$0	$578	$14,348	$14,926	$10,109	$0	$0	$7,449	$7,449	$5,045	$5,065
2012		662	0.00%	0	0	17	$0	$369	$9,167	$9,536	$6,053	$0	$0	$0	$0	$0	$6,053
2013		662	0.00%	0	0	7	$0	$161	$3,986	$4,146	$2,466	$0	$0	$0	$0	$0	$2,466
2014		662	0.00%	0	0	4	$0	$80	$1,993	$2,073	$1,156	$0	$0	$0	$0	$0	$1,156
2015																	
2016																	
2017																	
2018																	
2019																	
2020																	
2021																	
2022																	
2023																	
2024																	
2025																	
2026																	
2027																	
2028																	
2029																	
2030																	
Totals:	454	6112	15%	841	629	2514	$0	$55,310	$1,372,697	$1,428,007	$1,171,462	$0	$0	$453,749	$453,749	$404,472	$766,990

Credit Table for Prevoiusly Performed Surveys

Year	# of Surveys	% Credit	Credits
Prior to 7/1/96 with follow up inspection		100%	0
Prior to 7/1/96 without follow up inspection		50%	0
After 7/1/96	153	100%	153
TOTAL			153

Value of Conserved Water ($/ac-ft) =	$546
Discount Rate (Real) =	6.71%
Acres/CII accounts with dedicated irrigation meters =	1.7
Acres/CII accounts with mixed use meters =	0.1
Annual water use (ac-ft/acre) =	4.9
Water Savings =	15%
Conservation Measure Unit Cost ($/Acre) =	$425
Minimum Conservation Measure Unit Cost ($/Account) =	$150
Number of CII accounts with dedicated irrigation meters in 1997 =	504
Number of CII accounts with mixed use meters in 1997 =	6621
Lifespan of Benefit (Years) =	4
Energy savings ($/ac-ft) =	22

Benefit Cost Ratio:	2.9
Simple Pay-Back Period (years):	3.1
Discounted Cost / Water Saved ($/ac-ft):	$161
NPV / Water Saved ($/ac-ft):	$305

Table D-2 Region II Customer Service Area
BMP 9. Conservation Programs for Commercial, Industrial, and Institutional (CII) Accounts

							Benefits ($)					Costs ($)					
Calendar Year	Percent Surveyed	Commercial Interventions	Industrial Interventions	Institutional Interventions	Incremental Savings (Surveys) (ac-ft/yr)	Annual Savings Total (ac-ft/yr)	Avoided Capital Costs	Avoided Variable Costs	Avoided Purchase Costs	Total Undiscounted Benefits	Total Discounted Benefits	Capital Costs	Financial Incentives	Operating Expenses	Total Undiscounted Costs	Total Discounted Costs	Net Present Value
Pre 1998		4	3	4													
2006	5.00%	158.4	111.75	55.4	412.1	412.1	$0	$9,067	$225,022	$234,089	$234,089	$0	$0	$295,905	$295,905	$295,905	-$61,816
2007	5.00%	158.4	111.75	55.4	412.1	824.3	$0	$18,134	$450,045	$468,179	$438,739	$0	$0	$295,905	$295,905	$277,298	$161,441
2008						824.3	$0	$18,134	$450,045	$468,179	$411,151	$0	$0	$0	$0	$0	$411,151
2009						824.3	$0	$18,134	$450,045	$468,179	$385,297	$0	$0	$0	$0	$0	$385,297
2010						412.1	$0	$9,067	$225,022	$234,089	$180,535	$0	$0	$0	$0	$0	$180,535
2011																	
2012																	
2013																	
2014																	
2015																	
2016																	
2017																	
2018																	
2019																	
2020																	
2021																	
2022																	
2023																	
2024																	
2025																	
2026																	
2027																	
2028																	
2029																	
2030																	
Totals	10%	321	227	115	824	3,297	$0	$72,535	$1,800,179	$1,872,714	$1,649,812	$0	$0	$591,810	$591,810	$573,203	$1,076,608

Credit for Previously Completed Surveys

	Commercial	Industrial	Institutional
Total	4	3	4

Value of conserved water ($/ac-ft) =	546
Discount rate (real) =	6.71%
Annual survey - Annual water savings (ac-ft/unit) =	0.83
Annual survey - Conservation measure unit cost ($) =	600
Consultant survey - Annual water savings (ac-ft/unit) =	2.1
Consultant survey - Conservation measure unit cost ($) =	1,500
Number of commrcial accounts in 1997 =	3,208
Number of industrial accounts in 1997 =	2,265
Number of institutional accounts in 1997 =	1,148
Percent units surveyed =	10%
Life span of water survey (years) =	4
Energy savings ($/ac-ft) =	22

Benefit cost ratio =	2.88
Simple pay-back period (years) =	2
Discounted cost/water saved ($acre-feet) =	174
NPV/ water saved (acre-feet) =	327

Table D-2 Region II Customer Service Area
BMP 14. Residential ULFT Replacement Programs (page 1 of 3)

	Determination of Water Conservation Goal: Single-Family Units										
Calendar Year	Single-Family Units	SF Units Naturally Retrofited	SF Toilets Naturally Retrofited	Water Savings from Natural Replacement SF (ac-ft/yr)	Single-Family Units	Single-Family Retrofitted	Single-Family Turnover	Combined SF Homes Retrofitted	Combined SF Toilets Retrofitted	Water Savings from Natural Replacement and Turnover SF (ac-ft/yr)	Water Savings from Natural Turnover SF (ac-ft/yr)
1998	67569	0	0	0	67569	0	0	0	0	0	0
1999	64867	2703	5135	124	61826	2703	3,041	5743	10,912	262.4	139
2000	62272	2595	4930	119	56571	2473	2,782	5255	9,985	240.1	122
2001	59781	2491	4733	114	51762	2263	2,546	4809	9,136	219.7	106
2002	57390	2391	4543	109	47362	2070	2,329	4400	8,360	201.0	92
2003	55094	2296	4362	105	43337	1894	2,131	4026	7,649	184.0	79
2004	52890	2204	4187	101	39653	1733	1,950	3684	6,999	168.3	68
2005	50775	2116	4020	97	36283	1586	1,784	3371	6,404	154.0	57
2006	48744	2031	3859	93	33199	1451	1,633	3084	5,860	140.9	48
2007	46794	1950	3705	89	30377	1328	1,494	2822	5,362	128.9	40
2008	44922	1872	3556	86	27795	1215	1,367	2582	4,906	118.0	32
2009	43125	1797	3414	82	25432	1112	1,251	2363	4,489	108.0	26
2010	41400	1725	3278	79	23270	1017	1,144	2162	4,107	98.8	20
2011	39744	1656	3146	76	21292	931	1,047	1978	3,758	90.4	15
2012	38155	1590	3021	73	19483	852	958	1810	3,439	82.7	10
2013	36628	1526	2900	70	17827	779	877	1656	3,146	75.7	6
2014	35163	1465	2784	67	16311	713	802	1515	2,879	69.2	2
2015	33757	1407	2672	64	14925	652	734	1386	2,634	63.4	0
2016	32407	1350	2566	62	13656	597	672	1269	2,410	58.0	0
2017	31110	1296	2463	59	12495	546	615	1161	2,205	53.0	0
2018	29866	1244	2364	57	11433	500	562	1062	2,018	48.5	0
2019	28671	1195	2270	55	10461	457	514	972	1,846	44.4	0
Totals		38,898	73,907	1,777		26,874		57,108	108,505	2,610	861

Credit Table for Previously Installed ULFT				
Year	Single Family	Multi-family	Incremental Total Water Savings (ac-ft/Yr)	Cumulative Total Water Savings (ac-ft/Yr)
1991	439	1283	63	63
1992	439	1283	63	125
1993	439	1283	63	188
1994	439	1283	63	250
1995				250
1996				250
1997				250
1998				250
1999	7030	4103	335	586
2000	7378	471	197	782
2001	2472	94	63	846
2002			0	846
2003			0	846
2004			0	846
Total	18636	9800	846	6378

Table D-2 Region II Customer Service Area
BMP 14. Residential ULFT Replacement Program (page 2 of 3)

	Determination of Water Conservation Goal: Multi-Family Units											Conservation Goal - Combined	
Calendar Year	Multi-Family Units	MF Units Naturally Retrofited	MF Toilets Naturally Retrofited	Water Savings from Natural Replacement MF (ac-ft/yr)	Multi-Family Units	MF Units Naturally Retrofited	Multi-Family Turnover	Combined MF Homes Retrofitted	Combined MF Toilets Retrofitted	Water Savings from Natural Replacement and Turnover	Water Savings from Natural Turnover MF (ac-ft/yr)	Annual Water Savings fromTurnover (ac-ft/yr)	Cummulative Water Savings fromTurnover (ac-ft/yr)
1998	42544	0	0	0	42544	0	0	0	0	0	0	0	0
1999	40842	1702	2553	103	37013	1702	3,829	5531	8,296	336.3	233	372	372
2000	39209	1634	2451	99	32202	1481	3,331	4812	7,218	292.6	193	687	1058
2001	37640	1568	2353	95	28015	1288	2,898	4186	6,279	254.6	159	952	2010
2002	36135	1506	2258	92	24373	1121	2,521	3642	5,463	221.5	130	1173	3184
2003	34689	1445	2168	88	21205	975	2,194	3169	4,753	192.7	105	1357	4541
2004	33302	1388	2081	84	18448	848	1,908	2757	4,135	167.6	83	1508	6049
2005	31970	1332	1998	81	16050	738	1,660	2398	3,597	145.8	65	1630	7680
2006	30691	1279	1918	78	13963	642	1,444	2086	3,130	126.9	49	1728	9407
2007	29463	1228	1841	75	12148	559	1,257	1815	2,723	110.4	36	1803	11210
2008	28285	1179	1768	72	10569	486	1,093	1579	2,369	96.0	24	1860	13070
2009	27153	1131	1697	69	9195	423	951	1374	2,061	83.6	15	1901	14971
2010	26067	1086	1629	66	8000	368	828	1195	1,793	72.7	7	1927	16898
2011	25024	1043	1564	63	6960	320	720	1040	1,560	63.2	0	1942	18840
2012	24023	1001	1501	61	6055	278	626	905	1,357	55.0	0	1952	20792
2013	23062	961	1441	58	5268	242	545	787	1,181	47.9	0	1958	22750
2014	22140	922	1384	56	4583	211	474	685	1,027	41.6	0	1960	24710
2015	21254	886	1328	54	3987	183	412	596	894	36.2	0	1960	26670
2016	20404	850	1275	52	3469	159	359	518	777	31.5	0	1960	28631
2017	19588	816	1224	50	3018	139	312	451	676	27.4	0	1960	30591
2018	18805	784	1175	48	2626	121	272	392	588	23.9	0	1960	32551
2019	18052	752	1128	46	2284	105	236	341	512	20.8	0	1960	34511
Totals	630,342	24492	36737	1489.4		12,388		40,260	60,390	2,448	1,098.8	34,511	330,498

Table D-2 Region II Customer Service Area
BMP 14. Residential ULFT Replacement Programs (page 3 of 3)

	Water Savings							Benefits ($)					Costs ($)					
Calendar Year	No. of SF Toilets Required to be Replaced	Incremental Water Savings SF (ac-ft/yr)	No. of MF Toilets Required to be Replaced	Incremental Water Savings (ac-ft/yr)	Annual Water Savings (ac-ft/yr)	Incremental Total Water Savings (ac-ft/Yr)	Cumulative Total Water Savings (ac-ft/Yr)	Avoided Capital Costs	Avoided Variable Costs	Avoided Purchase Costs	Total Undiscounted Benefits	Total Discounted Benefits	Capital Costs	Financial Incentives	Operating Expenses	Total Undiscounted Costs	Total Discounted Costs	Net Present Value
Pre 2005	18636	448	9800	397	846	846	6378	0	140,324	3,482,598	3,622,923	3,622,923	0	0	2,246,444	2,246,444	2,246,444	1,376,479
2005	8295	200	4148	168	1213	1213	7592	0	26,695	662,513	689,208	689,208	0	0	982,958	982,958	982,958	-293,750
2006	8295	200	4148	168	1581	1581	9173	0	34,784	863,272	898,056	841,586	0	0	982,958	982,958	921,148	-79,563
2007	8295	200	4148	168	1949	1949	11122	0	42,873	1,064,032	1,106,905	972,075	0	0	982,958	982,958	863,226	108,849
2008						1949	13070	0	42,873	1,064,032	1,106,905	910,951	0	0	0	0	0	910,951
2009						1949	15019	0	42,873	1,064,032	1,106,905	853,669	0	0	0	0	0	853,669
2010						1949	16968	0	42,873	1,064,032	1,106,905	799,990	0	0	0	0	0	799,990
2011						1949	18917		42,873	1,064,032	1,106,905	749,686	0	0	0	0	0	749,686
2012						1949	20866		42,873	1,064,032	1,106,905	702,545	0	0	0	0	0	702,545
2013						1949	22814		42,873	1,064,032	1,106,905	658,369	0	0	0	0	0	658,369
2014						1949	24763		42,873	1,064,032	1,106,905	616,970	0	0	0	0	0	616,970
2015						1949	26712		42,873	1,064,032	1,106,905	578,175	0	0	0	0	0	578,175
2016						1949	28661		42,873	1,064,032	1,106,905	541,819	0	0	0	0	0	541,819
2017						1949	30609		42,873	1,064,032	1,106,905	507,749	0	0	0	0	0	507,749
2018						1949	32558		42,873	1,064,032	1,106,905	475,821	0	0	0	0	0	475,821
2019						1949	34507		42,873	1,064,032	1,106,905	445,901	0	0	0	0	0	445,901
2020						1949	36456		42,873	1,064,032	1,106,905	417,862	0	0	0	0	0	417,862
2021						1949	38404		42,873	1,064,032	1,106,905	391,587	0	0	0	0	0	391,587
2022						1949	40353		42,873	1,064,032	1,106,905	366,964	0	0	0	0	0	366,964
2023						1949	42302		42,873	1,064,032	1,106,905	343,889	0	0	0	0	0	343,889
2024						1949	44251		42,873	1,064,032	1,106,905	322,265	0	0	0	0	0	322,265
2025						1949	46200		42,873	1,064,032	1,106,905	302,001	0	0	0	0	0	302,001
2026						1949	48148		42,873	1,064,032	1,106,905	283,011	0	0	0	0	0	283,011
2027						1949	50097		42,873	1,064,032	1,106,905	265,215	0	0	0	0	0	265,215
2028						1949	52046		42,873	1,064,032	1,106,905	248,538	0	0	0	0	0	248,538
2029						1949	53995		42,873	1,064,032	1,106,905	232,910	0	0	0	0	0	232,910
2030						1949	55943		42,873	1,064,032	1,106,905	218,264	0	0	0	0	0	218,264
Totals	0.0	0		0.0	5589.0	50,411		0	1,230,757	30,545,141	31,775,897	17,359,940	0	0	5,195,317	5,195,317	5,013,776	12,346,164

Value of conserved water ($/ac-ft) =	546
Discount rate (real) =	6.71%
Natural toilet replacement rate =	4%
Annual single-family housing turnover rate =	4.5%
Annual multi-family housing turnover rate =	9.0%
Water savings due to toilet replacement at SF homes (gal/dwelling unit/day =	40.8
Water savings due to toilet replacement at MF homes (gal/dwelling unit/day =	54.3
Number of toilets per SF home =	1.9
Number of toilets per MF home =	1.5
Cost of conservation measure =	79
1991 single-family units =	89,919
1991 multi-family units =	56,616
Energy savings ($/ac-ft) =	22

Benefit cost ratio =	3.5
Simple pay-back period (years) =	9
Discounted cost/water saved ($acre-feet) =	99
NPV/ water saved (acre-feet) =	245

Table D-3 Definitions of Terms Used in the Economic Analysis

Term	Definition	Comments
Benefits:		
Avoided Capital Costs	Capital costs that are avoided by implementing the BMP	Example is the cost of a well that would not have to be installed due to implementation of the BMP.
Avoided Variable Costs	Variable costs that are avoided by implementing the BMP.	Example is the cost of electricity that would be saved if the BMP were implemented.
Avoided Purchase Costs	Purchase costs that are avoided by implementing the BMP.	Example is the cost of purchasing water that would not be required due to implementation of the BMP.
Total Undiscounted Benefits	The sum of avoided capital, variable, and purchase costs.	
Total Discounted Benefits	The present value of the sum of avoided capital, variable, and purchase costs.	The discount rate is used to calculate the present value of avoided costs.
Costs:		
Capital Costs	Capital costs incurred by implementing the BMP.	
Financial Incentives	Financial incentives paid to customers.	Example is the rebate for purchasing low-flow plumbing devices.
Operating Expenses	Operating expenses incurred implementing the BMP.	Example is the administrative cost of conducting surveys.
Total Undiscounted Costs	The sum of capital, financial incentives and operating expenses.	
Total Discounted Costs	The present value of the sum of capital, financial incentives and operating expenses.	The discount rate is used to calculate the present value of incurred costs.
Results:		
Net Present Value	Total discounted benefits minus total discounted costs.	A value greater than zero indicates an economically justifiable BMP.
Benefit/Cost Ratio	The sum of the total discounted benefits divided by the sum of the total discounted costs.	A ratio greater than one indicates an economically justifiable BMP.
Simple Pay-Back Period	The sum of the total discounted costs divided by the average annual total discounted benefits.	Indicates the number of years required for the benefits to pay back the costs of the BMP.
Discounted Cost/Water Saved	The sum of the total discounted costs divided by the total acre-feet of water saved over the study period.	Indicates the present-value cost to save one acre-foot of water. A low value is considered economically attractive.
Net Present Value/Water Saved	The sum of the net present value divided by the total acre-feet of water saved over the study period.	Indicates the net value of saving one acre-foot of water. A high value is considered economically attractive.

Appendix E
Council Annual Reports for Demand Management Measures

Reported as of 4/1

Water Supply & Reuse

Reporting Unit: **So. California Water Company - Metro District**

Year: **2004**

Water Supply Source Information

Supply Source Name	Quantity (AF) Supplied	Supply Type
City of Cerritos	1983	Imported
SCWC RII	30457	Groundwater
Recycled		
California Water	269	Imported
Central Basin MWD	7929	Imported
West Basin MWD	31010	Imported

Total AF: 71648

Reported as of 4/1

Accounts & Water Use

Reporting Unit Name:	Submitted to CUWCC	Year:
So. California Water Company - Metro District	**03/01/2005**	**2004**

A. Service Area Population Information:

1 Total service area population 349409

B. Number of Accounts and Water Deliveries (AF)

Type	Metered		Unmetered	
	No. of Accounts	Water Deliveries (AF)	No of Accounts	Water Deliveries (AF)
1. Single-Family	77166	28457	0	0
2. Multi-Family	16882	23613	0	0
3. Commercial	3200	8477	0	0
4. Industrial	253	1889	0	0
5 Institutional	690	3633	0	0
6. Dedicated Irrigation	112	225	0	0
7 Recycled Water	37	988	0	0
8 Other	1665	324	0	0
9 Unaccounted	NA	3490	NA	0
Total	100005	71096	0	0
	Metered		**Unmetered**	

Reported as of 4/1

BMP 01: Water Survey Programs for Single-Family and Multi-Family Residential Customers

Reporting Unit:	BMP Form Status:	Year:
So. California Water Company - Metro District	**100% Complete**	**2004**

A. Implementation

1 Based on your signed MOU date, 12/11/1991, your Agency STRATEGY DUE DATE is	12/10/1993
2 Has your agency developed and implemented a targeting/ marketing strategy for SINGLE-FAMILY residential water use surveys?	yes
a If YES, when was it implemented?	01/01/1996
3 Has your agency developed and implemented a targeting/ marketing strategy for MULTI-FAMILY residential water use surveys?	yes
a If YES, when was it implemented?	01/01/1996

B. Water Survey Data

Survey Counts:	**Single Family Accounts**	**Multi-Family Units**
1 Number of surveys offered:	0	0
2. Number of surveys completed:	0	0
Indoor Survey:		
3. Check for leaks, including toilets, faucets and meter checks	yes	no
4. Check showerhead flow rates, aerator flow rates, and offer to replace or recommend replacement, if necessary	yes	no
5. Check toilet flow rates and offer to install or recommend installation of displacement device or direct customer to ULFT replacement program, as neccesary; replace leaking toilet flapper, as necessary	yes	no
Outdoor Survey:		
6 Check irrigation system and timers	yes	no
7 Review or develop customer irrigation schedule	yes	no
8 Measure landscaped area (Recommended but not required for surveys)	yes	no
9 Measure total irrigable area (Recommended but not required for surveys)	yes	no
10 Which measurement method is typically used (Recommended but not required for surveys)	Odometer Wheel	
11. Were customers provided with information packets that included evaluation results and water savings recommendations?	yes	no
12 Have the number of surveys offered and completed, survey results, and survey costs been tracked?	yes	no

a. If yes, in what form are surveys tracked? spreadsheet

b. Describe how your agency tracks this information.

Once SCWC secures MWDSC funding through the member agencies, SCWC bids and hires a contractor to implement the program. The contractor is responsible for tracking the survey results for each customer, and entering the information into a database.

C. Water Survey Program Expenditures

	This Year	Next Year
1 Budgeted Expenditures	150000	150000
2. Actual Expenditures	150000	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

Reported as of 4/1

BMP 02: Residential Plumbing Retrofit

Reporting Unit:	BMP Form Status:	Year:
So. California Water Company - Metro District	**100% Complete**	**2004**

A. Implementation

1 Is there an enforceable ordinance in effect in your service area requiring replacement of high-flow showerheads and other water use fixtures with their low-flow counterparts? — no

a If YES, list local jurisdictions in your service area and code or ordinance in each:

2 Has your agency satisfied the 75% saturation requirement for single-family housing units? — no

3 Estimated percent of single-family households with low-flow showerheads: — 27%

4. Has your agency satisfied the 75% saturation requirement for multi-family housing units? — no

5 Estimated percent of multi-family households with low-flow showerheads: — 27%

6 If YES to 2 OR 4 above, please describe how saturation was determined, including the dates and results of any survey research.

B. Low-Flow Device Distribution Information

1 Has your agency developed a targeting/ marketing strategy for distributing low-flow devices? — yes

a. If YES, when did your agency begin implementing this strategy? — 01/01/1996

b. Describe your targeting/ marketing strategy.

Since 1996, SCWC has developed direct mail flyers to residents in various parts of SCWCs service territory advertising low-flow fixture programs.

Low-Flow Devices Distributed/ Installed	SF Accounts	MF Units
2. Number of low-flow showerheads distributed	750	750
3 Number of toilet-displacement devices distributed.	750	750
4. Number of toilet flappers distributed	750	750
5 Number of faucet aerators distributed	1500	1500

6 Does your agency track the distribution and cost of low-flow devices? — yes

a If YES, in what format are low-flow devices tracked? — Spreadsheet

b. If yes, describe your tracking and distribution system

The tracking and distribution is based on purchasing records and tracking quantity distributed at events

C. Low-Flow Device Distribution Expenditures

	This Year	Next Year
1. Budgeted Expenditures	60000	60000
2. Actual Expenditures	52692	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

   a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as "

E. Comments

Reported as of 4/1

BMP 03: System Water Audits, Leak Detection and Repair

Reporting Unit:	BMP Form Status:	Year:
So. California Water Company - Metro District	**100% Complete**	**2004**

A. Implementation

1. Has your agency completed a pre-screening system audit for this reporting year?	yes
2. If YES, enter the values (AF/Year) used to calculate verifiable use as a percent of total production	
a. Determine metered sales (AF)	67291
b Determine other system verifiable uses (AF)	316
c Determine total supply into the system (AF)	70870
d. Using the numbers above, if (Metered Sales + Other Verifiable Uses) / Total Supply is < 0 9 then a full-scale system audit is required.	0.95
3. Does your agency keep necessary data on file to verify the values used to calculate verifiable uses as a percent of total production?	yes
4. Did your agency complete a full-scale audit during this report year?	yes
5 Does your agency maintain in-house records of audit results or the completed AWWA audit worksheets for the completed audit?	yes
6 Does your agency operate a system leak detection program?	yes

a. If yes, describe the leak detection program:

If unaccounted for water is above 7% in a particular system, then water audits are conducted on the affected system. All hydrants, valves and service connections are served. All large production meters are tested for accuracy

B. Survey Data

1 Total number of miles of distribution system line	954
2. Number of miles of distribution system line surveyed.	0

C. System Audit / Leak Detection Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	1300000	1500000
2 Actual Expenditures	628500	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?	No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

APR-18-05 11:55 FROM- T-201 P.08/52 F-045

Reported as of 4/1

BMP 04: Metering with Commodity Rates for all New Connections and Retrofit of Existing

Reporting Unit:	BMP Form Status:	Year:
So. California Water Company - Metro District	**100% Complete**	**2004**

A. Implementation

1. Does your agency require meters for all new connections and bill by volume-of-use?	yes
2. Does your agency have a program for retrofitting existing unmetered connections and bill by volume-of-use?	no
a. If YES, when was the plan to retrofit and bill by volume-of-use existing unmetered connections completed?	
b. Describe the program	
3. Number of previously unmetered accounts fitted with meters during report year.	0

B. Feasibility Study

1. Has your agency conducted a feasibility study to assess the merits of a program to provide incentives to switch mixed-use accounts to dedicated landscape meters?	no
a. If YES, when was the feasibility study conducted? (mm/dd/yy)	
b. Describe the feasibility study:	
2. Number of CII accounts with mixed-use meters	6621
3. Number of CII accounts with mixed-use meters retrofitted with dedicated irrigation meters during reporting period	0

C. Meter Retrofit Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?	No
a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."	

E. Comments

All service connections in the Metropolitan District are metered and billed with commodity rates

Reported as of 4/1

BMP 05: Large Landscape Conservation Programs and Incentives

Reporting Unit:	BMP Form Status:	Year:
So. California Water Company - Metro District	**100% Complete**	**2004**

A. Water Use Budgets

1. Number of Dedicated Irrigation Meter Accounts:	112
2 Number of Dedicated Irrigation Meter Accounts with Water Budgets:	0
3. Budgeted Use for Irrigation Meter Accounts with Water Budgets (AF):	0
4 Actual Use for Irrigation Meter Accounts with Water Budgets (AF)	0
5 Does your agency provide water use notices to accounts with budgets each billing cycle?	no

B. Landscape Surveys

1. Has your agency developed a marketing / targeting strategy for landscape surveys?	yes
a. If YES, when did your agency begin implementing this strategy?	01/01/1996

b Description of marketing / targeting strategy:

SCWC's Metropolitan District's targeting strategy is to partner with MWDSC's member agencies and utilize the expert resources of CBMWD and WBMWD to identify and retrofit SCWC's customer for recycle water use SCWC identifies it's large use customers to CB/WBMWD, and entered into partnership agreements with the agencies and customers for system retrofit and recycle water use

2. Number of Surveys Offered.	0
3. Number of Surveys Completed.	0
4. Indicate which of the following Landscape Elements are part of your survey:	
a Irrigation System Check	yes
b Distribution Uniformity Analysis	yes
c Review / Develop Irrigation Schedules	yes
d Measure Landscape Area	yes
e. Measure Total Irrigable Area	yes
f Provide Customer Report / Information	yes
5. Do you track survey offers and results?	yes
6 Does your agency provide follow-up surveys for previously completed surveys?	yes

a. If YES, describe below:

Follow-up provided by CB/WBMWD

C. Other BMP 5 Actions

1. An agency can provide mixed-use accounts with ETo-based landscape budgets in lieu of a large landscape survey program.	no

Does your agency provide mixed-use accounts with landscape budgets?

2. Number of CII mixed-use accounts with landscape budgets. 0

3. Do you offer landscape irrigation training? no

4. Does your agency offer financial incentives to improve landscape water use efficiency? no

Type of Financial Incentive:	Budget (Dollars/ Year)	Number Awarded to Customers	Total Amount Awarded
a. Rebates			
b. Loans			
c. Grants			

5. Do you provide landscape water use efficiency information to new customers and customers changing services? yes

a. If YES, describe below

Landscape water use efficienty information is provided to new customers via a customer guide available in all customer service offices.

6. Do you have irrigated landscaping at your facilities? no

a. If yes, is it water-efficient?

b. If yes, does it have dedicated irrigation metering? no

7. Do you provide customer notices at the start of the irrigation season? no

8. Do you provide customer notices at the end of the irrigation season? no

D. Landscape Conservation Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	323780	

E. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

F. Comments

Reported as of 4/1

BMP 06: High-Efficiency Washing Machine Rebate Programs

Reporting Unit:	BMP Form Status:	Year:
So. California Water Company - Metro District	**100% Complete**	**2004**

A. Implementation

1 Do any energy service providers or waste water utilities in your service area offer rebates for high-efficiency washers?	no
a. If YES, describe the offerings and incentives as well as who the energy/waste water utility provider is.	
2 Does your agency offer rebates for high-efficiency washers?	no
3. What is the level of the rebate?	0
4 Number of rebates awarded.	0

B. Rebate Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?	no
a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."	

D. Comments

SCWC's Metropolitan District partners with MWDSC's member agencies, CBMWD and WBMWD to offer their rebate programs to SCWC customers The rebate programs are shared with all customer service representatives in the Metropolitan District so that they can refer customers to them.

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Reported as of 4/1

BMP 07: Public Information Programs

Reporting Unit:	BMP Form Status:	Year:
So. California Water Company - Metro District	**100% Complete**	**2004**

A. Implementation

1 Does your agency maintain an active public information program to promote and educate customers about water conservation? yes

a. If YES, describe the program and how it's organized.

The Region Administration Manager and the Community & Customer Relations Administrator are involved in notifying the public of various conservation programs They issue press releases, publish quarterly newsletters and use door tags and bill inserts to notify customers of future events. They issue press releases, publish quarterly newsletters and use door tags and bill inserts to notify customers of future events.

2 Indicate which and how many of the following activities are included in your public information program.

Public Information Program Activity	Yes/No	Number of Events
a. Paid Advertising	no	0
b. Public Service Announcement	no	0
c Bill Inserts / Newsletters / Brochures	yes	4
d. Bill showing water usage in comparison to previous year's usage	yes	
e. Demonstration Gardens	no	0
f. Special Events, Media Events	yes	6
g. Speaker's Bureau	no	
h. Program to coordinate with other government agencies, industry and public interest groups and media	yes	

B. Conservation Information Program Expenditures

	This Year	Next Year
1 Budgeted Expenditures	50000	50000
2. Actual Expenditures	9000	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Reported as of 4/1

BMP 08: School Education Programs

Reporting Unit:
So. California Water Company - Metro District

BMP Form Status:
100% Complete

Year:
2004

A. Implementation

1.Has your agency implemented a school information program to promote water conservation? yes

2. Please provide information on your school programs (by grade level):

Grade	Are grade-appropriate materials distributed?	No. of class presentations	No. of students reached	No. of teachers' workshops
Grades K-3rd	no	0	0	0
Grades 4th-6th	yes	226	7000	226
Grades 7th-8th	no	0	0	0
High School	no	0	0	0

3. Did your Agency's materials meet state education framework requirements? yes

4. When did your Agency begin implementing this program? 09/02/2004

B. School Education Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	189000	200000
2. Actual Expenditures	187900	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

APR-18-05 11:56 FROM- T-201 P.14/52 F-045

Reported as of 4/1

BMP 09: Conservation Programs for CII Accounts

Reporting Unit:	BMP Form Status:	Year:
So. California Water Company - Metro District	**100% Complete**	**2004**

A. Implementation

1. Has your agency identified and ranked COMMERCIAL customers according to use?	yes
2. Has your agency identified and ranked INDUSTRIAL customers according to use?	yes
3. Has your agency identified and ranked INSTITUTIONAL customers according to use?	yes

Option A: CII Water Use Survey and Customer Incentives Program

4. Is your agency operating a CII water use survey and customer incentives program for the purpose of complying with BMP 9 under this option?	yes

CII Surveys	Commercial Accounts	Industrial Accounts	Institutional Accounts
a. Number of New Surveys Offered	0	0	0
b. Number of New Surveys Completed	0	0	0
c. Number of Site Follow-ups of Previous Surveys (within 1 yr)	0	0	0
d. Number of Phone Follow-ups of Previous Surveys (within 1 yr)	0	0	0

CII Survey Components	Commercial Accounts	Industrial Accounts	Institutional Accounts
e. Site Visit	yes	yes	yes
f. Evaluation of all water-using apparatus and processes	yes	yes	yes
g. Customer report identifying recommended efficiency measures, paybacks and agency incentives	yes	yes	yes

Agency CII Customer Incentives	Budget ($/Year)	No. Awarded to Customers	Total $ Amount Awarded
h. Rebates	0	0	0
i. Loans	0	0	0
j. Grants	0	0	0
k. Others	0	0	0

APR-18-05 11:57 FROM- T-201 P.15/52 F-045

Option B: CII Conservation Program Targets

5. Does your agency track CII program interventions and water savings for the purpose of complying with BMP 9 under this option?	yes
6. Does your agency document and maintain records on how savings were realized and the method of calculation for estimated savings?	yes
7 Estimated annual savings (AF/yr) from site-verified actions taken by agency since 1991.	0
8. Estimated annual savings (AF/yr) from non-site-verified actions taken by agency since 1991.	0

B. Conservation Program Expenditures for CII Accounts

	This Year	Next Year
1. Budgeted Expenditures	10000	10000
2. Actual Expenditures	11488	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?	No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as"

D. Comments

SCWC's Metropolitan District has partnered with MWDSC's member agencies, CBMWD and WBMWD, to conduct CII account conservation programs. SCWC used CB/WBMWD expert resources to target SCWC's CII customers The program includes rebates for ULF Toilets (flushometer and tank), ULF Urinals (flushometer and waterless), high-efficiency clothes washers, cooling tower conductivity controllers, flush valve retrofits and pre-rinse self-closing spray heads.

APR-18-05 11:57 FROM- T-201 P.16/52 F-045

Reported as of 4/1

BMP 09a: CII ULFT Water Savings

Reporting Unit.	BMP Form Status:	Year:
So. California Water Company - Metro District	**100% Complete**	**2004**

1. Did your agency implement a CII ULFT replacement program in the reporting year? If No, please explain why on Line B 10 — No

A. Targeting and Marketing

1. What basis does your agency use to target customers for participation in this program? Check all that apply. — Consumption ranking

   a. Describe which method you found to be the most effective overall, and which was the most effective per dollar expended

   Consumptive ranking was onlymethod used to target customers

2. How does your agency advertise this program? Check all that apply — Direct letter

   a. Describe which method you found to be the most effective overall, and which was the most effective per dollar expended.

   Direct letter was only advertising method employed

B. Implementation

1. Does your agency keep and maintain customer participant information? (Read the Help Information for a complete list of all the information for this BMP.) — Yes
2. Would your agency be willing to share this information if the CUWCC did a study to evaluate the program on behalf of your agency? — No
3. What is the total number of customer accounts participating in the program during the last year ? — 0

CII Subsector	Number of Toilets Replaced			
4	Standard Gravity Tank	Air Assisted	Valve Floor Mount	Valve Wall Mount
a Offices	0	0	0	0
b Retail / Wholesale	0	0	0	0
c. Hotels	0	0	0	0
d. Health	0	0	0	0
e. Industrial	0	0	0	0
f Schools: K to 12	0	0	0	0
g Eating	0	0	0	0
h. Govern-ment	0	0	0	0
i Churches	0	0	0	0
j. Other	0	0	0	0

5 Program design. Rebate or voucher

6 Does your agency use outside services to implement this program? Yes

a. If yes, check all that apply.

Consultant

7 Participant tracking and follow-up. Letter

8. Based on your program experience, please rank on a scale of 1 to 5, with 1 being the least frequent cause and 5 being the most frequent cause, the following reasons why customers refused to participate in the program.

a Disruption to business	5
b Inadequate payback	5
c Inadequate ULFT performance	5
d. Lack of funding	5
e American's with Disabilities Act	5
f Permitting	5
g. Other. Please describe in B 9	5

9. Please describe general program acceptance/resistance by customers, obstacles to implementation, and other isues affecting program implementation or effectiveness.

None

10 Please provide a general assessment of the program for this reporting year. Did your program achieve its objectives? Were your targeting and marketing approaches effective? Were program costs in line with expectations and budgeting?

SCWC focused on residential ULFT distribution programs and will look to implement a future CII ULFT replacement program throughout SCWC's Metropolitan District

C. Conservation Program Expenditures for CII ULFT

1. CII ULFT Program: Annual Budget & Expenditure Data

	Budgeted	Actual Expenditure
a. Labor	0	0
b Materials	0	0
c Marketing & Advertising	0	0
d Administration & Overhead	0	0
e. Outside Services	0	0
f. Total	0	0

2 CII ULFT Program Annual Cost Sharing

a Wholesale agency contribution	0
b. State agency	0

contribution	
c. Federal agency contribution	0
d. Other contribution	0
e Total	0

D. Comments

SCWC's Metropolitan District has partnered with MWDSC's member agencies, CBMWD and WBMWD to conduct CII account conservation programs in the past and looks forward to implementing a future program

APR-18-05 11:57 FROM- T-201 P.19/52 F-045

Reported as of 4/1

BMP 11: Conservation Pricing

Reporting Unit:	BMP Form Status:	Year:
So. California Water Company - Metro District	**100% Complete**	**2004**

A. Implementation

Rate Structure Data Volumetric Rates for Water Service by Customer Class

1. Residential

a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$42863777
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$8329077

2. Commercial

a. Water Rate Structure	Uniform
b Sewer Rate Structure	Service Not Provided
c Total Revenue from Volumetric Rates	$21907152
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$4256890

3. Industrial

a Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$1597043
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$310672

4. Institutional / Government

a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$3071693
d Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$1068639

5. Irrigation

a. Water Rate Structure	Uniform
b Sewer Rate Structure	Service Not Provided
c Total Revenue from Volumetric Rates	$190653
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$105206

6. Other

a. Water Rate Structure	Uniform

b Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$498994
d Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$32927

B. Conservation Pricing Program Expenditures

	This Year	Next Year
1 Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

1 Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as "

D. Comments

SCWC's Metropolitan District misunderstood the instructions for 2001 and 2002 for separating out volumetric and non-volumetric. Hence, 2003 & 2004 appear to erroneously have increased non-volumetric rates. Correction was made to 2003 & 2004 information

Reported as of 4/1

BMP 12: Conservation Coordinator

Reporting Unit:	BMP Form Status:	Year:
So. California Water Company - Metro District	**100% Complete**	**2004**

A. Implementation

1. Does your Agency have a conservation coordinator?	yes
2 Is this a full-time position?	no
3 If no, is the coordinator supplied by another agency with which you cooperate in a regional conservation program ?	no
4 Partner agency's name:	
5. If your agency supplies the conservation coordinator	
a. What percent is this conservation coordinator's position?	30%
b. Coordinator's Name	Sylvia Beltran
c. Coordinator's Title	Community & Customer Relations Administrator
d. Coordinator's Experience and Number of Years	Thirteen years experience in implementing corporate programs and one year in implementing various conservation programs Works with member agencies and contractors to develop and implement conservation programs. Responsible for keeping proper records, e.a., contracts, conservation credit funding proposals, event costs, marketing information, member agency contracts, etc.
e. Date Coordinator's position was created (mm/dd/yyyy)	04/01/1999
6 Number of conservation staff, including Conservation Coordinator.	3

B. Conservation Staff Program Expenditures

	This Year	Next Year
1 Budgeted Expenditures	80000	85000
2 Actual Expenditures	79000	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?	no

a If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as "

D. Comments

Reported as of 4/1

BMP 13: Water Waste Prohibition

Reporting Unit:	BMP Form Status:	Year:
So. California Water Company - Metro District	**100% Complete**	**2004**

A. Requirements for Documenting BMP Implementation

1. Is a water waste prohibition ordinance in effect in your service area? yes

   a. If YES, describe the ordinance.

   CPUC Tariff Rule 14-1

2. Is a copy of the most current ordinance(s) on file with CUWCC? no

   a. List local jurisdictions in your service area in the first text box and water waste ordinance citations in each jurisdiction in the second text box:

   n/a n/a

B. Implementation

1. Indicate which of the water uses listed below are prohibited by your agency or service area.

   a. Gutter flooding yes

   b. Single-pass cooling systems for new connections no

   c Non-recirculating systems in all new conveyor or car wash systems no

   d. Non-recirculating systems in all new commercial laundry systems no

   e Non-recirculating systems in all new decorative fountains yes

   f Other, please name no

2. Describe measures that prohibit water uses listed above

   Water uses listed above are prohibited in stages 2,3, and 4 of a water shortage (greater than 10% water shortage)

Water Softeners:

3. Indicate which of the following measures your agency has supported in developing state law:

   a. Allow the sale of more efficient, demand-initiated regenerating DIR models. no

   b Develop minimum appliance efficiency standards that.

      i.) Increase the regeneration efficiency standard to at least 3,350 grains of hardness removed per pound of common salt used. no

      ii) Implement an identified maximum number of gallons discharged per gallon of soft water produced. no

   c Allow local agencies, including municipalities and special districts, to set more stringent standards and/or to ban on-site regeneration of water softeners if it is demonstrated and found by the agency governing board that there is an adverse effect on the reclaimed water or groundwater supply. no

4. Does your agency include water softener checks in home water audit programs? no

5 Does your agency include information about DIR and exchange-type

water softeners in educational efforts to encourage replacement of less efficient timer models? no

C. Water Waste Prohibition Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

Reported as of 4/1

BMP 14: Residential ULFT Replacement Programs

Reporting Unit:
So. California Water Company - Metro District

BMP Form Status:
100% Complete

Year
2004

A. Implementation

	Single-Family Accounts	Multi-Family Units
1 Does your Agency have program(s) for replacing high-water-using toilets with ultra-low flush toilets?	yes	yes

Number of Toilets Replaced by Agency Program During Report Year

Replacement Method	SF Accounts	MF Units
2 Rebate	0	0
3 Direct Install	0	0
4. CBO Distribution	0	0
5. Other	0	0
Total	**0**	**0**

6 Describe your agency's ULFT program for single-family residences

SCWA partners with MWDSC member agencies in order to secure funding for programs. SCWC enters into contract agreements with MWDSC's member agencies to contribute funds and distribute ULFTs SCWC hires contractors to implement the various ULFT programs. The contractor is responsible for implementing the program which includes customer database record keeping, ordering and distributing ULFTs, recycling, hiring CBO, paperwork etc Up to two free ULFTs are provided to single-family residents who reside in SCWC's service area and who don't have ULFTs and who have not participated before.

7 Describe your agency's ULFT program for multi-family residences

SCWC enters into contract agreement with its member agencies in order to receive funding from MWDSC. SCWC also contributes funds to this program After securing MWD and member agency funding, SCWC will bid and hire an experience contractor to implement the multi-family program SCWC will provide customer information and assist the contractor with marketing in order to provide the service to its customers Free ULFTs, water efficient showerheads and aerators will be provided to its customers free of charge The contractor will be in charge of data management for each customer

8 Is a toilet retrofit on resale ordinance in effect for your service area? no

9. List local jurisdictions in your service area in the left box and ordinance citations in each jurisdiction in the right box

B. Residential ULFT Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	38600	50000

APR-18-05 11:59 FROM- T-201 P.25/52 F-045

2. Actual Expenditures 38000

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as"

D. Comments

APR-18-05 11:59 FROM- T-201 P.26/52 F-045

Reported as of 4/1

Water Supply & Reuse

Reporting Unit: **So. California Water Company - Metro District**

Year: **2003**

Water Supply Source Information

Supply Source Name	Quantity (AF) Supplied	Supply Type
City of Cerritos	1930	Imported
City of South Gate	18	Imported
Southwest Suburban Water	1	Imported
California Water	1203	Imported
Central Basin MWD	6511	Imported
West Basin MWD	33678	Imported
Recycled	916	Recycled

Total AF: 44257

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Reported as of 4/1

Accounts & Water Use

Reporting Unit Name:	Submitted to CUWCC	Year:
So. California Water Company - Metro District	**03/01/2005**	**2003**

A. Service Area Population Information:

1. Total service area population 347702

B. Number of Accounts and Water Deliveries (AF)

Type	Metered		Unmetered	
	No. of Accounts	Water Deliveries (AF)	No. of Accounts	Water Deliveries (AF)
1. Single-Family	76848	28361	0	0
2 Multi-Family	16813	23533	0	0
3 Commercial	3186	8448	0	0
4 Industrial	255	1795	0	0
5. Institutional	682	3697	0	0
6. Dedicated Irrigation	96	189	0	0
7 Recycled Water	38	886	0	0
8 Other	1649	1861	0	0
9. Unaccounted	NA	798	NA	0
Total	99567	69568	0	0
	Metered		**Unmetered**	

APR-18-05 11:59 FROM- T-201 P.28/52 F-045

Reported as of 4/1

BMP 01: Water Survey Programs for Single-Family and Multi-Family Residential Customers

Reporting Unit:	BMP Form Status:	Year:
So. California Water Company - Metro District	**100% Complete**	**2003**

A. Implementation

1 Based on your signed MOU date, 12/11/1991, your Agency STRATEGY DUE DATE is:	12/10/1993
2. Has your agency developed and implemented a targeting/ marketing strategy for SINGLE-FAMILY residential water use surveys?	yes
a If YES, when was it implemented?	01/01/1996
3 Has your agency developed and implemented a targeting/ marketing strategy for MULTI-FAMILY residential water use surveys?	yes
a. If YES, when was it implemented?	01/01/1996

B. Water Survey Data

Survey Counts:	**Single Family Accounts**	**Multi-Family Units**
1. Number of surveys offered.	0	0
2. Number of surveys completed:	0	0
Indoor Survey:		
3. Check for leaks, including toilets, faucets and meter checks	yes	no
4 Check showerhead flow rates, aerator flow rates, and offer to replace or recommend replacement, if necessary	yes	no
5. Check toilet flow rates and offer to install or recommend installation of displacement device or direct customer to ULFT replacement program, as neccesary, replace leaking toilet flapper, as necessary	yes	no
Outdoor Survey:		
6 Check irrigation system and timers	yes	no
7. Review or develop customer irrigation schedule	yes	no
8. Measure landscaped area (Recommended but not required for surveys)	yes	no
9 Measure total irrigable area (Recommended but not required for surveys)	yes	no
10. Which measurement method is typically used (Recommended but not required for surveys)	Odometer Wheel	
11. Were customers provided with information packets that included evaluation results and water savings recommendations?	yes	no
12. Have the number of surveys offered and completed, survey results, and survey costs been tracked?	yes	no

a. If yes, in what form are surveys tracked? spreadsheet

b Describe how your agency tracks this information.

Once SCWC secures MWDSC funding through the member agencies, SCWC bids and hires a contractor to implement the program The contractor is responsible for tracking the survey results for each customer, and entering the information into a database.

C. Water Survey Program Expenditures

	This Year	Next Year
1 Budgeted Expenditures	0	150000
2. Actual Expenditures	0	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as "

E. Comments

APR-18-05 11:59 FROM- T-201 P.30/52 F-045

Reported as of 4/1

BMP 02: Residential Plumbing Retrofit

Reporting Unit:	BMP Form Status:	Year:
So. California Water Company - Metro District	**100% Complete**	**2003**

A. Implementation

1. Is there an enforceable ordinance in effect in your service area requiring replacement of high-flow showerheads and other water use fixtures with their low-flow counterparts? — no

   a. If YES, list local jurisdictions in your service area and code or ordinance in each

2. Has your agency satisfied the 75% saturation requirement for single-family housing units? — no
3. Estimated percent of single-family households with low-flow showerheads: — 23%
4. Has your agency satisfied the 75% saturation requirement for multi-family housing units? — no
5. Estimated percent of multi-family households with low-flow showerheads: — 23%
6. If YES to 2 OR 4 above, please describe how saturation was determined, including the dates and results of any survey research.

B. Low-Flow Device Distribution Information

1. Has your agency developed a targeting/ marketing strategy for distributing low-flow devices? — yes

   a. If YES, when did your agency begin implementing this strategy? — 01/01/1996

   b. Describe your targeting/ marketing strategy

   Since 1996, SCWC has developed direct mail flyers to residents in various parts of SCWCs service territory advertising low-flow fixture programs.

Low-Flow Devices Distributed/ Installed	SF Accounts	MF Units
2. Number of low-flow showerheads distributed	500	500
3. Number of toilet-displacement devices distributed	500	500
4. Number of toilet flappers distributed:	500	500
5. Number of faucet aerators distributed.	1000	1000

6. Does your agency track the distribution and cost of low-flow devices? — yes

   a. If YES, in what format are low-flow devices tracked? — Spreadsheet

   b. If yes, describe your tracking and distribution system .

   The tracking and distribution is based on purchasing records and tracking quantity distributed at events.

C. Low-Flow Device Distribution Expenditures

	This Year	Next Year
1. Budgeted Expenditures	45000	60000
2 Actual Expenditures	11955	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

APR-18-05 12:00 FROM- T-201 P.32/52 F-045

Reported as of 4/1

BMP 03: System Water Audits, Leak Detection and Repair

Reporting Unit:	BMP Form Status:	Year:
So. California Water Company - Metro District	**100% Complete**	**2003**

A. Implementation

1 Has your agency completed a pre-screening system audit for this reporting year?	yes
2 If YES, enter the values (AF/Year) used to calculate verifiable use as a percent of total production	
a Determine metered sales (AF)	65927
b Determine other system verifiable uses (AF)	1844
c Determine total supply into the system (AF)	70185
d. Using the numbers above, if (Metered Sales + Other Verifiable Uses) / Total Supply is < 0.9 then a full-scale system audit is required.	0.98
3 Does your agency keep necessary data on file to verify the values used to calculate verifiable uses as a percent of total production?	yes
4. Did your agency complete a full-scale audit during this report year?	yes
5. Does your agency maintain in-house records of audit results or the completed AWWA audit worksheets for the completed audit?	yes
6 Does your agency operate a system leak detection program?	yes

a. If yes, describe the leak detection program:

If unaccounted for water is above 7% in a particular system, then water audits are conducted on the affected system. All hydrants, valves and service connections are served. All large production meters are tested for accuracy

B. Survey Data

1 Total number of miles of distribution system line.	954
2 Number of miles of distribution system line surveyed.	0

C. System Audit / Leak Detection Program Expenditures

	This Year	Next Year
1 Budgeted Expenditures	1600000	1300000
2 Actual Expenditures	1144900	

D. "At Least As Effective As"

1 Is your AGENCY implementing an "at least as effective as" variant of this BMP?	No

a If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as"

E. Comments

APR-18-05 12:00 FROM- T-201 P.33/52 F-045

Reported as of 4/1

BMP 04: Metering with Commodity Rates for all New Connections and Retrofit of Existing

Reporting Unit:	BMP Form Status:	Year:
So. California Water Company - Metro District	**100% Complete**	**2003**

A. Implementation

1 Does your agency require meters for all new connections and bill by volume-of-use?	yes
2 Does your agency have a program for retrofitting existing unmetered connections and bill by volume-of-use?	no
a. If YES, when was the plan to retrofit and bill by volume-of-use existing unmetered connections completed?	
b. Describe the program:	
3. Number of previously unmetered accounts fitted with meters during report year	0

B. Feasibility Study

1 Has your agency conducted a feasibility study to assess the merits of a program to provide incentives to switch mixed-use accounts to dedicated landscape meters?	no
a If YES, when was the feasibility study conducted? (mm/dd/yy)	
b. Describe the feasibility study:	
2 Number of CII accounts with mixed-use meters.	6621
3 Number of CII accounts with mixed-use meters retrofitted with dedicated irrigation meters during reporting period	0

C. Meter Retrofit Program Expenditures

	This Year	Next Year
1 Budgeted Expenditures	0	0
2 Actual Expenditures	0	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?	No
a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."	

E. Comments

All service connections in the Metropolitan District are metered and billed with commodity rates.

Reported as of 4/1

BMP 05: Large Landscape Conservation Programs and Incentives

Reporting Unit:	BMP Form Status:	Year:
So. California Water Company - Metro District	**100% Complete**	**2003**

A. Water Use Budgets

1 Number of Dedicated Irrigation Meter Accounts:	96
2. Number of Dedicated Irrigation Meter Accounts with Water Budgets:	0
3. Budgeted Use for Irrigation Meter Accounts with Water Budgets (AF):	0
4. Actual Use for Irrigation Meter Accounts with Water Budgets (AF):	0
5. Does your agency provide water use notices to accounts with budgets each billing cycle?	no

B. Landscape Surveys

1 Has your agency developed a marketing / targeting strategy for landscape surveys?	yes
a. If YES, when did your agency begin implementing this strategy?	01/01/1996

b Description of marketing / targeting strategy:

SCWC's Metropolitan District's targeting strategy is to partner with MWDSC's member agencies and utilize the expert resources of CBMWD and WBMWD to identify and retrofit SCWC's customer for recycle water use. SCWC identifies it's large use customers to CB/WBMWD, and entered into partnership agreements with the agencies and customers for system retrofit and recycle water use.

2 Number of Surveys Offered	0
3 Number of Surveys Completed.	0
4. Indicate which of the following Landscape Elements are part of your survey:	
a Irrigation System Check	no
b Distribution Uniformity Analysis	no
c Review / Develop Irrigation Schedules	no
d Measure Landscape Area	no
e. Measure Total Irrigable Area	no
f. Provide Customer Report / Information	no
5. Do you track survey offers and results?	no
6 Does your agency provide follow-up surveys for previously completed surveys?	no
a If YES, describe below	

C. Other BMP 5 Actions

1 An agency can provide mixed-use accounts with ETo-based landscape budgets in lieu of a large landscape survey program	no

Does your agency provide mixed-use accounts with landscape budgets?

2. Number of CII mixed-use accounts with landscape budgets 0

3. Do you offer landscape irrigation training? no

4. Does your agency offer financial incentives to improve landscape water use efficiency? no

Type of Financial Incentive:	Budget (Dollars/ Year)	Number Awarded to Customers	Total Amount Awarded
a. Rebates			
b. Loans			
c. Grants			

5 Do you provide landscape water use efficiency information to new customers and customers changing services? yes

a If YES, describe below:

Landscape water use efficienty information is provided to new customers via a customer guide available in all customer service offices

6. Do you have irrigated landscaping at your facilities? yes

a. If yes, is it water-efficient? no

b. If yes, does it have dedicated irrigation metering? no

7 Do you provide customer notices at the start of the irrigation season? no

8. Do you provide customer notices at the end of the irrigation season? no

D. Landscape Conservation Program Expenditures

	This Year	Next Year
1 Budgeted Expenditures	0	0
2 Actual Expenditures	289456	

E. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

F. Comments

Reported as of 4/1

BMP 06: High-Efficiency Washing Machine Rebate Programs

Reporting Unit:	BMP Form Status:	Year:
So. California Water Company - Metro District	**100% Complete**	**2003**

A. Implementation

1. Do any energy service providers or waste water utilities in your service area offer rebates for high-efficiency washers?	no
a. If YES, describe the offerings and incentives as well as who the energy/waste water utility provider is	
2. Does your agency offer rebates for high-efficiency washers?	no
3. What is the level of the rebate?	0
4. Number of rebates awarded	0

B. Rebate Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?	no
a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."	

D. Comments

SCWC's Metropolitan District partners with MWDSC's member agencies, CBMWD and WBMWD to offer their rebate programs to SCWC customers. The rebate programs are shared with all customer service representatives in the Metropolitan District so that they can refer customers to them

Reported as of 4/1

BMP 07: Public Information Programs

Reporting Unit:	BMP Form Status:	Year:
So. California Water Company - Metro District	**100% Complete**	**2003**

A. Implementation

1. Does your agency maintain an active public information program to promote and educate customers about water conservation? yes

a. If YES, describe the program and how it's organized

The Region Administration Manager and the Community & Customer Relations Administrator are involved in notifying the public of various conservation programs. They issue press releases, publish quarterly newsletters and use door tags and bill inserts to notify customers of future events. They issue press releases, publish quarterly newsletters and use door tags and bill inserts to notify customers of future events.

2. Indicate which and how many of the following activities are included in your public information program

Public Information Program Activity	Yes/No	Number of Events
a. Paid Advertising	no	0
b. Public Service Announcement	no	0
c. Bill Inserts / Newsletters / Brochures	yes	4
d. Bill showing water usage in comparison to previous year's usage	yes	
e. Demonstration Gardens	no	0
f. Special Events, Media Events	yes	6
g. Speaker's Bureau	no	0
h. Program to coordinate with other government agencies, industry and public interest groups and media	yes	

B. Conservation Information Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	50000	50000
2. Actual Expenditures	9068	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Reported as of 4/1

BMP 08: School Education Programs

Reporting Unit:
So. California Water Company - Metro District

BMP Form Status:
100% Complete

Year:
2003

A. Implementation

1.Has your agency implemented a school information program to promote water conservation? yes

2. Please provide information on your school programs (by grade level):

Grade	Are grade-appropriate materials distributed?	No. of class presentations	No. of students reached	No. of teachers' workshops
Grades K-3rd	no	0	0	0
Grades 4th-6th	yes	134	4144	134
Grades 7th-8th	no	0	0	0
High School	no	0	0	0

3. Did your Agency's materials meet state education framework requirements? yes

4. When did your Agency begin implementing this program? 01/05/2004

B. School Education Program Expenditures

	This Year	Next Year
1 Budgeted Expenditures	125000	190000
2 Actual Expenditures	121000	

C. "At Least As Effective As"

1 Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Reported as of 4/1

BMP 09: Conservation Programs for CII Accounts

Reporting Unit:	BMP Form Status:	Year:
So. California Water Company - Metro District	**100% Complete**	**2003**

A. Implementation

1. Has your agency identified and ranked COMMERCIAL customers according to use?	yes
2. Has your agency identified and ranked INDUSTRIAL customers according to use?	yes
3. Has your agency identified and ranked INSTITUTIONAL customers according to use?	yes

Option A: CII Water Use Survey and Customer Incentives Program

4. Is your agency operating a CII water use survey and customer incentives program for the purpose of complying with BMP 9 under this option?	yes

CII Surveys	Commercial Accounts	Industrial Accounts	Institutional Accounts
a. Number of New Surveys Offered	0	0	0
b. Number of New Surveys Completed	0	0	0
c. Number of Site Follow-ups of Previous Surveys (within 1 yr)	0	0	0
d. Number of Phone Follow-ups of Previous Surveys (within 1 yr)	0	0	0

CII Survey Components	Commercial Accounts	Industrial Accounts	Institutional Accounts
e. Site Visit	yes	yes	yes
f. Evaluation of all water-using apparatus and processes	yes	yes	yes
g. Customer report identifying recommended efficiency measures, paybacks and agency incentives	yes	yes	yes

Agency CII Customer Incentives	Budget ($/Year)	No. Awarded to Customers	Total $ Amount Awarded
h. Rebates	0	0	0
i. Loans	0	0	0
j. Grants	0	0	0
k. Others	0	0	0

Option B: CII Conservation Program Targets

5. Does your agency track CII program interventions and water savings for the purpose of complying with BMP 9 under this option?	yes
6 Does your agency document and maintain records on how savings were realized and the method of calculation for estimated savings?	yes
7. Estimated annual savings (AF/yr) from site-verified actions taken by agency since 1991.	0
8 Estimated annual savings (AF/yr) from non-site-verified actions taken by agency since 1991.	0

B. Conservation Program Expenditures for CII Accounts

	This Year	Next Year
1 Budgeted Expenditures	10000	10000
2. Actual Expenditures	9500	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?	No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

SCWC's Metropolitan District has partnered with MWDSC's member agencies, CBMWD and WBMWD, to conduct CII account conservation programs SCWC used CB/WBMWD expert resources to target SCWC's CII customers. The program includes rebates for ULF Toilets (flushometer and tank), ULF Urinals (flushometer and waterless), high-efficiency clothes washers, cooling tower conductivity controllers, flush valve retrofits and pre-rinse self-closing spray heads.

Reported as of 4/1

BMP 09a: CII ULFT Water Savings

Reporting Unit:	BMP Form Status:	Year:
So. California Water Company - Metro District	**100% Complete**	**2003**

1 Did your agency implement a CII ULFT replacement program in the reporting year? — Yes

If No, please explain why on Line B 10

A. Targeting and Marketing

1. What basis does your agency use to target customers for participation in this program? Check all that apply. — Consumption ranking

a. Describe which method you found to be the most effective overall, and which was the most effective per dollar expended.

Consumptive ranking was onlymethod used to target customers.

2 How does your agency advertise this program? Check all that apply. — Direct letter

a. Describe which method you found to be the most effective overall, and which was the most effective per dollar expended

Direct letter was only advertising method employed.

B. Implementation

1 Does your agency keep and maintain customer participant information? (Read the Help information for a complete list of all the information for this BMP) — Yes

2. Would your agency be willing to share this Information if the CUWCC did a study to evaluate the program on behalf of your agency? — No

3 What is the total number of customer accounts participating in the program during the last year ? — 23

CII Subsector	Number of Toilets Replaced			
4.	Standard Gravity Tank	Air Assisted	Valve Floor Mount	Valve Wall Mount
a. Offices	0	0	0	0
b. Retail / Wholesale	0	0	0	0
c Hotels	23	0	0	0
d Health	0	0	0	0
e. Industrial	0	0	0	0
f. Schools. K to 12	0	0	0	0
g Eating	0	0	0	0
h Govern-ment	0	0	0	0
i Churches	0	0	0	0

j. Other	0	0	0	0

5. Program design.

Rebate or voucher

6. Does your agency use outside services to implement this program? Yes

a. If yes, check all that apply

Consultant

7. Participant tracking and follow-up

Letter

8 Based on your program experience, please rank on a scale of 1 to 5, with 1 being the least frequent cause and 5 being the most frequent cause, the following reasons why customers refused to participate in the program.

a Disruption to business	5
b. Inadequate payback	5
c. Inadequate ULFT performance	5
d. Lack of funding	5
e American's with Disabilities Act	5
f Permitting	5
g Other. Please describe in B 9.	5

9. Please describe general program acceptance/resistance by customers, obstacles to implementation, and other isues affecting program implementation or effectiveness

None

10. Please provide a general assessment of the program for this reporting year. Did your program achieve its objectives? Were your targeting and marketing approaches effective? Were program costs in line with expectations and budgeting?

Program costs were 100% more than anticipated as there was no budget for this program.

C. Conservation Program Expenditures for CII ULFT

1 CII ULFT Program: Annual Budget & Expenditure Data

	Budgeted	Actual Expenditure
a Labor	0	0
b. Materials	0	0
c. Marketing & Advertising	0	0
d. Administration & Overhead	1000	1000
e. Outside Services	0	0
f. Total	1000	1000

2 CII ULFT Program Annual Cost Sharing

a Wholesale agency contribution	2260
b. State agency contribution	0

c Federal agency contribution	1480
d. Other contribution	0
e Total	3740

D. Comments

SCWC's Metropolitan District has partnered with MWDSC's member agencies, CBMWD and WBMWD to conduct CII account conservation programs. SCWC used CB/WBMWD expert resources to target SCWC's CII customers. The program included rebates for ULF Toilets (flushometer and tank), ULF Urinals (flushometer and waterless), high-efficiency clothes washers, cooling tower conductivity controllers, flush valve retrofits and pre-rinse self-closing spray heads

Reported as of 4/1

BMP 11: Conservation Pricing

Reporting Unit:	BMP Form Status:	Year:
So. California Water Company - Metro District	**100% Complete**	**2003**

A. Implementation

Rate Structure Data Volumetric Rates for Water Service by Customer Class

1. Residential

a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$42608049
d Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$18658510

2. Commercial

a. Water Rate Structure	Uniform
b Sewer Rate Structure	Service Not Provided
c Total Revenue from Volumetric Rates	$8279386
d Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$3625630

3. Industrial

a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$1513966
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$251392

4. Institutional / Government

a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$3118395
d Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$882439

5. Irrigation

a Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$159739
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$77294

6. Other

a Water Rate Structure	Uniform

b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$423127
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$38822

B. Conservation Pricing Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

SCWC's Metropolitan District misunderstood the instructions for 2001 and 2002 for separating out volumetric and non-volumetric. Hence, 2003 & 2004 appear to erroneously have increased non-volumetric rates. Correction was made to 2003 & 2004 information

Reported as of 4/1

BMP 12: Conservation Coordinator

Reporting Unit:	BMP Form Status:	Year:
So. California Water Company - Metro District	**100% Complete**	**2003**

A. Implementation

1 Does your Agency have a conservation coordinator?	yes
2 Is this a full-time position?	no
3. If no, is the coordinator supplied by another agency with which you cooperate in a regional conservation program ?	no
4. Partner agency's name:	
5 If your agency supplies the conservation coordinator:	
a What percent is this conservation coordinator's position?	30%
b. Coordinator's Name	Renee Smith
c. Coordinator's Title	Region Administration Manager
d Coordinator's Experience and Number of Years	Six years experience in implementing various conservation programs. Works with the member agencies and contractors to develo and implement conservation programs Responsible for keeping proper records, e.a , contracts, conservation credit funding proposals, event costs, marketing information, member agency contracts, etc. Also, responsible for submitting customer databases and invoices to its member agencies
e Date Coordinator's position was created (mm/dd/yyyy)	04/01/1997
6 Number of conservation staff, including Conservation Coordinator	3

B. Conservation Staff Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	70000	80000
2. Actual Expenditures	77500	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?	no

a If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

APR-18-05 12:03 FROM- T-201 P.47/52 F-045

Reported as of 4/1

BMP 13: Water Waste Prohibition

Reporting Unit:	BMP Form Status:	Year:
So. California Water Company - Metro District	**100% Complete**	**2003**

A. Requirements for Documenting BMP Implementation

1. Is a water waste prohibition ordinance in effect in your service area? yes

   a. If YES, describe the ordinance:

   CPUC Tariff Rule 14-1

2. Is a copy of the most current ordinance(s) on file with CUWCC? no

   a. List local jurisdictions in your service area in the first text box and water waste ordinance citations in each jurisdiction in the second text box

   n/a n/a

B. Implementation

1. Indicate which of the water uses listed below are prohibited by your agency or service area.

   a. Gutter flooding yes

   b. Single-pass cooling systems for new connections no

   c. Non-recirculating systems in all new conveyor or car wash systems no

   d. Non-recirculating systems in all new commercial laundry systems no

   e. Non-recirculating systems in all new decorative fountains yes

   f. Other, please name no

2. Describe measures that prohibit water uses listed above:

   Water uses listed above are prohibited in stages 2,3, and 4 of a water shortage (greater than 10% water shortage)

Water Softeners:

3. Indicate which of the following measures your agency has supported in developing state law:

   a. Allow the sale of more efficient, demand-initiated regenerating DIR models. no

   b. Develop minimum appliance efficiency standards that:

      i.) Increase the regeneration efficiency standard to at least 3,350 grains of hardness removed per pound of common salt used. no

      ii.) Implement an identified maximum number of gallons discharged per gallon of soft water produced no

   c. Allow local agencies, including municipalities and special districts, to set more stringent standards and/or to ban on-site regeneration of water softeners if it is demonstrated and found by the agency governing board that there is an adverse effect on the reclaimed water or groundwater supply no

4. Does your agency include water softener checks in home water audit programs? no

5. Does your agency include information about DIR and exchange-type

water softeners in educational efforts to encourage replacement of less efficient timer models? no

C. Water Waste Prohibition Program Expenditures

	This Year	Next Year
1 Budgeted Expenditures	0	0
2. Actual Expenditures	0	

D. "At Least As Effective As"

1 Is your AGENCY implementing an "at least as effective as" variant of this BMP? no

a If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as "

E. Comments

APR-18-05 12:03 FROM- T-201 P.50/52 F-045

Reported as of 4/1

BMP 14: Residential ULFT Replacement Programs

Reporting Unit:	BMP Form Status:	Year:
So. California Water Company - Metro District	**100% Complete**	**2003**

A. Implementation

	Single-Family Accounts	Multi-Family Units
1. Does your Agency have program(s) for replacing high-water-using toilets with ultra-low flush toilets?	yes	yes

Number of Toilets Replaced by Agency Program During Report Year

Replacement Method	SF Accounts	MF Units
2. Rebate	0	0
3. Direct Install	0	0
4 CBO Distribution	0	0
5 Other	0	0
Total	**0**	**0**

6. Describe your agency's ULFT program for single-family residences.

SCWA partners with MWDSC member agencies in order to secure funding for programs. SCWC enters into contract agreements with MWDSC's member agencies to contribute funds and distribute ULFTs. SCWC hires contractors to implement the various ULFT programs. The contractor is responsible for implementing the program which includes: customer database record keeping, ordering and distributing ULFTs, recycling, hiring CBO, paperwork etc. Up to two free ULFTs are provided to single-family residents who reside in SCWC's service area and who don't have ULFTs and who have not participated before

7. Describe your agency's ULFT program for multi-family residences

SCWC enters into contract agreement with its member agencies in order to receive funding from MWDSC. SCWC also contributes funds to this program. After securing MWD and member agency funding, SCWC will bid and hire an experience contractor to implement the multi-family program. SCWC will provide customer information and assist the contractor with marketing in order to provide the service to its customers. Free ULFTs, water efficient showerheads and aerators will be provided to its customers free of charge. The contractor will be in charge of data management for each customer

8. Is a toilet retrofit on resale ordinance in effect for your service area? no

9. List local jurisdictions in your service area in the left box and ordinance citations in each jurisdiction in the right box:

B. Residential ULFT Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	30000	40000

2 Actual Expenditures 25000

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no

a If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as "

D. Comments

APR-18-05 12:04 FROM- T-201 P.52/52 F-045

Reported as of 4/1

BMP 01 Coverage: Water Survey Programs for Single-Family and Multi-Family Residential Customers

Reporting Unit	Reporting Period
So. California Water Company - Metro District	**03-04**

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency Indicated "at least as effective as" Implementation during report period?	No

A Reporting Unit (RU) must meet three conditions to satisfy strict compliance for BMP 1

Condition 1. Adopt survey targeting and marketing strategy on time

Condition 2 Offer surveys to 20% of SF accounts and 20% of MF units during report period

Condition 3: Be on track to survey 15% of SF accounts and 15% of MF units within 10 years of implementation start date.

Test for Condition 1

So California Water Company - M-'
Implement Targeting/Mark

Year So California Water Co
Reported Implementing Targe
So California Water Company
Targeting/Marketing Coverage

Coverage report 2003-04

Test for Condition 2

Survey Program to Start by:	1998			
Reporting Period:	03-04	20%	NO	NO

Test for Condition 3

	Completed Residential Surveys	
	Single Family	Multi-Family
Total Completed Surveys 1999 - 2004:	8,870	
Past Credit for Surveys Completed Prior to 1999 (Implementation of Reporting Database):	2,090	
Total + Credit	10,960	

Reported as of 4/1

BMP 02 Coverage: Residential Plumbing Retrofit

Reporting Unit
So. California Water Company - Metro District

Reporting Period.
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

An agency must meet one of three conditions to satisfy strict compliance for BMP 2.

Condition 1 The agency has demonstrated that 75% of SF accounts and 75% of MF units constructed prior to 1992 are fitted with low-flow showerheads.

Condition 2 An enforceable ordinance requiring the replacement of high-flow showerheads and other water use fixtures with their low-flow counterparts is in place for the agency's service area.

Condition 3 The agency has distributed or directly installed low-flow showerheads and other lowflow plumbing devices to not less than 10% of single-family accounts and 10% of multi-family units constructed prior to 1992 during the reporting period

Test for Condition 1

		Single-Family		Multi-Family	
Report Year	Report Period	Reported Saturation	Saturation > 75%?	Reported Saturation	Saturation > 75%?
1999	99-00	19.00%	NO	19.00%	NO
2000	99-00	19.00%	NO	19 00%	NO
2001	01-02	19 00%	NO	19 00%	NO
2002	01-02	19 00%	NO	19 00%	NO
2003	03-04	23.00%	NO	23.00%	NO
2004	03-04	27 00%	NO	27.00%	NO

Test for Condition 2

Report Year	Report Period	So. California Water Company - Metro District has ordinance requiring showerhead retrofit?
1999	99-00	NO
2000	99-00	NO
2001	01-02	NO
2002	01-02	NO
2003	03-04	NO
2004	03-04	NO

Test for Condition 3

Reporting Period. 03-04

1992 SF Accounts	Num. Showerheads Distributed to SF Accounts	Single-Family Coverage Ratio	SF Coverage Ratio > 10%
73,225	1,250	1.7%	NO

1992 MF Accounts	Num Showerheads Distributed to MF Accounts	Multi-Family Coverage Ratio	MF Coverage Ratio > 10%

56,616	1,250	2 2%	NO

BMP 2 COVERAGE STATUS SUMMARY:
Water supplier has not met one or more coverage requirements for this BMP.

Reported as of 4/1

BMP 03 Coverage: System Water Audits, Leak Detection and Repair

Reporting Unit:
So. California Water Company - Metro District

Reporting Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

An agency must meet one of two conditions to be in compliance with BMP 3:

Condition 1: Perform a prescreening audit. If the result is equal to or greater than 0.9 nothing more needs be done.

Condition 2: Perform a prescreening audit. If the result is less than 0.9, perform a full audit in accordance with AWWA's Manual of Water Supply Practices, Water Audits, and Leak Detection.

Test for Conditions 1 and 2

Report Year	Report Period	Pre-Screen Completed	Pre-Screen Result	Full Audit Indicated	Full Audit Completed
1999	99-00	YES	97.1%	No	YES
2000	99-00	YES	98.9%	No	YES
2001	01-02	YES	99.2%	No	YES
2002	01-02	YES	96.8%	No	YES
2003	03-04	YES	98.0%	No	YES
2004	03-04	YES	95.4%	No	YES

BMP 3 COVERAGE STATUS SUMMARY:
Water supplier is meeting coverage requirements for this BMP.

Reported as of 4/1

BMP 04 Coverage: Metering with Commodity Rates for all New Connections and Retrofit of Existing

Reporting Unit	Reporting Period:
So. California Water Company - Metro District	**03-04**

MOU Exhibit 1 Coverage Requirement

No exemption request filed	
Agency indicated "at least as effective as" implementation during report period?	No

An agency must be on track to retrofit 100% of its unmetered accounts within 10 years to be in compliance with BMP 4.

Test for Compliance

Total Meter Retrofits Reported through 2004	
No. of Unmetered Accounts in Base Year	
Meter Retrofit Coverage as % of Base Year Unmetered Accounts	
Coverage Requirement by Year 6 of Implementation per Exhibit 1	42.0%
RU on Schedule to meet 10 Year Coverage Requirement	YES

BMP 4 COVERAGE STATUS SUMMARY:

Water supplier is meeting coverage requirements for this BMP.

Reported as of 4/1

BMP 05 Coverage: Large Landscape Conservation Programs and Incentives

Reporting Unit:
So. California Water Company - Metro District

Reporting Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

An agency must meet three conditions to comply with BMP 5.

Condition 1: Develop water budgets for 90% of its dedicated landscape meter accounts within four years of the date implementation is to start.

Condition 2: (a) Offer landscape surveys to at least 20% of its CII accounts with mixed use meters each report cycle and be on track to survey at least 15% of its CII accounts with mixed use meters within 10 years of the date implementation is to start OR (b) Implement a dedicated landscape meter retrofit program for CII accounts with mixed use meters or assign landscape budgets to mixed use meters.

Condition 3: Implement and maintain customer incentive program(s) for irrigation equipment retrofits.

Test for Condition 1

Year	Report Period	BMP 5 Implementation Year	No. of Irrigation Meter Accounts	No. of Irrigation Accounts with Budgets	Budget Coverage Ratio	90% Coverage Met by Year 4
1999	99-00	1	504			NA
2000	99-00	2	27			NA
2001	01-02	3	40			NA
2002	01-02	4	54			No
2003	03-04	5	96			No
2004	03-04	6	112			No

Test for Condition 2a (survey offers)

Select Reporting Period:	03-04
Large Landscape Survey Offers as % of Mixed Use Meter CII Accounts	
Survey Offers Equal or Exceed 20% Coverage Requirement	NO

Test for Condition 2a (surveys completed)

Total Completed Landscape Surveys Reported through	
Credit for Surveys Completed Prior to Implementation of Reporting Database	6
Total + Credit	6
CII Accounts in Base Year	6,621
RU Survey Coverage as a % of Base Year CII Accounts	0.1%
Coverage Requirement by Year of Implementation per Exhibit 1	6.3%

RU on Schedule to Meet 10 Year Coverage

Requirement NO

Test for Condition 2b (mixed use budget or meter retrofit program)

Report Year	Report Period	BMP 5 Implementation Year	Agency has mix-use budget program	No. of mixed-use budgets
1999	99-00	1	NO	
2000	99-00	2	NO	
2001	01-02	3	NO	
2002	01-02	4	NO	
2003	03-04	5	NO	
2004	03-04	6	NO	

Report Year	Report Period	BMP 4 Implementation Year	No. of mixed use CII accounts	No. of mixed use CII accounts fitted with irrig. meters
1999	99-00	1	6,621	
2000	99-00	2	6,621	
2001	01-02	3	6,621	
2002	01-02	4	6,621	
2003	03-04	5	6,621	
2004	03-04	6	6,621	

Test for Condition 3

Report Year	Report Period	BMP 5 Implementation Year	RU offers financial incentives?	No. of Loans	Total Amt. Loans
1999	99-00	1	YES		
2000	99-00	2	NO		
2001	01-02	3	NO		
2002	01-02	4	NO		
2003	03-04	5	NO		
2004	03-04	6	NO		

Report Year	Report Period	No. of Grants	Total Amt Grants	No. of rebates	Total Amt Rebates
1999	99-00				
2000	99-00				
2001	01-02				
2002	01-02				
2003	03-04				
2004	03-04				

BMP 5 COVERAGE STATUS SUMMARY:
Water supplier has not met one or more coverage requirements for this BMP.

Reported as of 4/1

BMP 06 Coverage: High-Efficiency Washing Machine Rebate Programs

Reporting Unit:
So. California Water Company - Metro District

Reporting Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

An agency must meet one condition to comply with BMP 6.

Condition 1 Offer a cost-effective financial incentive for high-efficiency washers if one or more energy service providers in service area offer financial incentives for high-efficiency washers.

Test for Condition 1

Year	Report Period	BMP 6 Implementation Year	Rebate Offered by ESP?	Rebate Offered by RU?	Rebate Amount
1999	99-00	1	NO	NO	
2000	99-00	2	NO	NO	
2001	01-02	3	NO	NO	
2002	01-02	4	NO	NO	
2003	03-04	5	NO	NO	
2004	03-04	6	NO	NO	

Year	Report Period	BMP 6 Implementation Year	No. Rebates Awarded	Coverage Met?
1999	99-00	1		YES
2000	99-00	2		YES
2001	01-02	3		YES
2002	01-02	4		YES
2003	03-04	5		YES
2004	03-04	6		YES

BMP 6 COVERAGE STATUS SUMMARY:
Water supplier is meeting coverage requirements for this BMP.

Reported as of 4/1

BMP 07 Coverage: Public Information Programs

Reporting Unit	Reporting Period
So. California Water Company - Metro District	**03-04**

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?	No

An agency must meet one condition to comply with BMP 7.

Condition 1. Implement and maintain a public information program consistent with BMP 7's definition.

Test for Condition 1

Year	Report Period	BMP 7 Implementation Year	RU Has Public Information Program?
1999	99-00	2	YES
2000	99-00	3	YES
2001	01-02	4	YES
2002	01-02	5	YES
2003	03-04	6	YES
2004	03-04	7	YES

BMP 7 COVERAGE STATUS SUMMARY:
Water supplier is meeting coverage requirements for this BMP.

APR-18-05 11:29 FROM- T-200 P.11/30 F-044

Reported as of 4/1

BMP 08 Coverage: School Education Programs

Reporting Unit:
So. California Water Company - Metro District

Reporting Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

An agency must meet one condition to comply with BMP 8.

Condition 1. Implement and maintain a school education program consistent with BMP 8's definition.

Test for Condition 1

Year	Report Period	BMP 8 Implementation Year	RU Has School Education Program?
1999	99-00	2	YES
2000	99-00	3	YES
2001	01-02	4	YES
2002	01-02	5	YES
2003	03-04	6	YES
2004	03-04	7	YES

BMP 8 COVERAGE STATUS SUMMARY:
Water supplier is meeting coverage requirements for this BMP.

APR-18-05 11:29 FROM- T-200 P.12/30 F-044

Reported as of 4/1

BMP 09 Coverage: Conservation Programs for CII Accounts

Reporting Unit:
So. California Water Company - Metro District

Reporting Period
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

An agency must meet three conditions to comply with BMP 9.

Condition 1. Agency has identified and ranked by use commercial, industrial, and institutional accounts.

Condition 2(a): Agency is on track to survey 10% of commercial accounts, 10% of industrial accounts, and 10% of institutional accounts within 10 years of date implementation to commence
OR
Condition 2(b): Agency is on track to reduce CII water use by an amount equal to 10% of baseline use within 10 years of date implementation to commence
OR
Condition 2(c): Agency is on track to meet the combined target as described in Exhibit 1 BMP 9 documentation

Test for Condition 1

Year	Report Period	BMP 9 Implementation Year	Ranked Com Use	Ranked Ind Use	Ranked Inst Use
1999	99-00	1	YES	YES	YES
2000	99-00	2	YES	YES	YES
2001	01-02	3	YES	YES	YES
2002	01-02	4	YES	YES	YES
2003	03-04	5	YES	YES	YES
2004	03-04	6	YES	YES	YES

Test for Condition 2a

	Commercial	Industrial	Institutional
Total Completed Surveys Reported through 2004			
Credit for Surveys Completed Prior to Implementation of Reporting Databases	3	3	2
Total + Credit	3	3	2
CII Accounts in Base Year	3,208	2,265	1,148
RU Survey Coverage as % of Base Year CII Accounts	0.1%	0.1%	0.2%
Coverage Requirement by Year 6 of Implementation per Exhibit 1	4.2%	4.2%	4.2%
RU on Schedule to Meet 10 Year Coverage Requirement	NO	NO	NO

Test for Condition 2a

Performance

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Year	Report Period	BMP 9 Implementation Year	Performance Target Savings (AF/yr)	Performance Target Savings Coverage	Target Savings Coverage Requirement	Coverage Requirement Met
1999	99-00	1			0.5%	NO
2000	99-00	2			1.0%	NO
2001	01-02	3			1.7%	NO
2002	01-02	4			2.4%	NO
2003	03-04	5			3.3%	NO
2004	03-04	6			4.2%	NO

Test for Condition 2c

Total BMP 9 Surveys + Credit	8
BMP 9 Survey Coverage	0.1%
BMP 9 Performance Target Coverage	
BMP 9 Survey + Performance Target Coverage	0.1%
Combined Coverage Equals or Exceeds Coverage Requirement?	NO

BMP 9 COVERAGE STATUS SUMMARY:
Water supplier has not met one or more coverage requirements for this BMP.

Reported as of 4/1

BMP 11 Coverage: Conservation Pricing

Reporting Unit:
So. California Water Company - Metro District

Reporting Period
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

An agency must meet one condition to comply with BMP 11.

Agency shall maintain rate structure consistent with BMP 11's definition of conservation pricing 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

a) Non-conserving pricing provides no incentives to customers to reduce use Such pricing is characterized by one or more of the following components: rates in which the unit price decreases as the quantity used increases (declining block rates),rates that involve charging customers a fixed amount per billing cycle regardless of the quantity used; pricing in which the typical bill is determined by high fixed charges and low commodity charges

b) Conservation pricing provides incentives to customers to reduce average or peak use, or both Such pricing includes rates designed to recover the cost of providing service, and billing for water and sewer service based on metered water use. Conservation pricing is also characterized by one or more of the following components: rates in which the unit rate is constant regardless of the quantity used (uniform rates) or increases as the quantity used increases (increasing block rates); seasonal rates or excessuse surcharges to reduce peak demands during summer months; rates based upon the longrun marginal cost or the cost of adding the next unit of capacity to the system.

Test for Condition 1

Year	Report Period	RU Employed Non Conserving Rate Structure	RU Meets BMP 11 Coverage Requirement
1999	99-00	YES	NO
2000	99-00	NO	YES
2001	01-02	NO	YES
2002	01-02	NO	YES
2003	03-04	NO	YES
2004	03-04	NO	YES

BMP 11 COVERAGE STATUS SUMMARY:
Water supplier is meeting coverage requirements for this BMP.

Reported as of 4/1

BMP 12 Coverage: Conservation Coordinator

Reporting Unit: **So. California Water Company - Metro District**

Reporting Period: **03-04**

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

Agency shall staff and maintain the position of conservation coordinator and provide support staff as necessary.

Test for Compliance

Report Year	Report Period	Conservation Coordinator Position Staffed?	Total Staff on Team (incl CC)
1999	99-00	YES	2
2000	99-00	YES	3
2001	01-02	YES	3
2002	01-02	YES	3
2003	03-04	YES	3
2004	03-04	YES	3

BMP 12 COVERAGE STATUS SUMMARY:
Water supplier is meeting coverage requirements for this BMP.

Reported as of 4/1

BMP 13 Coverage: Water Waste Prohibition

Reporting Unit:
So. California Water Company - Metro District

Reporting Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

An agency must meet one condition to comply with BMP 13

Implementation methods shall be enacting and enforcing measures prohibiting gutter flooding, single pass cooling systems in new connections, non-recirculating systems in all new conveyer car wash and commercial laundry systems, and non-recycling decorative water fountains.

Test for Condition 1

Agency or service area prohibits:

Year	Gutter Flooding	Single-Pass Cooling Systems	Single-Pass Car Wash	Single-Pass Laundry	Single-Pass Fountains	Other	RU has ordinance that meets coverage requirement
1999	yes	no	no	no	yes	no	NO
2000	yes	no	no	no	yes	no	NO
2001	yes	no	no	no	yes	no	NO
2002	yes	no	no	no	yes	no	NO
2003	yes	no	no	no	yes	no	NO
2004	yes	no	no	no	yes	no	NO

BMP 13 COVERAGE STATUS SUMMARY:
Water supplier has not met one or more coverage requirements for this BMP.

Reported as of 4/1

BMP 14 Coverage: Residential ULFT Replacement Programs

Reporting Unit **So. California Water Company - Metro District**

MOU Exhibit 1 Coverage Requirement

A Reporting Unit (RU) must meet one of the following conditions to be in compliance with BMP 14.

Condition 1. Retrofit-on-resale (ROR) ordinance in effect in service area.

Condition 2 Water savings from toilet replacement programs equal to 90% of Exhibit 6 coverage requirement.

An agency with an exemption for BMP 14 is not required to meet one of the above conditions This report treats an agency with missing base year data required to compute the Exhibit 6 coverage requirement as out of compliance with BMP 14

Status: Water supplier has not met one or more coverage requirements for this BMP. as of 2004

Coverage Year	BMP 14 Data Submitted to CUWCC	Exemption Filed with CUWCC	ROR Ordinance in Effect	Exhibit 6 Coverage Req'mt (AF)	Toilet Replacement Program Water Savings* (AF)
1998	Yes			358 99	1707.91
1999	Yes	No	No	1022.58	2317.60
2000	Yes	No	No	1943.17	3120.65
2001	Yes	No	No	3079.13	3961.46
2002	Yes	No	No	4394.09	4768.63
2003	Yes	No	No	5856.30	5543.52
2004	Yes	No	No	7438.07	6287 41
2005	No	No	No	9115 29	
2006	No	No	No	10867 00	
2007	No	No	No	12674 99	

*NOTE: Program water savings listed are net of the plumbing code. Savings are cumulative (not annual) between 1991 and the given year Residential ULFT count data from unsubmitted forms are NOT included in the calculation.

BMP 14 COVERAGE STATUS SUMMARY:

Water supplier has not met one or more coverage requirements for this BMP.

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BMP 14 Coverage: Residential ULFT Replacement Programs

Reporting Unit. **So. California Water Company - Metro District**

BMP 14 Coverage Calculation Detail: Retrofit on Resale (ROR) Ordinance Water Savings

	Single Family	Multi-Family
1992 Housing Stock		
Average rate of natural replacement (% of remaining stock)	04	04
Average rate of housing demolition (% of remining stock)	.005	.005
Estimated Housing Units with 3.5+ gpf Toilets in 1997	59767 89	46211 25
Average resale rate	.045	.09
Average persons per unit		
Average toilets per unit		
Average savings per home (gpd; from Exhibit 6)	40.8	54.3

Single Family Housing Units

Coverage Year	Unretrofitted Houses	Houses Sold	Houses Unsold	Sold and Retrofitted	Sold and Already Retrofitted	Unsold and Retrofitted	Gross ROR Savings (AFY)	Nat'l Replacement Only Savings (AFY)	Net ROR Savings (AFY)
1998	54820 06	2676.11	56792 94	2676 11		2271.72	841 01	723 62	117 39
1999	50281.84	2662 73	56508 97	2454.57	208 16	2083 66	1048.39	827.99	220.40
2000	48119.31	2649 41	56226.43	2251 37	398 04	1911 16	1238.59	928.21	310.39
2001	42301 36	2636.17	55945 30	2064 99	571 17	1752.95	1413 06	1024 44	388 62
2002	38799 49	2622.98	55665 57	1894 04	728.94	1607 83	1573 07	1116 84	456.24
2003	35587.51	2609 87	55387.24	1737.25	872 62	1474 73	1719.84	1205.56	514.29
2004	32641.43	2596 82	55110.31	1593.43	1003 39	1352 65	1854 47	1290 75	563 72
2005	29939 25	2583.84	54834.75	1461 52	1122 32	1240.67	1977 94	1372 55	605 39
2006	27460 76	2570.92	54560 58	1340 53	1230.39	1137 96	2091.20	1451 09	640.11
2007	25187.44	2558 08	54287.78	1229.56	1328 51	1043 76	2195.08	1526.51	668.57

Multi Family Housing Units

Coverage Year	Unretrofitted Houses	Houses Sold	Houses Unsold	Sold and Retrofitted	Sold and Already Retrofitted	Unsold and Retrofitted	Gross ROR Savings (AFY)	Nat'l Replacement Only Savings (AFY)	Net ROR Savings (AFY)
1998	40399 35	4138.22	41841 97	4138 22		1673.68	988 21	744 61	241 60
1999	35318.41	4117 53	41632.76	3617.76	499 76	1463 18	1295.21	852 01	443.19
2000	30876 48	4096.94	41424 60	3162 76	934 18	1279.16	1565 34	955.14	610.20
2001	26993.21	4076 45	41217 48	2764.99	1311.46	1118 28	1801 50	1054 16	747 34
2002	23598 33	4056 07	41011.39	2417.24	1638 83	977 64	2007.96	1149 24	858 72
2003	20630.41	4035 79	40806 33	2113 23	1922.56	854.68	2188 45	1240 53	947.92
2004	18035 77	4015.61	40602 30	1847 45	2168 16	747.19	2346.24	1328.19	1018.05
2005	15767 44	3995 53	40399.29	1615 10	2380 43	653 22	2484 19	1412 37	1071 83
2006	13784 40	3975.56	40197 29	1411 97	2563 58	571.07	2604 79	1493.19	1111.60

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2007	12050.77	3955.68	39998.31	1234.39	2721.29	499.24	2710.22	1570.79	1139.43

Total Water Savings (AF) Report

Reporting Unit:
So. California Water Company - Metro District

Estimated Water Savings from BMP Annual Report Data

BMP01: Water Survey Programs for Single-Family and Multi-Family Residential Customers	1,135
BMP02: Residential Plumbing Retrofit	374
BMP04: Metering with Commodity Rates for all New Connections and Retrofit of Existing	0
BMP05: Large Landscape Conservation Programs and Incentives	499
BMP06: High-Efficiency Washing Machine Rebate Programs	0
BMP09: Conservation Programs for CII Accounts	82
BMP09a: CII ULFT Water Savings	143
BMP14: Residential ULFT Replacement Programs	8,314
Total:	10,547

Water Savings (AFY) Detail Report for BMP 01: Water Survey Programs for Single-Family and Multi-Family Residential Customers

Reporting Unit:
So. California Water Company - Metro District

Estimated Water Savings from BMP Annual Report Data

Year		Water Savings (AF)
1991		0
1992		0
1993		0
1994		0
1995		0
1996		56
1997		48
1998		41
1999		35
2000		167
2001		213
2002		181
2003		154
2004		131
2005		111
	TOTAL:	**1,135**

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Water Savings (AFY) Detail Report for BMP 02: Residential Plumbing Retrofit

Reporting Unit
So. California Water Company - Metro District

Estimated Water Savings from BMP Annual Report Data

Year	Gross Water Savings (AFY)	Water Savings (AFY) Net of Plumbing Code
1991	0	0
1992	0	0
1993	0	0
1994	0	0
1995	0	0
1996	0	0
1997	0	0
1998	0	0
1999	17	17
2000	34	30
2001	53	39
2002	54	29
2003	63	30
2004	76	34
2005	76	24
TOTALS:	**374**	**203**

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Water Savings (AFY) Detail Report for BMP 04: Metering with Commodity Rates for all New Connections and Retrofit of Existing

Reporting Unit:
So. California Water Company - Metro District

Estimated Water Savings from BMP Annual Report Data

Year	Water Savings (AF)
1991	0
1992	0
1993	0
1994	0
1995	0
1996	0
1997	0
1998	0
1999	0
2000	0
2001	0
2002	0
2003	0
2004	0
2005	0
TOTAL:	**0**

Water Savings (AFY) Detail Report for BMP 05: Large Landscape Conservation Programs and Incentives

Reporting Unit:
So. California Water Company - Metro District

Estimated Water Savings from BMP Annual Report Data

Year		Water Savings (AF)
1991		0
1992		0
1993		0
1994		0
1995		4
1996		7
1997		6
1998		6
1999		5
2000		41
2001		74
2002		103
2003		93
2004		84
2005		75
	TOTAL:	**499**

Water Savings (AFY) Detail Report for BMP 06: High-Efficiency Washing Machine Rebate Programs

Reporting Unit:
So. California Water Company - Metro District

Estimated Water Savings from BMP Annual Report Data

Year	Gross Water Savings (AFY)	Water Savings (AFY) Net of Program Freeridership Effects
1991	0	0
1992	0	0
1993	0	0
1994	0	0
1995	0	0
1996	0	0
1997	0	0
1998	0	0
1999	0	0
2000	0	0
2001	0	0
2002	0	0
2003	0	0
2004	0	0
2005	0	0
TOTAL:	**0**	**0**

Water Savings (AFY) Detail Report for BMP 09: Conservation Programs for CII Accounts

Reporting Unit
So. California Water Company - Metro District

Estimated Water Savings from BMP Annual Report Data

Year		Water Savings (AF)
1991		0
1992		0
1993		0
1994		0
1995		0
1996		0
1997		4
1998		5
1999		11
2000		13
2001		12
2002		11
2003		10
2004		9
2005		8
	TOTAL:	**82**

Water Savings (AFY) Detail Report for BMP 09a: CII ULFT Water Savings

Reporting Unit
So. California Water Company - Metro District

Estimated Water Savings from BMP Annual Report Data

Year	Gross Water Savings (AFY)	Water Savings (AFY) Net of Plumbing Code	Water Savings (AFY) Net of Plumbing Code and Program Freeridership Effects
1991	0	0	0
1992	0	0	0
1993	0	0	0
1994	0	0	0
1995	0	0	0
1996	0	0	0
1997	0	0	0
1998	0	0	0
1999	0	0	0
2000	0	0	0
2001	0	0	0
2002	0	0	0
2003	0	0	0
2004	0	0	0
2005	0	0	0
TOTALS:	**0**	**0**	**0**

Water Savings (AFY) Detail Report for BMP 14: Residential ULFT Replacement Programs

Reporting Unit:
So. California Water Company - Metro District

Estimated Water Savings from BMP Annual Report Data

Year	Gross Water Savings (AFY)	Water Savings (AFY) Net of Plumbing Code	Water Savings (AFY) Net of Plumbing Code and Program Freeridership Effects
1991	74	74	55
1992	147	144	108
1993	221	212	159
1994	294	277	208
1995	294	266	199
1996	294	255	191
1997	294	245	184
1998	294	235	176
1999	678	610	476
2000	896	803	632
2001	966	841	662
2002	966	807	636
2003	966	775	610
2004	966	744	586
2005	966	714	562
TOTALS:	**8,314**	**7,002**	**5,446**

Appendix F
Rule No. 14.1: Mandatory Water Conservation, Restrictions, and Ration Program

Rule No. 14.1

MANDATORY WATER CONSERVATION, RESTRICTIONS AND RATIONING PROGRAM (N)

A. GENERAL INFORMATION:

If water supplies are projected to be insufficient to meet normal customer demand, and are beyond the control of the Company, the Company may elect to implement voluntary conservation using the portion of this plan set forth in Section C of this rule after notifying the Commission's Water Division of its intent. If, in the opinion of the Company, more stringent water measures are required, the Company shall request Commission authorization to implement the mandatory conservation and rationing measures set forth in Section D.

The Commission shall authorize mandatory conservation and rationing by approving Schedule No. 14.1, Mandatory Water Conservation and Rationing. When Schedule No. 14.1 has expired or is not in effect, mandatory conservation and rationing measures will not be in force. Schedule No. 14.1 will set forth water use violation fines, charges for removal of flow restrictors, and the period during which mandatory conservation and rationing measures will be in effect.

When the applicable Schedule No. 14.1 is in effect and the Company determines that water supplies are again sufficient to meet normal demands, and mandatory conservation and rationing measures are no longer necessary, the Company shall seek Commission approval to rescind Schedule No. 14.1 to discontinue rationing.

In the event of a water supply shortage requiring a voluntary or mandatory program, the Company shall make available to its customers water conservation kits as required by Rule No. 20. The Company shall notify all customers of the availability of conservation kits.

B. DEFINITIONS

As used in this water rationing plan, the word:

1. "Company" means the Southern California Water Company, California Cities Water, and Arden-Cordova Water Service;
2. "Persons" means an individual customer, resident, business, organizations including commercial, industrial, nonprofit, and government organizations or associations;
3. "Customer" means any person who uses water supplied by the Company;
4. "Water" means water supplied by the Company;

(N)

Rule No. 14.1

(N)

MANDATORY WATER CONSERVATION, RESTRICTIONS AND RATIONING PROGRAM
(Continued)

B. DEFINITIONS (Continued)

5. "Water shortage emergency" means the conditions which constitute a determination that deliveries of potable water supplies have reached a level such that continued unrestricted water use would be detrimental to the public welfare.

C. CONSERVATION – NON-ESSENTIAL OR UNAUTHORIZED WATER USE

No customer shall use Company–supplied water for non-essential or unauthorized uses as defined as follows:

1. Use of water through any connection when the Company has notified the customer in writing to repair a broken or defective plumbing, sprinkler, watering or irrigation system and the customer has failed to make such repairs within 5 days after receipt of such notice.
2. Use of water which results in flooding or run-off in gutters, waterways, patios, driveway, or streets.
3. Use of water for washing aircraft, cars, buses, boats, trailers or other vehicles without a positive shut-off nozzle on the outlet end of the hose. Exceptions include washing vehicles at commercial or fleet vehicle washing facilities operated at fixed locations where equipment using water is properly maintained to avoid wasteful use.
4. Use of water through a hose for washing buildings, structures, sidewalks, walkways, driveways, patios, parking lots, tennis courts, or other hard-surfaced areas in a manner which results in excessive run-off or waste.
5. Use of water for watering streets with trucks, except for initial wash-down for construction purposes (if street sweeping is not feasible), or to protect the health and safety of the public.
6. Use of water for construction purposes, such as consolidation of backfill, dust control, or other uses unless no other source of water or other method can be used.
7. Use of water for more than minimal landscaping in connection with any new construction.
8. Use of water for outside plants, lawn, landscape, and turf areas more often than every other day, with even numbered addresses watering on even numbered days of the month and odd numbered addresses watering on the odd numbered days of the month, except that this provision shall not apply to commercial nurseries, golf courses and other water-dependent industries.
9. Use of water for watering outside plants, lawn, landscape and turf areas during certain hours if and when specified in the applicable Schedule No. 14.1 when the schedule is in effect.
10. Use of water for watering outside plants and turf areas using a hand-held hose without a positive shut-off valve.
11. Use of water for decorative fountains or the filling or topping off of decorative lakes or ponds. Exceptions are made for those decorative fountains, lakes, or ponds which utilize recycled water. (N)

(Continued)

Rule No. 14.1

(N)

MANDATORY WATER CONSERVATION, RESTRICTIONS AND RATIONING PROGRAM
(Continued)

C. CONSERVATION – NON-ESSENTIAL OR UNAUTHORIZED WATER USE (Continued)

12. Use of water for the filling or refilling of swimming pools.
13. Service of water by any restaurant except upon the request of the patron.

D. RATIONING OF WATER USE

In the event the conservation measures required by Section C are insufficient to control the water shortage, the Company shall, upon Commission approval, impose mandatory conservation and rationing. Rationing shall be in accordance with the conditions set forth in the applicable Schedule No. 14.1 as filed at the time such rationing is approved by the Commission.

Before mandatory conservation and rationing is authorized by the Commission, the Company shall hold public meetings and take all other applicable steps required by Sections 350 through 358 of the California Water Code.

E. ENFORCEMENT OF MANDATORY CONSERVATION AND RATIONING

1. The water use restrictions of the conservation program, in Section C of this rule, become mandatory when the rationing program goes into effect. These restrictions are applicable whether or not the customer exceeds the monthly water allocation.

2. The Company may, after one verbal and one written warning, install a flow-restricting device on the service line of any customer observed by Company personnel to be using water for any non-essential or unauthorized use as defined in Section C above.

3. A flow restrictor shall not restrict water delivery by greater than 50% of normal flow and shall provide the premise with a minimum of 6 Ccf/month. The restricting device may be removed only by the Company, only after a three-day period has elapsed, and only upon payment of the appropriate removal charge as set forth in the applicable Schedule No 14.1.

4. After the removal of the restricting device, if any non-essential or unauthorized use of water shall continue, the Company may install another flow-restricting device. This device shall remain in place until water supply conditions warrant its removal and until the appropriate charge for removal has been paid to the Company.

5. Each customer's water allocation shall be shown on the water bill. Water allocations may be appealed in writing as provided in Section F of this Rule. If a customer uses water in excess of the allocated amount, the utility may charge the excess usage penalty shown in the applicable Schedule No. 14.1.

(N)

(Continued)

Rule No. 14.1

(N)

MANDATORY WATER CONSERVATION, RESTRICTIONS AND RATIONING PROGRAM
(Continued)

E. ENFORCEMENT OF MANDATORY CONSERVATION AND RATIONING (Continued)

6. Any money collected by the Company through water use violation fines shall not be accounted for as income, but shall be accumulated by the Company in a separate account for disposition as directed or authorized from time to time by the Commission.

7. The charge for removal of a flow-restricting device shall be in accordance with the applicable Schedule No. 14.1.

F. APPEAL PROCEDURE

Any customer who seeks a variance from any of the provisions of this water conservation and rationing plan shall notify the Company in writing, explaining in detail the reason for such a variation. The Company shall respond to each such request.

Any customer not satisfied with the Company's response may file an appeal with the staff of the Commission. The customer and the Company will be notified of the disposition of such appeal by letter from the Executive Director of the Commission.

If the customer disagrees with such disposition, the customer shall have the right to file a formal complaint with the Commission. Except as set forth in this Section, no person shall have any right or claim in law or in equity, against the Company because of, or as a result of, any matter or thing done or threatened to be done pursuant to the provisions of this water conservation and rationing plan.

G. PUBLICITY

In the event the Company finds it necessary to implement this plan, it shall notify customers and hold public hearings concerning the water supply situation, in accordance with Chapter 3, Water Shortage Emergencies, Section 350 through 358, of the California Water Code. The Company shall also provide each customer with a copy of this plan by means of billing inserts or special mailings; notifications shall take place prior to imposing any fines associated with this plan. In addition, the Company shall provide customers with periodic updates regarding its water supply status and the results of customers' conservation efforts. Updates may be by bill insert, special mailing, poster, flyer, newspaper, television or radio spot/advertisement, community bulletin board, or other appropriate methods.

(N)

Appendix G
Rate Schedule

Schedule No. ME-1

Metropolitan District

GENERAL METERED SERVICE

APPLICABILITY

Applicable to all metered water service.

TERRITORY

Portions of the Cities of Artesia, Bell, Bell Gardens, Carson, Cerritos, Compton, Cudahy, Culver City, Downey, El Segundo, Gardena, Hawaiian Gardens, Hawthorne, Huntington Park, Inglewood, Lakewood, La Mirada, Lawndale, Long Beach, Norwalk, Paramount, Santa Fe Springs, South Gate, and the communities of Athens, Lennox, and Moneta and vicinity, Los Angeles County, and portions of the City of Los Alamitos, Orange County.

RATES

Quantity Rates:

For all water delivered, per 100 cu. ft..... $ 1.9790

Service Charge:	Per Month	Surcredit	
For 5/8 x 3/4-inch meter.....	$ 15.70	$0.80	(N)
For 3/4-inch meter.....	23.55	$1.15	(N)
For 1-inch meter.....	39.25	$1.90	(N)
For 1 1/2 inch meter.....	78.45	$4.00	(N)
For 2-inch meter.....	126.00	$6.35	(N)
For 3-inch meter.....	235.00	$11.85	(N)
For 4-inch meter.....	392.00	$19.80	(N)
For 6-inch meter.....	785.00	$39.60	(N)
For 8-inch meter.....	1,255.00	$63.90	(N)
For 10-inch meter.....	1,804.00	$96.00	(N)

The service charge is a readiness-to-serve charge applicable to all metered service and to which is added the charge for water used computed at the Quantity Rates.

SPECIAL CONDITIONS

1. All bills are subject to the reimbursement fee set forth on Schedule No. UF. (D)

2. Pursuant to Decision 04-08-053, a surcharge of $0.0690 per Ccf is to be added to the Quantity Rate for a 12-month period, beginning with the effective date of Advice Letter 1182-W, which is (T) January 1, 2005, to recover the difference between the interim rates and actual rates for the (T) period of February 14, 2004 through September 2, 2004.

3 Due to the overcollection in the Balancing-Type Memorandum Account for the period of January 1, (N) 2004 through December 31, 2004, a surcredit will be applied to the service charges for a 36-month (N) period, beginning on the effective date of Advice Letter 1188-WA. (N)

Schedule No. ME-3

Metropolitan District

RECLAIMED WATER SERVICE

APPLICABILITY

Applicable to all metered reclaimed (non-potable) water service for irrigation and/or industrial use.

TERRITORY

Portions of the Cities of Artesia, Bell, Bell Gardens, Carson, Cerritos, Compton, Cudahy, Culver City, Downey, El Segundo, Gardena, Hawaiian Gardens, Hawthorne, Huntington Park, Inglewood, Lakewood, La Mirada, Lawndale, Long Beach, Norwalk, Paramount, Santa Fe Springs, South Gate, and the communities of Athens, Lennox, and Moneta and vicinity, Los Angeles County, and portions of the City of Los Alamitos, Orange County.

RATES

Quantity Rates:

For all water delivered, per 100 cu. ft..... $ 1.2380

	Per Month	Surcredit
Service Charge:		
For 5/8 x 3/4-inch meter.....	$ 3.90	$0.60 (N)
For 3/4-inch meter.....	5.20	$0.90 (N)
For 1-inch meter.....	6.95	$1.55 (N)
For 1 1/2 inch meter.....	13.10	$3.10 (N)
For 2-inch meter.....	17.95	$4.95 (N)
For 3-inch meter.....	84.50	$9.25 (N)
For 4-inch meter.....	129.00	$15.45 (N)
For 6-inch meter.....	189.00	$30.85 (N)
For 8-inch meter.....	258.00	$49.20 (N)
For 10-inch meter.....	337.00	$70.95 (N)

The Service Charge is a readiness-to-serve charge applicable to all metered service and to which is added the charge for water used computed at the Quantity Rates.

SPECIAL CONDITIONS

1. All bills are subject to the reimbursement fee set forth on Schedule No. UF. (D)

2. Pursuant to Decision 04-08-053, a surcharge of $0.0690 per Ccf is to be added to the Quantity Rate for a 12-month period, beginning with the effective date of Advice Letter 1182-W which is (T) January 1, 2005, to recover the difference between the interim rates and actual rates for the period (T) of February 14, 2004 through September 2, 2004.

3. Due to the overcollection in the Balancing-Type Memorandum Account for the period of December 1, (N) 2004 through December 31, 2004, a surcredit will be applied to the service charges for a 36-month (N) period, beginning on the effective date of Advice Letter 1188-WA. (N)

Appendix H
Responses to Public Comments

No Public Comments received during Public Review Period.

Appendix I
Groundwater Basin Water Rights Stipulation/Judgment

LAGERLOF, SENICAL, DRESCHER & SWIFT
301 North Lake Avenue, 10th Floor
Pasadena, California 91101
(818) 793-9400 or (213) 385-4345

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF LOS ANGELES

CENTRAL AND WEST BASIN WATER REPLENISHMENT DISTRICT, etc., Plaintiff, v. CHARLES E. ADAMS, et al., Defendants.	No. 786,656 SECOND AMENDED JUDGMENT (Declaring and establishing water rights in Central Basin and enjoining extractions therefrom in excess of specified quantities.)
CITY OF LAKEWOOD, a municipal corporation, Cross-Complaint, v. CHARLES E. ADAMS, et al., Cross-Defendants.	

The above-entitled matter duly and regularly came on for trial in Department 73 of the above-entitled Court (having been transferred thereto from Department 75 by order of the presiding Judge), before the Honorable Edmund M. Moor, specially assigned Judge, on May 17, 1965, at 10:00 a.m. Plaintiff was represented by its attorneys BEWLEY, KNOOP, LASSLEBEN & WHELAN, MARTIN E. WHELAN,

JR., and EDWIN H. VAIL, JR., and cross-complainant was represented by its attorney JOHN S. TODD. Varic defendants and cross-defendants were also represented at the trial. Evidence both oral and documentary was introduced. The trial continued from day to day on May 17, 18, 19, 20, 21 and 24, 1965, at which time it was continued by order of Court for further trial on August 25, 1965, at 10:00 a.m. in Department 73 of the above-entitle Court; whereupon, having then been transferred to Department 74, trial was resumed in Department 74 on August 25, 1965, and then continued to August 27, 1965 at 10:00 a.m. in the same Department. On the latter date, trial was concluded and the matter submitted. Findings of fact and conclu-sions of law have heretofore been signed and filed. Pursuant to the reserved and continuing jurisdiction of the court under the judgment herein, certain amendments to said judgment and temporary orders have heretofore been made and entered. Continuing jurisdiction of the court for this action is currently assigned to HON. FLORENCE T. PICKARD. Motion of Plaintiff herein fo further amendments to the judgment, notice thereof and of the hearin thereon having been duly and regularly given to all parties, came on for hearing in Department 38 of the above-entitled court on MAY 6, 1991 at 8:45 a.m. before said HONORABLE PICKARD. Plaintiff was represented by its attorneys LAGERLOF, SENECAL, DRESCHER & SWIFT, by William F. Kruse. Various defendants were represented by counsel of record appearing on the Clerk's records. Hearing thereon was concluded on that date. The within "Second Amended Judgment" incorporates amendments and orders heretofore made to the extent presently operable and amendments pursuant to said last mentione motion. To the extent this Amended judgment is a restatement of the

amendments pursuant to said last mentioned motion. To the extent this Amended judgment is a restatement of the judgment as heretofore amended, it is for convenience in incorporating all matters in one document, is not a readjudication of such matters and is not intended to reopen any such matters. As used hereinafter the word "judgment" shall include the original judgment as amended to date. In connection with the following judgment, the following terms, words, phrases and clauses are used by the Court with the following meanings:

"Administrative Year" means the water year until operation under the judgment is converted to a fiscal year pursuant to Paragraph 4, Part I, p. 53 hereof, whereupon it shall mean a fiscal year, including the initial 'short fiscal year' therein provided.

"Allowed Pumping Allocation" is that quantity in acre feet which the Court adjudges to be the maximum quantity which a party should be allowed to extract annually from Central Basin as set forth in part I hereof, which constitutes 80% of such party's Total Water Right.

"Allowed Pumping Allocation for a particular Administrative year" and "Allowed Pumping Allocation in the following Administrative year" and similar clauses, mean the Allowed Pumping Allocation as increased in a particular Administrative year by an authorized carryovers pursuant to Part III, Subpart A of this judgment and as reduced by reason of any over-extractions in a previous Administrative year.

"Artificial Replenishment" is the replenishment of Central Basin achieved through the spreading of imported or reclaimed

water for percolation thereof into Central Basin by a governmental agency.

"Base Water Right" is the highest continuous extractions of water by a party from Central Basin for a beneficial use in any period of five consecutive years after the commencement of overdraft in Central Basin and prior to the commencement of this action, as to which there has been no cessation of use by that party during any subsequent period of five consecutive years. As employed in the above definition, the words "extractions of water by a party" and "cessation of use by that party" include such extractions and cessations by any predecessor or predecessors in interest.

"Calendar Year" is the twelve month period commencing January 1 of each year and ending December 31 of each year.

"Central Basin" is the underground water basin or reservoir underlying Central Basin Area, the exterior boundaries of which Central Basin are the same as the exterior boundaries of Central Basin Area.

"Central Basin Area" is the territory described in Appendix "1" to this judgment, and is a segment of the territory comprising Plaintiff District.

"Declared water emergency" shall mean a period commencing with the adoption of a resolution of the Board of Directors of the Central and West Basin Water Replenishment District declaring that conditions within the Central Basin relating to natural and imported supplies of water are such that, without implementation of the water emergency provision of this Judgment, the water resources of the Central Basin risk degradation. In making such

declaration, the Board of Directors shall consider any information and requests provided by water producers, purveyors and other affected entities and may, for that purpose, hold a public hearing in advance of such declaration. A Declared Water Emergency shall extend for one (1) year following such resolution, unless sooner ended by similar resolution.

"Extraction", "extractions", "extracting", "extracted", and other variations of the same noun and verb, mean pumping, taking, diverting or withdrawing ground water by any manner or means whatsoever from Central Basin.

"Fiscal year" is the twelve (12) month period July 1 through June 30 following.

"Imported Water" means water brought into Central Basin Area from a non-tributary source by a party and any predecessors in interest, either through purchase directly from The Metropolitan Water District of Southern California or by direct purchase from a member agency thereof, and additionally as to the Department of Water and Power of the City of Los Angeles, water brought into Central Basin area by that party by means of the Owens River Aqueduct.

"Imported Water Use Credit" is the annual amount, computed on a calendar year basis, of imported water which any party and any predecessors in interest, who have timely made the required filings under Water Code Section 1005.1, have imported into Central Basin Area in any calendar year and subsequent to July 9, 1951, for beneficial use therein, but not exceeding the amount by which that party and any predecessors in interest reduces his or their extractions of ground water from Central Basin in that

calendar year from the level of his or their extractions in the preceding calendar year, or in any prior calendar year not earlier than the calendar year 1950, whichever is the greater.

"Natural Replenishment" means and includes all processes other than "Artificial Replenishment" by which water may become a part of the ground water supply of Central Basin.

"Natural Safe Yield" is the maximum quantity of ground water, not in excess of the long term average annual quantity of Natural Replenishment, which may be extracted annually from Central Basin without eventual depletion thereof or without otherwise causing eventual permanent damage to Central Basin as a source of ground water for beneficial use, said maximum quantity being determined without reference to Artificial Replenishment.

"Overdraft" is that condition of a ground water basin resulting from extractions in any given annual period or periods in excess of the long term average annual quantity of Natural Replenishment, or in excess of that quantity which may be extracted annually without otherwise causing eventual permanent damage to the basin.

"Party" means a party to this action. Whenever the term "party" is used in connection with a quantitative water right, or any quantitative right, privilege or obligation, or in connection with the assessment for the budget of the Watermaster, it shall be deemed to refer collectively to those parties to whom are attributed a Total Water Right in Part I of this judgment.

"Person" or "persons" include individuals, partnerships, associations, governmental agencies and corporations, and any and all types of entities.

"Total Water Right" is the quantity arrived at in the same manner as in the computation of "Base Water Right", but including as if extracted in any particular year the Imported Water Use Credit, if any, to which a particular party may be entitled.

"Water" includes only non-saline water, which is that having less than 1,000 parts of chlorides to 1,000,000 parts of water.

"Water Year" is the 12-month period commencing October 1 of each year and ending September 30th of the following year.

In those instances where any of the above-defined words, terms, phrases or clauses are utilized in the definition of any of the other above-defined words, terms, phrases and clauses, such use is with the same meaning as is above set forth.

NOW THEREFORE, IT IS ORDERED, DECLARED, ADJUDGED AND DECREED WITH RESPECT TO THE ACTION AND CROSS-ACTION AS FOLLOWS:

I. DECLARATION AND DETERMINATION OF WATER RIGHTS OF PARTIES; RESTRICTION ON THE EXERCISE THEREOF.[1]

1. Determination of Rights of Parties.

(a) Each party, except defendants, The City of Los Angeles and Department of Water and Power of the City of Los Angeles, whose name is hereinafter set forth in the tabulation at the conclusion of Subpart 3 of Part 1, and after whose name there

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[1]headings in the judgment are for purposes of reference and the language of said headings do not constitute, other than for such purpose, a portion of this judgment.

appears under the column "Total Water Right" a figure other than "0", was the owner of and had the right to extract annually groundwater from Central Basin for beneficial use in the quantity set forth after that party's name under said column "Total Water Right" pursuant to the Judgment as originally entered herein. Attached hereto as Appendix "2" and by this reference made a part hereof as though fully set forth are the water rights of parties and successors in interest as they existed as of the close of the water year ending September 30, 1978 in accordance with the Watermaster Reports on file with this Court and the records of the Plaintiff. This tabulation does not take into account additions or subtractions from any Allowed Pumping Allocation of a producer for the 1978-79 water year, nor other adjustments not representing change in fee title to water rights, such as leases of water rights, nor does it include the names of lessees of landowners where the lessees are exercising the water rights. The exercise of all water rights is subject, however, to the provisions of this Judgment is hereinafter contained. All of said rights are of the same legal force and effect and are without priority with reference to each other. Each party whose name is hereinafter set forth in the tabulation set forth in Appendix "2" of this judgment, and after whose name there appears under the column "Total Water Right" the figure "0" owns no rights to extract any ground water from Central Basin, and has no right to extract any ground water from Central Basin.

(b) Defendant The City of Los Angeles is the owner of the right to extract fifteen thousand (15,000) acre feet per annum of ground water from Central Basin. Defendant Department

of Water and Power of the City of Los Angeles has no right to extract ground water from Central Basin except insofar as it has the right, power, duty or obligation on behalf of defendant The City of Los Angeles to exercise the water rights in Central Basin of defendant The City of Los Angeles. The exercise of said rights are subject, however, to the provisions of this judgment hereafter contained, including but not limited to, sharing with other parties in any subsequent decreases or increases in the quantity of extractions permitted from Central Basin, pursuant to continuing jurisdiction of the Court, on the basis that fifteen thousand (15,000) acre feet bears to the Allowed Pumping Allocations of the other parties.

(c) No party to this action is the owner of or has any right to extract ground water from Central Basin except as herein affirmatively determined.

2. Parties Enjoined as Regards Quantities of Extractions.

(a) Each party, other than The State of California and The City of Los Angeles and Department of Water and Power of The City of Los Angeles, is enjoined and restrained in any Administrative year commencing after the date this judgment becomes final from extracting from Central Basin any quantity of Water greater than the party's Allowed Pumping Allocation as hereinafter set forth next to the name of the party in the tabulation appearing in Appendix 2 at the end of this Judgment, subject to further provisions of this judgment. Subject to such further provisions, the officials, agents and employees of The State of California are enjoined and restrained in any such Administrative year from extracting from Central Basin collectively any quantity of water

greater than the Allowed Pumping Allocation of The State of California as hereinafter set forth next to the name of that party in the same tabulation. Each party adjudged and declared above not to be the owner of and not to have the right to extract ground water from Central Basin is enjoined and restrained in any Administrative year commencing after the date this judgment becomes final from extracting any ground water from Central Basin, except as may be hereinafter permitted to any such party under the Exchange Pool provisions of this judgment.

(b) Defendant The City of Los Angeles is enjoined and restrained in any Administrative year commencing after the date this judgment becomes final from extracting from Central Basin any quantity of water greater than fifteen thousand (15,000) acre feet, subject to further provisions of this judgment, including but not limited to, sharing with other parties in any subsequent decreases or increases in the quantity of extractions permitted from Central Basin by parties, pursuant to continuing jurisdiction of the Court, on the basis that fifteen thousand (15,000) acre feet bears to the Allowed Pumping Allocations of the other parties. Defendant Department of Water and Power of The City of Los Angeles is enjoined and restrained in any Administrative year commencing after the date this judgment becomes final from extracting from Central Basin any quantity of water other than such as it may extract on behalf of defendant The City of Los Angeles, and which extractions, along with any extractions by said City, shall not exceed that quantity permitted by this judgment to that City in any Administrative year. Whenever in this judgment the term "Allowed Pumping

Allocation" appears, it shall be deemed to mean as to defendant The City of Los Angeles the quantity of fifteen thousand (15,000) acre feet.

Name [2]	Total Water Right	Allowed Pumping Allocation
J. P. Abbott, Inc.	21	17
Charles E. Adams (Corty Van Dyke, tenant) (see additional listing below for Charles E. Adams)	8	6
Charles E. Adams and Rhoda E. Adams	5	4
Juan Aguayo and Salome Y. Aguayo	1	1
Aguiar Dairy, Inc.	33	26
Airfloor Company of California, Inc.	1	1
J. N. Albers and Nellie Albers	98	78
Jake J. Alewyn and Mrs. Jake J. Alewyn aka Normalie May Alewyn (see listing under name of Victor E. Gamboni)		
Tom Alger and Hilda Alger	9	7
Clarence M. Alvis and Doris M. Alvis	0	0
American Brake Shoe Company	52	42

[2]Parties and Rights as originally adjudicated

Name	Total Water Right	Allowed Pumping Allocation
American Pipe and Construction Co.	188	150
Anaconda American Brass Company	0	0
Gerrit Anker (see listing under name of Agnes De Vries		
Archdiocese of Los Angeles Education & Welfare Corporation	8	6
George W. Armstrong and Ruth H. Armstrong (Armstrong Poultry Ranch, tenant)	28	22
Artesia Cemetery District	30	24
Artesia Milling Company (see listing under name of Dick Zuidervaart)		
Artesia School District	51	41
Arthur Land Co., Inc.	13	10
Charles Arzouman and Neuart Arzouman	1	1
Associated Southern Investment Company (William R. Morris, George V. Gutierrez and Mrs. Socorro Gutierrez, tenants and licensees)	16	13
The Atchison, Topeka and Santa Fe Railway Co.	124	99
Atkinson Brick Company	11	9
Arthur Atsma (see listing under name of Andrew De Voss)		
B.F.S. Mutual Water Company	183	146
Henry Baar (see listing under name of Steve Stefani, Sr.)		
Vernon E. Bacon (see listing under name of Southern California Edison Company)		

Name	Total Water Right	Allowed Pumping Allocation
Adolph Bader and Gesine Bader (Fred Bader, tenant)	14	11
K. R. Bailey and Virginia R. Bailey	1	1
Dave Bajema (see listing under name of Peter Dotinga)		
Donald L. Baker and Patsy Ruth Baker	5	4
Allen Bakker	0	0
Sam Bangma and Ida Bangma	17	14
Bank of America National Trust and Savings Association, as Trustee of Trust created by Will of Tony V. Freitas, Deceased (Frank A. Gonsalves, tenant)	29	23
Emma Barbaria, as to undivided 1/2 interest; John Barbaria, Jr. and Lorraine Barbaria as to undivided 1/4 interest; and Frank Barbaria as to undivided 1/4 interest (John Barbaria & Sons Dairy, tenant)	27	22
Antonio B. Barcellos and Manuel B. Barcellos	12	10
John Barcelos and Guilhermina Barcelos	16	13
Sam Bartsma and Birdie Bartsma	34	27
Bateson's School of Horticulture, Inc. (see listing under name of John Brown Schools of California, Inc.)		
Bechard Mutual Water Corporation	4	4
Beck Tract Water Company, Inc.	29	23
Iver F. Becklund	1	1
Margaret E. Becklund	1	1
P. T. Beeghly (International Carbonic, Inc., tenant)	1	1
Doutzen Bekendam and Hank Bekendam	0	0
John Bekendam	0	0
Tillie Bekendam	0	0

Name	Total Water Right	Allowed Pumping Allocation
Bell Trailer City (see listing under name of Bennett E. Simmons)	1	1
E. F. Bellenbaum and Marie P. Bellenbaum	32	26
Bellflower Christian School	243	194
Bellflower Home Garden Water Company	111	89
Bellflower Unified School District	2,109	1,687
Bellflower Water Company	11	9
Belmont Water Association	0	0
Tony Beltman	0	0
Berlu Water Company, Inc.	32	26
Jack R. Bettencourt and Bella Bettencourt	151	121
Bigby Townsite Water Co.		
Siegfried Binggeli and Trina L. Binggeli (see listing under name of Paul H. Lussman, Jr.)	0	0
Fred H. Bixby Ranch Company		
Delbert G. Black and Lennie O. Black as to undivided one-half; and Harley Lee, as to undivided one-half	40	32
Bloomfield School District	11	9
Adrian Boer and Julia Boer	5	4
Gerard Boere and Rosalyn Boer		
Henry Boer and Annie Boer (William Offinga & Son, including Sidney Offinga, tenants	34	27
as to 33 acre feet of water right and 26 acre feet of allowed pumping allocation)	30	24
John Boere, Jr. and Mary J. Boere	30	24
John Boere, Sr. and Edna Boere (John Boere, Jr., tenant)	30	24
John Boere, Jr. (see also listing under name of Leonard A. Grenier)		

Name	Total Water Right	Allowed Pumping Allocation
Frank Boersma and Angie Boersma	31	25
Gerrit Boersma and Jennie Boersma (George Boersma, tenant)	8	6
Jack Boersma	0	0
Sam Boersma and Berdina Boersma	42	34
Jan Bokma (see listing under name of August Vanderberg)		
Jacob Bollema	0	0
James C. Boogerd (see listing under name of Jake Van Leeuwen, Jr.)		
Bernard William Bootsma, Carrie Agnes Van Dam and Gladys Marie Romberg	12	10
Michel Bordato and Anna M. Bordato (Charlie Vander Kooi, tenant)	12	10
John Borges and Mary Borges, aka Mrs. John Borges (Manuel B. Ourique, tenant)	14	11
Mary Borges, widow of Manuel Borges (Manuel Borges, Jr., tenant)	7	6
Gerrit Bos and Margaret Bos	88	70
Jacob J. Bosma (see listing under name of Sieger Vierstra)		
Peter Bothof	6	5
William Bothof and Antonette Bothof	7	6
Frank Bouma and Myron D. Kolstad	3	3
Ted Bouma and Jeanette Bouma	21	17
Sam Bouman (Arie C. Van Leeuwen, tenant)	8	6
John Brown Schools of California, Inc. (Bateson's School of Horticulture, Inc., tenant)	2	2
M. J. Brown, Jr. and Margaret Brown	0	0
Adrian Bulk and Alice Bulk	20	16

Exhibit B

Name	Total Water Right	Allowed Pumping Allocation
Duke Buma and Martha Buma	8	6
Miles A. Burson and Rose Burson	7	6
Calavar Corporation (see listing under name of H R M Land Company)		
California Cotton Oil Corporation	101	81
California Portland Cement Company	0	0
California Rendering Company, Ltd.	149	119
California Water and Telephone Company	2,584	2,067
California Water Service Company (Base Water Right - 13,477)	14, 717	11,774
Candlewood Country Club	184	147
V. Capovilla and Mary Capovilla	0	0
Carmenita School District	9	7
Carson Estate Company	139	111
Paul Carver	0	0
Catalin Corporation of America	13	10
Center City Water Co.	86	69
Central Manufacturing District, Inc. (Louis Guglielmana and Richard Wigboly, tenants)	825	660
Century Center Mutual Water Association	317	254
Century City Mutual Water Company, Ltd.	62	50
Cerritos Junior College District	119	95
Cerritos Park Mutual Water Company	77	62
Challenge Cream & Butter Association	146	117
Chansall Mutual Water Company	101	81
Maynard W. Chapin, as Executor of the Estate of Hugh L. Chapin, deceased	36	29

Name	Total Water Right	Allowed Pumping Allocation
Cherryvale Water Users' Association	14	11
Shigeru Chikami and Jack Chikami doing business as Chikami Bros. Farming (see also listing under name of Southern California Edison Company)	10	8
John Christoffels and Effie Christoffels	14	11
Citrus Grove Heights Water Company	277	222
City Farms Mutual Water Company No. 1	37	30
City Farms Mutual Water Company No. 2	15	12
City of Artesia	30	24
City of Bellflower	60	48
City of Compton	6,511	5,209
City of Downey	5,713	4,570
City of Huntington Park	4,788	3,830
City of Inglewood (Base Water Right - 629)	1,118	894
City of Lakewood	10,631	8,505
City of Long Beach (Base Water Right - 29,876)	33,538	26,830
City of Los Angeles (see paragraph 2 above of this Part I for water rights and restrictions on the exercise thereof of said defendant. See also such reference with respect to Department of Water and Power of the City of Los Angeles.)		
City of Lynwood	6,238	4,990
City of Montebello	260	208
City of Norwalk	613	490
City of Santa Fe Springs	505	404
City of Signal Hill	1,675	1,340

Name	Total Water Right	Allowed Pumping Allocation
City of South Gate	9,942	7,954
City of Vernon	9,008	7,206
City of Whittier	776	621
Allan Clanton and Ina Clanton	80	64
Claretian Jr. Seminary (see listing under name of Dominguez Seminary)		
Dr. Russell B. Clark (see listing under name of Research Building Corporation)		
Jacob Cloo and Grace Cloo	16	13
Clougherty Packing Company	80	64
Coast Packing Company	426	341
Coast Water Company	588	470
Joe A. Coelho, Jr. and Isabel Coelho	5	4
J. H. Coito, Jr.	0	0
John H. Coito and Guilhermina Coito (Zylstra Bros., a partnership consisting of Lammert Zylstra and William Zylstra, tenant)	17	14
J. E. Collinsworth	15	12
Compton Union High School District	48	38
Conservative Water Company (Base Water Right - 4,101)	133	3,306
Container Corporation of America	323	1,058
Nicholas C. Contoas and P. Basil Lambros (Vehicle Maintenance & Painting Corporation, tenant)	1	1
Continental Can Company, Inc.	946	757
Contractors Asphalt Products Company, Inc.	16	13
R. M. Contreras	8	6

Name	Total Water Right	Allowed Pumping Allocation
Copp Equipment Company, Inc. and Humphries Investments Incorporated	7	6
Mary Cordeiro and First Western Bank & Trust Company, as Trustee pursuant to last will and testament of Tony Cordeiro, deceased	46	37
Corporation of the Presiding Bishop of The Church of Jesus Christ of Latter Day Saints (Ray Mitchell, tenant)	39	31
Harry Lee Cotton and Doris L. Cotton	5	4
County of Los Angeles	737	590
County Water Company	280	224
Cowlitz Amusements, Inc. (La Mirada Drive-In Theater, tenant)	4	4
Pete Coy	28	22
Crest Holding Corporation	20	16
Katherine M. Culbertson	2	2
Orlyn L. Culp and Garnetle Culp	21	17
Everett Curry and Marguerite Curry	2	2
D. V. Dairy (see listing under name of Frank C. Leal)		
Dairymen's Fertilizer Co-op, Inc.	1	1
Noble G. Daniels (see listing under name of Harold Marcroft)		
John A. Davis	0	0
Henry De Bie, Jr. and Jessie De Bie	17	14
Clifford S. Deeth	0	0
Ernest De Groot and Dorothy De Groot	81	65
Pete de Groot	15	12
Pier De Groot and Fay De Groot	21	17

Name	Total Water Right	Allowed Pumping Allocation
Martin De Hoog and Adriana De Hoog	12	10
Edward De Jager and Alice De Jager	37	30
Cornelius De Jong and Grace De Jong	13	10
Jake De Jong and Lena De Jong (Frank A. Gonsalves, tenant as to 8 acre-feet of water right)	21	17
William De Kriek (see listing under name of Gerrit Van Dam)		
Del Amo Dairy (see listing under name of Ed Haakma)		
Del Amo Estate Company	0	0
Joe De Marco and Concetta De Marco	1	1
Louis F. De Martini (see listing under name of Southern California Edison Company)		
Mary A. De Mello	16	13
John Den Hollander (see listing under name of James Dykstra)		
Department of Water and Power of The City of Los Angeles, by reason of charter provisions, has that management and control of water rights owned by the City of Los Angeles (see listing under name of City of Los Angeles)		
Ruth E. Dever (Orange County Nursery, Inc., tenant)	0	0
Andrew De Voss and Alice De Voss (Arthur De Voss and Arthur Atsma, tenants)	36	29
Agnes De Vries (Gerrit Anker, tenant)	16	13
Dick De Vries and Theresa De Vries	10	8
Gerrit De Vries and Claziena De Vries	18	14
Gerrit Deyager and Lena Deyager	0	0

Name	Total Water Right	Allowed Pumping Allocation
Lloyd W. Dinkelspiel, Jr. (see listing under name of Florence Hellman Ehrman)		
District VII, Division of Highways of the State of California Department of Public Works (see listing under name of State of California)		
Dominguez Estate Company	0	0
Dominguez Seminary and Claretian Jr. Seminary	111	89
Dominguez Water Corporation	8,012	6,410
Peter Dotinga and Tena Dotinga (Dave Bajema, tenant)	9	7
Robert L. Dougherty	0	0
Downey Cemetery District	21	17
Downey Fertilizer Co. (see listing under name of Downey Land Company)		
Downey Land Company (Downey Fertilizer Co., tenant)	101	81
Downey Valley Water Company	87	70
Jim Drost	0	0
James Dykstra and Dora Dykstra (John Den Hollander, tenant)	6	5
John Dykstra and Wilma Dykstra	52	42
Cor Dyt and Andy Dyt	6	5
Eagle Picher Company	141	113
Gail H. Eagleton	67	54
Florence Hellman Ehrman; I. W. Hellman, Jr.; Federick J. Hellman; Marco F. Hellman; Clarence E. Heller; Alfred Heller, Elizabeth Heller; Clarence E. Heller, Elinor R. Heller and Wells Fargo Bank, as co-executors of the Estate of Edward H. Heller, deceased; Lloyd W. Dinkelspiel, Jr., William H.		

Name	Total Water Right	Allowed Pumping Allocation
Green and Wells Fargo Bank, as co-executors of the Estate of Lloyd W. Dinkelspiel, deceased; Wells Fargo Bank, as Trustee under the trust created by the Will of Florence H. Dinkelspiel, deceased. (Union Oil Company of California, Lessee as to 190 acre-feet of right and as to 152 acre-feet of allowed pumping allocation)	555	444
El Rancho Unified School District	69	55
Berton Elson (see listing under name of D. P. Winslow)		
John H. Emoto and Shizuko Emoto	0	0
Addie L. Enfield (see listing under name of James L. Stamps)		
John W. England and Consuello England (see listing under name of Jenkins Realty Mutual Water Co.)		
Emma Engler (Morris Weiss, tenant)	10	8
Anthony F. Escobar and Eva M. Escobar (Henry Kampen, tenant)	14	11
Excelsior Union High School District	381	305
Kenneth A. Farris and Wanda Farris	1	1
Federal Ice and Cold Storage Company	92	74
Fred Fekkes (see listing under name of Steve Stefani, Sr.)		
Julius Felsenthal and Mrs. Julius Felsenthal, aka Marga Felsenthal	1	1
Tony Fernandes (see listing under name of U. Stewart Jones)		
Joe C. Ferreira and Carolina Ferreira (Joe C. Ferreira and Joe C. Ferreira, Jr., operators of well facility)	37	30

Name	Total Water Right	Allowed Pumping Allocation
Mary A. Ferreira (Joe Lucas, tenant) (see also listing under name of Jack Gonsalves)	1	1
John Feuz, Jr.	0	0
Fibreboard Paper Products Corporation	1,521	1,217
Abe Fien	0	0
Alfred Fikse, Jr. and Aggie Fikse	2	2
Henry Fikse and Jennie Fikse	4	4
Filtrol Corporation	570	456
The Firestone Tire & Rubber Co.	1,536	1,229
First Western Bank & Trust Co. (see listing under name of Mary Cordeiro)		
Clare Fisher	0	0
Elizabeth Flesch, James Flesch, Margaret Flesch, Theodore Flesch, Ernest D. Roth and Eva Roth, doing business as Norwalk Mobile Lodge	18	14
The Flintkote Company	2,567	2,054
Ford Motor Company	11	9
Robert G. Foreman (see listing under name of Lakewood Pipe Co.)		
Guiseppi Franciosi and Alice Franciosi	2	2
Tony V. Freitas (see listing under name of Bank of America, etc.)		
S. Fujita	0	0
Jun Fukushima (see listing under name of Chige Kawaguchi)		
Paul Fultheim and Helga Fultheim	5	4
Fumi Garden Farms, Inc. (see listing under name of Southern California Edison Company and also under name of George Yamamoto)		

Name	Total Water Right	Allowed Pumping Allocation
Gabby Louise, Inc. (Arthur Gilbert & Associates, tenant)	58	46
Victor E. Gamboni and Barbara H. Gamboni (Jake J. Alewyn and Mrs. Jake J. Alewyn also known as Normalie May Alewyn, tenants as to 13 acre feet of water right and 10 acre feet of allowed pumping allocation)	27	22
Nick Gandolfo and Palmera Gandolfo	5	4
Freddie A. Garrett and Vivian Marie Garrett	6	5
Martha Gatz	15	12
General Dynamics Corporation	675	540
General Telephone Company of California	2	2
Alfred Giacomi and Jennie Giacomi	58	46
Arthur Gilbert & Associates (see listing under name of Gabby Louise Inc.)		
Mary Godinho	0	0
Pauline Godinho (Joe C. Godinho and John C. Godinho, Jr., doing business as Godinho Bros. Dairy, tenants)	31	25
Harry N. Goedhart, Henry Otto Goedhart, Hilbrand John Goedhart, John Goedhart, Otto Goedhart, Jr., Peter Goedhart, and Helen Goedhart Van Eik (Paramount Farms, tenant)	21	17
Reimer Goedhart	12	10
Golden Wool Company	223	178
Albert S. Gonsalves and Caroline D. Gonsalves	10	8
Frank A. Gonsalves (see listing under name of Bank of America National Trust and Savings Association, etc.; and also under name of Jake De Jong)		

Name	Total Water Right	Allowed Pumping Allocation
Jack Gonsalves, Joe Lucas, Pete Koopmans, Manuel M. Souza, Sr., Manuel M. Souza, Jr., Frank M. Souza, Louie J. Souza, and Mary A. Ferreira	55	44
Jack Gonsalves and Mary Gonsalves	31	25
Joaquin Gonsalves and Elvira Gonsalves	27	22
Joe A. Gonsalves and Virginia Gonsalves	12	10
The B. F. Goodrich Company	519	415
The Goodyear Tire & Rubber Company	1,141	913
Eric Gorden and Hilde Gorden	2	2
Fern Ethyl Gordon as to an undivided 1/2 interest; Fay G. Tawzer and Lawrence R. Tawzer, as to an undivided 1/2 interest	17	14
Huntley L. Gordon (appearing by and through United California Bank, as Conservator of the Estate of Huntley L. Gordon)	41	33
Robert E. Gordon	5	4
Joe Gorzeman and Elsie Gorzeman	13	10
Florence M. Graham	7	6
Marie Granger	0	0
Great Western Malting Company	448	358
William H. Green (see listing under name of Florence Hellman Ehrman)		
Greene-Howard Petroleum Corporation (see listing under name of Hathaway Company)		
John H. Gremmius and Henry W. Gremmius dba Henry and John Gremmius	0	0
Leonard A. Grenier and Marie Louise Grenier (John Boere, Jr., tenant)	10	8
Florence Guerrero	2	2

Name	Total Water Right	Allowed Pumping Allocatio
Louis Guglielmana (see listing under name of Central Manufacturing District, Inc.)		
George V. Gutierrez and Mrs. Socorro Gutierrez (see listing under name of Associated Southern Investment Company)		
Salvatore Gutierrez (see listing under name of Southern California Edison Company)		
H. J. S. Mutual Water Co.	63	50
H R M Land Company (Harron, Rickard & McCone Company of Southern California and Calavar Corporation, tenants)	3	3
Gerrit Haagsma and Mary Haagsma	10	8
Ed Haakma and Sjana Haakma (Del Amo Dairy, tenant; Ed Haakma and Peter Vander Kooi, being partners of said Del Amo Dairy)	28	22
Verney Haas and Adelyne Haas	4	4
William H. Hadley and Grade Hadley	4	4
Henry C. Haflinger and Emily Haflinger	10	8
Clarence Theodore Halburg	3	3
Fred Hambarian	2	2
Henry Hamstra and Nelly Hamstra	33	26
Raymond Hansen and Mary Hansen	12	10
Earl Haringa; Evert Veenendaal and Gertrude Veenendaal	22	18
Antoine Harismendy and Claire Harismendy	0	0
Harron, Rickard & McCone Company of Southern California (see listing under name of H R M Land Company)		
Jack D. Hastings	0	0
Kameko Hatanaka	9	7

Name	Total Water Right	Allowed Pumping Allocation
Kazuo Hatanaka (Minoru Yoshijima, tenant)	10	8
Masakazu Hatanaka, Isao Hatanaka, and Kenichi Hatanaka	5	4
Mrs. Motoye Hatanaka	0	0
Hathaway Company, Richard F. Hathaway, Julian I. Hathaway, and J. Elwood Hathaway (Greene-Howard Petroleum Corporation, tenant utilizing less than 1 acre foot per year)	70	56
Clarence E. Heller; Alfred Heller; Elizabeth Heller; Clarence E. Heller; Elinor R. Heller, as co-executors of the Estate of Edward H. Heller, deceased (see listing under name of Florence Hellman Ehrman)		
I. W. Hellman, Jr.; Federick J. Hellman; Marco F. Hellman (see listing under name of Florence Hellman Ehrman)		
Ralph Hicks	0	0
Alfred V. Highstreet and Evada V. Highstreet	10	8
John Highstreet and Eileen M. Highstreet	9	7
Bob Hilarides and Maaike Hilarides (Frank Hilarides, tenant)	51	41
John Hilarides and Maria Hilarides	26	21
Hajime Hirashima (see listing under name of Masaru Uyeda)		
Willis G. Hix	1	1
Henry H. Hoffman and Apolonia Hoffman	12	10
Dick Hofstra	0	0
Andrew V. Hohn and Mary G. Hohn	1	1
Kyle R. Holmes and Grace Ellen Holmes	20	16
Home Water Company	35	28

Exhibit B

Name	Total Water Right	Allowed Pumping Allocation
Manuel L. Homen	17	14
Mrs. Paul Y. Homer (see listing under name of Mrs. Paul Y. Homer (King).)		
Cornelis Hoogland and Alice Hoogland	15	12
Art Hop, Jr.	0	0
Art Hop, Sr. and Johanna Hop (G. A. Van Beek, tenant)	5	4
Andrew Hop, Jr. and Muriel Hop	33	26
Theodore R. Houseman and Leona M. Houseman	14	11
Humphries Investments Incorporated (see listing under name of Copp Equipment Company, Inc.)		
Albert Huyg and Marie Huyg	22	18
Hygenic Dairy Farms, Inc.	0	0
Pete W. Idsinga and Annie Idsinga	13	10
Miss Alice M. Imbert	1	1
Industrial Asphalt of California, Inc.	116	93
Inglewood Park Cemetery Association	285	228
International Carbonic, Inc. (see listing under name of P. T. Beeghly)		
Jugora Ishii and Mumeno Ishii (Ishii Brothers, tenant)	10	8
Robert J. Jamison and Betty Jamison	7	6
Jenkins Realty Mutual Water Co. (Clyde H. Jenkins, Minnie R. Jenkins, Mary Wilcox, Ruby F. Marchbank, Robert B. Marchbank, John W. England, and Consuello England, Shareholders	10	8
John-Wade Co.	1	1
Henry S. Jones and Madelynne Jones	1	1

Name	Total Water Right	Allowed Pumping Allocation
U. Stewart Jones and Dorothy E. Jones (Tony Fernandes, tenant)	1	1
Harold Jongsma and Mary N. Jongsma	65	52
W. P. Jordan (see listing under name of Henry Van Ruiten)		
Dave Jorritsma and Elizabeth Jorritsma	27	22
Christine Joseph (see listing under name of Helen Wolfsberger)		
Junior Water Co., Inc.	737	590
Kal Kan Foods, Inc.	120	96
Kalico, Inc.	4	4
Hagop Kalustian (11 acre feet of total water right attributable to well located at 6629 South Street, Lakewood and reported to plaintiff under Producer No. 3925. 2 acre feet of total water right attributable to portion of property not sold to State of California formerly served by well located at 10755 Artesia Blvd., Artesia, the production of which well was reported to plaintiff under Producer No. 4030)	13	10
Fritz Kampen and Clare Kampen	14	11
William Kamstra and Bertha Kamstra	35	28
Henry Kampen (see listing under name of Anthony Escobar)		
L. Kauffman Company, Inc. (see listing under name of Lorraine K. Meyberg)		
Chige Kawaguchi and Masao Kawaguchi (Jun Fukushima, tenant)	4	4
King Kelley Marmalade Co. (see listing under name of Roberta M. Magnusson)		
Mrs. Paul Y. Homer (King)	17	14
Jacob R. Kimm and Bonnie Kimm	36	29

Exhibit B

Name	Total Water Right	Allowed Pumping Allocation
Mrs. Oraan Kinne (Nicholaas J. Moons, tenant)	11	9
Morris P. Kirk & Son, Inc.	77	62
Jake Knevelbaard and Ana Knevelbaard	50	40
Willie Knevelbaard and Joreen Knevelbaard	1	1
Simon Knorringa	12	10
John Koetsier, Jr.	0	0
Myron D. Kolstad (see listing under name of Frank Bouma)		
Yoshio Kono and Barbara Kono (see listing under name of George Mimaki)		
Louis Koolhaas	13	10
Simon Koolhaas and Sophie Grace Koolhaas	9	7
Pete Koopmans (see listing under name of Jack Gonsalves)		
Nick P. Koot (see listing under name of Mary Myrndahl)		
Kotake, Inc. (Masao Kotake, Seigo Kotake, William Kotake, dba Kotake Bros., tenants)	83	66
Masao Kotake	0	0
Walter G. Kruse and Mrs. Walter G. Kruse, aka Vera M. Kruse	11	9
Laguna-Maywood Mutual Water Company No. 1	1,604	1,283
La Habra Heights Mutual Water Company	3,044	2,435
La Hacienda Water Company	46	37
Lakewood Pipe Co., a partnership composed of Robert G. Foreman, Frank W. Tybus and June E. Tybus (Lakewood Pipe Service Co., tenant)	12	10

Name	Total Water Right	Allowed Pumping Allocation
P. Basil Lambros (see listing under name of Nicholas C. Conteas)		
La Mirada Drive-in Theater (see listing under name of Cowlitz Amusements, Inc.)		
La Mirada Water Company	0	0
Calvin E. Langston and Edith Langston	1	1
S. M. Lanting and Alice Lanting	15	12
Henry Lautenbach and Nellie H. Lautenbach	16	13
Norman Lautrup, as Executor of the Estate of Nels Lautrup, deceased; and Minnie Margaret Lautrup	30	24
Frank C. Leal and Lois L. Leal (D. V. Dairy, tenant)	15	12
Eugene O. LeChasseur and Lillian P. LeChasseur (R. A. LeChasseur, tenant)	2	2
Lee Deane Products, Inc.	0	0
Harley Lee (see listing under name of Delbert G. Black)		
Le Fiell Manufacturing Company	0	0
Armand Lescoulie (see listing under name of Southern California Edison Company)		
Liberty Vegetable Oil Company	14	11
Little Lake Cemetery District	17	14
Little Lake School District	0	0
Loma Floral Company (see listing under name of George Mimaki)		
Melvin L. Long and Stella M. Long	2	2
Nick J. Loogman (see listing under name of William Smoorenburg)		
Frank Lorenz (see listing under name of Ralph Oosten)		

Name	Total Water Right	Allowed Pumping Allocation
Los Angeles County Waterworks District No. 1 (Base Water Right 22)	113	90
Los Angeles County Waterworks District No. 10	842	674
Los Angeles County Waterworks District No. 16	412	330
Los Angeles Paper Box and Board Mills	321	257
Los Angeles Union Stockyards Company	0	0
Los Nietos Tract 6192 Water Co.	49	39
Alden Lourenco (see listing under name of A. C. Pinheiro)		
Lowell Joint School District	0	0
Joe Lucas (see listings under names of Mary A. Ferreira and Jack Gonsalves)		
Luer Packing Co. (see listing under name of Sam Perricone)		
Jake J. Luetto (Orange County Nursery, Inc., tenant)	13	10
Lunday-Thagard Oil Co.	265	212
Joe Luond (Frieda Roethlisberger, tenant as to portion of rights)	7	6
John Luscher and Frieda Luscher	13	10
Paul H. Lussman, Jr. and Ann Lussman, Siegfried Binggeli and Trina L. Binggeli (Paul's Dairy, tenant)	8	6
Lynwood Gardens Mutual Water Company	205	164
Lynwood Park Mutual Water Company	278	222
Jerome D. Mack and Joyce Mack (see listing under name of D. S. Moss)		
Roberta M. Magnusson (King Kelly Marmalade Co., tenant)	15	12
Anthony Mancebo	0	0

Name	Total Water Right	Allowed Pumping Allocation
Robert B. Marchbank and Ruby F. Marchbank (see listing under name of Jenkins Realty Mutual Water Co.)		
Harold Marcroft and Marjorie Marcroft (Noble G. Daniels, tenant)	7	6
Floyd G. Marcusson (see listing under name of Sykes Realty Co.)		
Walter Marlowe and Edna Marlowe	1	1
Marshburn, Inc. (see listing under name of Mel, Inc.)		
The Martin Bros. Container & Timber Products Corp.	7	6
Mary Martin	35	28
Antonio Mathias and Mary Mathias	16	13
Mausoleum Park, Inc. and Sun Holding Corporation	4	4
Maywood Mutual Water Company No. 1	926	741
Maywood Mutual Water Company No. 2	1,007	806
Maywood Mutual Water Company No. 3	1,407	1,126
Mel, Inc. (Marshburn, Inc., tenant)	67	54
G. Mellano	12	10
Wilbur Mellema and Mary Mellema (see listing under name of Elmo D. Murphy)		
Wilbur Mellema (see listing under name of Morris Weiss)		
Memorial Parks, Inc.	42	34
Lyman B. Merrick and Gladys L. Merrick	17	24
Metropolitan State Hospital of the State of California Department of Mental Hygiene (see listing under name of State of California)		
F. N. Metzger	0	0

Name	Total Water Right	Allowed Pumping Allocatio.
Lorraine K. Meyberg (L. Kauffman Company, Inc., tenant)	81	65
Midland Park Water trust	71	57
Midway Gardens Mutual Association	59	47
Harry C. Miersma and Dorothy L. Miersma	12	10
Henry Miersma and Susan M. Miersma	7	6
Willis L. Miller	0	0
George Mimaki, Mitsuko Mimaki, Yoshio Kono and Barbara Kono (Loma Floral Company, tenant)	2	2
Ray Mitchell (see listing under name of Corporation of the Presiding Bishop of the Church of Jesus Christ of Latter Day Saints; and also listing under name of Frank Ruggieri)		
Fumiko Mitsuuchi, aka Mary Mitsuuchi (Z. Van Spanje, tenant as to one acre foot)	14	11
Yoneichi Miyasaki	0	0
Glenn Miyoshi, Yosaku Miyoshi, Masayo Miyoshi, Haruo Miyoshi, and Masaru Miyoshi, dba Miyoshi Bros.	10	8
Jean Mocho and Michel Plaa	11	9
Modern Imperial Company	71	57
Montebello Land and Water Company	1,990	1,592
Monterey Acres Mutual Water Company	128	102
Nicholaas J. Moons (see listing under name of Mrs. Oraan Kinne)		
Alexander Moore and Betty L. Moore	16	13
Neal Moore	0	0
Alyce Mooschekian	0	0
Reuben Mooschekian	15	12

Name	Total Water Right	Allowed Pumping Allocation
William R. Morris (see also listing under name of Associated Southern Investment Company)	1	1
D. S. Moss, Lillian Moss, Jerome D. Mack, and Joyce Mack	5	4
Mountain View Dairies, Inc.	68	54
Kiyoshi Murakawa and Shizuko Murakawa	0	0
Daisaku Murata, Fui Murata, Hatsuye Murata, Kenji Murata, Setsuko Murata, and Takeo Murata	15	12
Kenji Murata (see listing under name of Southern California Edison Company)		
Elmo D. Murphy and Evelene B. Murphy (Morris Weiss, Bessie Weiss, Wilbur Mellema, and Mary Mellema, tenants)	23	18
Murphy Ranch Mutual water company	576	461
Etta Murr	3	3
R. B. Murray and Gladys J. Murray	0	0
Tony G. Mussachia and Anna M. Mussachia	10	8
Mary Myrndahl (Nick P. Koot, tenant)	11	9
Sam Nakamura and Tokiko Nakamura	2	2
Leo Nauta (see listing under name of John Osinga)		
Pete Nauta (see listing under name of Jacob Vandenberg)		
Fred C. Nelles School for Boys of the State of California Department of the Youth Authority (see listing under name of State of California)		
Otelia Nelson and Robert Nelson (Shelter Superior Dairy, tenant)	14	11
Simon S. Niekerk and Rose Niekerk (Niekerk Hay Company, tenant)	3	3

Name	Total Water Right	Allowed Pumping Allocation
Norris-Thermador Corporation	172	138
North Gate Gardens Water Co.	60	48
Norwalk-La Mirada City School District	360	288
Norwalk Mobile Lodge (see listing under name of Elizabeth Flesch)		
Mabel E. Nottingham (Leslie Nottingham, tenant)	25	20
William Offinga & Son, including Sidney Offinga (see listing under name of Henry Boer)		
Olive Lawn Memorial Park, Inc.	14	11
John Oord	0	0
Marinus Oosten and Anthonia Oosten	16	13
Ralph Oosten and Caroline Oosten (Frank Lorenz, tenant as to 13 acre feet of water right and 10 acre feet of allowed pumping allocation)	51	41
Orange County Nursery, Inc. (see also: listing under name of Ruth E. Dever; listing under name of Jake J. Luetto; and listing under name of Mary Ravera)	16	13
Orchard Dale County Water District (Base Water Right - 1,382)	1,384	1,107
Orchard Park Water Club, Inc.	50	40
Oriental Foods, Inc.	34	27
Orla Company (John D. Westra, tenant)	7	6
Viva Ormonde (see listing under name of Hank Van Dam)		
Pablo Oropeza and Aurelia G. Oropeza (Pablo Oropeza, Jr., tenant) (see also listing under name of Tarr and McComb Oil Company, Ltd.)		
John Osinga (Leo Nauta, tenant)	6	5

Exhibit B

Name	Total Water Right	Allowed Pumping Allocation
Manuel B. Ourique (see listing under name of John Borges)		
Owl Constructors	20	16
Pacific Electric Railway Company (Gerrit Van Leeuwen of 15405 Shoemaker road, Norwalk, tenant as to 11 acre feet of right and 9 acre feet of allowed pumping allocation)	15	12
Packers Mutual Water Company	43	34
Edward G. Paddison and Grace M. Paddison	17	14
Paramount Farms (see listing under name of Harry N. Goedhart)		
Paramount County Water District	2,967	2,374
Paramount Unified School District	58	46
Park Water Company	24,592	19,674
W. J. Parsonson	0	0
Rudolph Pasma and Frances C. Pasma	10	8
Paul's Dairy (see listing under name of Paul H. Lussman, Jr.)		
Mrs. La Verne Payton	1	1
Peerless Land & Water Co., Inc.	1,232	986
J. C. Pereira, Jr. and Ezaura Pereira	34	27
Sam Perricone and Louis Romoff (Luer Packing Co., tenant)	107	86
Peterson Manufacturing Co., Inc.	73	58
Phelps Dodge Copper Products Corporation	390	312
Pico County Water District	3,741	2.993
Piedmont Heights Water Club	7	6
Lucille C. Pimental (Richard Pimental and Pimental Dairy, tenants)	16	13

Name	Total Water Right	Allowed Pumping Allocation
Joe Pine (see listing under name of A. C. Pinheiro)		
A. C. Pinheiro and Mary M. Pinheiro (Alden Lourenco, tenant as to 9 acre feet of water right and 7 acre feet of allowed pumping right; and Joe Pine, tenant as to 13 acre feet of water right and 10 acre feet of allowed pumping right)	128	102
Fred Pinto and Mary Pinto	5	4
Frank Pires (see listing under name of Frank Simas)		
Tony C. Pires and Laura C. Pires	31	25
Michel Plaa (see listing under name of Jean Mocho)		
Donald R. Plunkett	53	42
Pomering Tract Water Association	32	26
Clarence Pool	24	19
Garret Porte and Cecelia Porte	35	28
Veronica Postma	16	13
C. H. Powell	1	1
Powerine Oil Company	784	627
John Preem	0	0
Ralph Pylman and Ida Pylman	13	10
Quality Meat Packing Company	38	30
Ralphs Grocery Company	0	0
Arthur D. Ramsey and James A. Ramsey	5	4
Rancho Santa Gertrudes Mutual Water System	48	38
Mary Ravera (Orange County Nursery, Inc., tenant	39	31

Exhibit B

Name	Total Water Right	Allowed Pumping Allocatio.
Zelma Ravera	2	2
Rawlins Investment Corporation (Rockview Milk Farms, Inc., tenant)	66	53
Hal Rees	0	0
Reeves Tract Water Company	36	29
Clarence Reinalda	0	0
Reliance Dairy Farms	122	98
Research Building Corporation (Dr. Russell B. Clark, tenant)	11	9
Richfield Oil Corporation	71	57
Richland Farm Water Company	216	173
George Rietkerk and Cornelia Rietkerk	7	6
Rio Hondo Country Club (see listing under name of James L. Stamps)		
Erasmo Rios (see listing under name of Esther Salcido)		
Jesus Rios (see listing under name of Esther Salcido)		
Frank J. Rocha, Jr. and Elsie M. Rocha	13	10
Rockview Milk Farms, Inc. (see listing under name of Rawlins Investment Corporation)		
John Rodrigues, Emily S. Rodrigues, and John Rodrigues, Jr. (see also below)	5	4
John Rodrigues and John Rodrigues Jr.	1	1
Frieda Roethlisberger (see listing under name of Joe Luond)		
Patricia L. Davis Rogers, aka Patricia L. Davis	2	2
The Roman Catholic Archbishop of Los Angeles, a corporation sole	426	341

Name	Total Water Right	Allowed Pumping Allocation
Gladys Marie Romberg (see listing under name of Bernard William Bootsma)		
Alois M. Rombout	0	0
Louis Romoff (see listing under name of Sam Perricone)		
Elvira C. Rosales	3	3
Frank J. Ross	2	2
Ernest D. Roth and Eva Roth (see listing under name of Elizabeth Flesch)		
Ed Roukema	0	0
Herbert N. Royden	31	25
Ruchti Brothers	31	25
Frank Ruggieri and Vada Ruggieri (see additional listing below)	1	1
Frank Ruggieri and Vada Ruggieri; David Seldeen and Fay Seldeen (Ray Mitchell, tenant)	23	18
Thomas S. Ryan and Dorothy J. Ryan	19	15
Sam Rypkema and Tena Rypkema	8	6
St. John Bosco School	53	42
James H. Saito and Yoshino Saito	2	2
Esther Salcido and Jesus Rios (Erasmo Rios, tenant)	3	3
San Gabriel Valley Water Company	6,828	5,462
Joe Santana and Palmira Santana	10	8
Sasaki Bros. Ranch, Inc.	32	26
Sativa L. A. County Water District	592	474
Ben Schilder, Jr. and Anna Schilder	28	22
Carl Schmid and Olga Schmid	18	14

Name	Total Water Right	Allowed Pumping Allocation
Mrs. A. Schuur	0	0
John Schuurman and Isabel Schuurman (James Sieperda, tenant)	15	12
David Seldeen and Fay Seldeen (see listing under name of Frank Ruggieri)		
Maurice I. Sessler	8	6
Chris Shaffer and Celia I. Shaffer	8	6
Shayman & Wharram, a partnership, consisting of John W. Shayman and Francis O. Wharram	2	2
Shell Oil Company (see listing under name of Margaret F. Slusher)		
Shelter Superior Dairy (see listing under name of Otelia Nelson)		
Tadao Shiba and Harume Shiba, Susumu Shiba, and Mitsuko Shiba	7	6
Yahiko Shiozaki and Kiyoko Shiozaki; Ken Shiozaki and Grace Shiozaki	6	5
Shore-Plotkin Enterprises, Inc. (Shore-Calnevar, Inc., tenant)	0	0
J. E. Siemon	15	12
James Sieperda (see listing under name of John Schuurman)		
Sierra Restaurant Corporation	0	0
Frank Simas and Mabel Simas (Frank Pires, tenant)	11	9
Bennett E. Simmons and Alice Lorraine Simmons, George K. Simmons and Doris June Simmons (Bell Trailer City, tenant)	41	33
Margaret F. Slusher (Shell Oil Company, tenant)	7	6
Lester W. Smith and Donald E. Smith (Lester W. Smith Dairy, tenant)	20	16

Name	Total Water Right	Allowed Pumping Allocation
Wirt Smith	14	11
William Smoorenburg and Nick J. Loogman (Smoorenburg & Loogman, a partnership of William Smoorenburg and Nick J. Loogman, operating well facility)	21	17
Leo Snozzi and Sylvia Snozzi	52	42
Socony Mobil Oil Company, Inc.	172	138
Somerset Mutual Water Company	2,744	2,195
South Montebello Irrigation District	1,238	990
Southern California Edison Company (Vernon Bacon; Chikami Bros. Farming, consisting of Jack Chikami and Shigeru Chikami; Louis F. De Martini; Armand Lescoulie; C. D. Webster; Kenji Murata; Glenn F. Spiller and Jean H. Spiller; George Yamamoto and Alice Yamamoto, conducting business as Fumi Garden Farms, Inc.; and Salvatore Gutierrez, tenants and licenses)	816	653
Southern California Water Company	18,937	15,150
Southern Service Company, Ltd.	81	65
Henrietta Southfield	4	4
John Southfield	0	0
Southwest Water Company	2,895	2,316
Manuel M. Souza, Sr.; Manuel M. Souza, Jr.; Frank M. Souza and Louie J. Souza (see listing under name of Jack Gonsalves)		
Nelson Souza and Mary Souza	12	10
Glenn F. Spiller and Jean H. Spiller (see also listing under name of Southern California Edison company)	24	19
Farah Sprague	3	3

Name	Total Water Right	Allowed Pumping Allocation
Herman F. Staat and Charlotte H. Staat	2	2
James L. Stamps, as to an undivided 80% interest; Addie L. Enfield, as to an undivided 20% interest (Rio Hondo Country Club, tenant	443	354
Standard Oil Company of California	118	94
J. F. Standley and Myrtle M. Standley	1	1
Star Dust Lands, Inc.	85	68
State of California (included herein are water rights of Fred C. Nelles School for Boys of the State of California Department of the Youth Authority; Metropolitan State Hospital of the State of California Department of Mental Hygiene; and District VII, Division of Highways of the State of California Department of Public Works)	757	606
Stauffer Chemical Company	181	145
John Steele and Clara D. Steele	4	4
Steve Stefani, Jr.	0	0
Steve Stefani, Sr., and Dora Stefani (Henry Baar and Fred Fekkes, tenants)	38	30
Andrew Stellingwerf	0	0
Henry Stellingwerf and Jeanette Stellingwerf	14	11
Henry Sterk and Betty S. Sterk	114	91
V. C. Stiefel	3	3
Sophia J. Stockmal and John F. Stockmal	3	3
William Thomas Stover and Gertrude D. Stover	3	3
Louis Struikman and Alice Struikman (Louise Struikman and Pete Struikman dba Louis Struikman and Son, tenants as to 43 acre feet of water right and 34 acre feet of allowed pumping allocation; and Sidney		

Name	Total Water Right	Allowed Pumping Allocation
Van Dyke, tenant as to 10 acre feet of water right and 8 acre feet of allowed pumping allocation) (see also below)	53	42
Louis Struikman and Peter Struikman	3	3
Cornelius Struikmans and Ida Struikmans	9	7
Henry Struikmans and Nellie Struikmans	13	10
Henry Struikmans, Jr.	0	0
Suburban Mutual Water Co.	0	0
Suburban Water Systems	3,666	2,933
Kazuo Sumida	2	2
Sun Coast Development Company	0	0
Sun Holding Corporation (see listing under name of Mausoleum Park, Inc.)		
Sunnyside Mausoleum Company	60	48
Sunset Cemetery Association	26	21
E. A. Sutton and Ramona Sutton	39	31
Swift & Company	2,047	1,638
Roy Sybrandy and Anne Sybrandy	29	23
Sykes Realty Co., Floyd G. Marcusson and Albert C. Sykes	2	2
Andy Sytsma and Dorothy Sytsma (Albert Sytsma and Robert Sytsma, doing business as Sytsma Bros., tenants)	20	16
Tarr and McComb Oil Company, Ltd. (Pablo Oropeza, tenant)	86	69
Roy Tashima and Shigeo Tashima	1	1
Fay G. Tawzer and Lawrence R. Tawzer (see listing under name of Fern Ethyl Gordon)		
Dorothy Taylor	0	0
Quentin D. Taylor	0	0

Exhibit B

Name	Total Water Right	Allowed Pumping Allocation
Carl Teixeira and Evelyn Teixeira	11	9
George S. Teixeira and Laura L. Teixeira	17	14
Harm Te Velde and Zwaantina Te Velde	253	202
Theo Hamm Brewing Co.	150	120
Thirty-Three Forty-Five East Forty-Fifth Street, Inc.	17	14
O. T. Thompson and Drusilla Thompson	20	16
Tract Number One Hundred and Eighty Water Company	1,526	1,221
Tract 349 Mutual Water Company	529	423
Fred Troost and Annie Troost	53	42
Frank W. Tybus and June E. Tybus (see listing under name of Lakewood Pipe Co.)		
Uehling Water Company, Inc.	846	677
Union Development Co., Inc.	12	10
Union Oil Company of California (see listing under name of Florence Hellman Ehrman)		
Union Pacific Railroad Company	656	525
Union Packing Company	100	80
United California Bank (see listing under name of Huntley L. Gordon)		
United Dairymen's Association	1	1
United States Gypsum Company	1,581	1,265
United States Rubber Company	820	656
United States Steel Corporation	176	141
Masaru Uyeda, Hajime Hirashima, and Tadashi Uyeda	12	10
G. A. Van Beek (see listing under name of Art Hop, Sr.)		

Name	Total Water Right	Allowed Pumping Allocation
Bas Van Dam (see listing under name of Gertrude Van Dam)		
Carrie Agnes Van Dam (see listing under name of Bernard William Bootsma)		
Cornelius A. Van Dam and Florence Van Dam	24	19
Dick Van Dam, Jr.	0	0
Gerrit Van Dam and Grace Van Dam (William De Kriek, tenant)	13	10
Gertrude Van Dam (Bas Van Dam, tenant as to 29 acre feet of water right and 23 acre feet of allowed pumping right; and Henry Van Dam, tenant as to 19 acre feet of water right and 15 acre feet of allowed pumping right)	48	38
Hank Van Dam and Jessie Van Dam (Viva Ormonde, tenant)	22	18
Henry Van Dam (see listing under name of Gertrude Van Dam)		
Jacob Vandenberg and Anna Vandenberg (Pete Nauta, tenant)	8	6
August Vandenburg, Ben W. Vandenburg, and Andrew W. Vandeburg (Jan Bokma, tenant)	6	5
John Van Den Raadt	4	4
M. Vander Dussen and Aletta C. Vander Dussen	12	10
Sybrand Vander Dussen and Johanna Vander Dussen	23	18
Helen Goedhart Van Eik (see listing under name of Harry N. Goedhart)		
Cornelius Vander Eyk, aka Case Vander Eyk, and Nelly Vander Eyk, aka Nellie Vander Eyk	7	6
George Van Der Ham and Alice Van Der Ham	10	8

Name	Total Water Right	Allowed Pumping Allocation
Huibert Vander Ham and Henrietta Vander Ham	33	26
Joe Vanderham and Cornelia Vanderham	13	10
John Vanderham and Nell M. Vanderham	20	16
Charlie Vander Kooi and Lena Mae Vander Kooi (see also listing under name of Michel Bordato)	13	10
Pete Vander Kooi (see listing under name of Ed Haakma)		
Bert Vander Laan and Stella Vander Laan	10	8
Matt Vander Sys and Johanna Vander Sys	13	10
Bill Vander Vegt and Henny Vander Vegt	18	14
George Vander Vegt and Houjke Vander Vegt	12	10
Harry J. Vander Wall and Marian E. Vander Wall	12	10
Bert Vande Vegte and Lillian Vande Vegte	1	1
Anthony Van Diest	0	0
Jennie Van Diest, as to undivided 1/3 interest; Ernest Van Diest and Rena Van Diest, as to undivided 1/3 interest; and Cornelius Van Diest and Anna Van Diest, as to undivided 1/3 interest. (Van Diest Dairy, tenant)	20	16
Katrena Van Diest and/or Margaret Van Diest	92	74
Henry W. Van Dyk (see listing under name of Henrietta Veenendaal)		
Wiechert Van Dyk and Jennie Van Dyk	13	10
Corty Van Dyke (see listing under name of Charles E. Adams)		
Sidney Van Dyke (see listing under name of Louis Struickman)		

Name	Total Water Right	Allowed Pumping Allocation
William Van Foeken	0	0
Jake Van Haaster and Gerarda Van Haaster	0	0
Arie C. Van Leeuwen (see listing under name of Sam Bouman)		
Gerrit Van Leeuwen of 15405 Shoemaker Road, Norwalk (see listing under name of Pacific Electric Railway Company)		
Henry Van Leeuwen and Caroline P. Van Leeuwen; Gerrit Van Leeuwen of 5948 Lorelei Street, Bellflower, and Ellen Van Leeuwen	1	1
Jake Van Leeuwen, Jr. and Cornelia J. Van Leeuwen (James C. Boogerd and Jake Van Leeuwen, Jr. dba Van Leeuwen & Boogerd, tenants)	9	7
Anthony R. Van Loon (see listing under name of Henry Van Ruiten)		
John Van Nierop and Lily E. Van Nierop	0	0
Henry Van Ruiten and Mary A. Van Ruiten, as to undivided 1/2 interest; and Jake Van Ruiten and Jacoba Van Ruiten, as to undivided 1/2 interest (W. P. Jordan, Anthony R. Van Loon, and Jules Wesselink, tenants)	88	70
Pete Van Ruiten and Mary Van Ruiten (for purposes of clarification, this Mary Van Ruiten is also known as Mrs. Pete Van Ruiten and is not the same individual as sued herein as Mary A. Van Ruiten, who is also known as Mrs. Henry G. Van Ruiten)	38	30
Z. Van Spanje (see listing under name of Fumiko Mitsuuchi)		
Evert Veenendaal and Gertrude Veenendaal (see listing under name of Earl Haringa)		
Henrietta Veenendaal (Henry W. Van Dyk, tenant)	10	8

Name	Total Water Right	Allowed Pumping Allocation
Henry Veenendaal and Henrietta Veenendaal	8	6
Joe H. Veenendaal and Margie Veenendaal	34	27
John Veenendaal	0	0
Vehicle Maintenance & Painting Corporation (see listing under name of Nicholas C. Conteas)		
Salvador Velasco	16	13
Mike Veldhuis	0	0
Albert Veldhuizen and Helen Veldhuizen	23	18
Jack Verbree	0	0
Mrs. Klaasje Verburg (Leon Verburg to extent of interest under contract to purchase)	12	10
John C. Verhoeven and Sadie Verhoeven	25	20
Joseph C. Vierra and Caroline Vierra (Joseph C. Vierra and William J. Vierra, doing business as Vierra & Vierra, tenants)	13	10
Sieger Vierstra and Nellie G. Vierstra (Jacob J. Bosma, tenant)	12	10
Virginia Country Club of Long Beach	340	272
Roy Visbeek	0	0
Louis Visser	9	7
Vista Hill Psychiatric Foundation	39	31
Louie Von Ah	0	0
Walnut Irrigation District	154	123
Walnut Park Mutual Water Co.	1,245	996
C. D. Webster (see also listing under name of Southern California Edison Company)	1	1

Name	Total Water Right	Allowed Pumping Allocation
Morris Weiss and Bessie Weiss (Wilbur Mellema, tenant) (also see listings under names of Elmo D. Murphy and Emma Engler)	20	16
Wells Fargo Bank as Executor of Estate of Edward H. Heller, Deceased, and as Executor of Estate of Lloyd W. Dinkelspiel, Deceased, and as Trustee under Trust created by the Will of Florence H. Dinkelspiel, Deceased (see listing under name of Florence Hellman Ehrman)		
Jules Wesselink (see listing under name of Henry Van Ruiten)		
West Gateway Mutual Water Co.	105	84
Henry Westra and Hilda Westra	40	32
John D. Westra (see listing under name of Orla Company)		
Francis O. Wharram (see listing under name of Shayman & Wharram)		
Whittier Union High School District	125	100
Arend Z. Wier	14	11
H. Wiersema, aka Harm Wiersema and Pearl Wiersema	16	13
William Wiersma and Elbra Wiersma	7	6
Richard Wigboly (see listing under name of Central Manufacturing District, Inc.)		
Mary Wilcox (see listing under name of Jenkins Realty Mutual Water Co.)		
Ralph P. Williams and Mary Williams	14	11
Wilshire Oil Company of California	1,795	1,436
Melvin L. Wilson and Marie Wilson	1	1
D. P. Winslow and Dorothy C. Winslow (Berton Elson, tenant)	15	12

Name	Total Water Right	Allowed Pumping Allocation
Helene K. Winters	1	1
Fred E. Wiseman and Grayce Ana Wiseman	2	2
Helen Wolfsberger and Christine Joseph	2	2
Volney Womack	0	0
Cho Shee Woo (Hong Woo and Ngorn Seung Woo, as agents of property for Cho Shee Woo)	20	16
Gerrit Wybenga and Rena Wybenga	10	8
George Yamamoto and Alice Yamamoto, also known as Fumi Yamamoto (Fumi Garden Farms, Inc., tenant) (see also listing under name of Southern California Edison Company)	17	14
Paul N. Yokota and Miyo Yokota	4	4
Minoru Yoshijima (see listing under name of Kazuo Hatanaka)		
Frank Yoshioka	0	0
Maxine Young	3	3
Mrs. A. Zandvliet also known as Ana A. Zandvliet	8	6
Arnold Zeilstra and Nellie Zeilstra	6	5
George Zivelonghi and Antonio Zivelonghi	121	97
Dick Zuidervaart and Janna Zuidervaart (Artesia Milling Company, tenant)	1	1
Andy Zylstra	0	0
Zylstra Bros. a partnership consisting of Lammert Zylstra and William Zylstra (see listing under name of John H. Coito)		
John Zylstra and Leonard J. Zylstra, doing business as The Zylstra Dairy	22	18
Leonard Zylstra (not the same person as Leonard J. Zylstra	0	0

4. Transition in Administrative Year - Application. "Year" and "Administrative Year" as used throughout this judgment shall mean the water year; provided that with the first fiscal year (July 1 - June 30) commencing at least four months after the "Amended Judgment" became final, and thereafter, said words shall mean the fiscal year. Since this will provide a transitional Administrative year of nine months, October 1 - June 30, ("short year" hereafter), notwithstanding the finding and determinations in the annual Watermaster report for the then last preceding water year, the Allowed Pumping Allocations of the parties and the quantity which Defendant City of Los Angeles is annually permitted to extract from Central Basin for said short year shall be based on three-quarters of the otherwise allowable quantity. During said short year, because of hardships that might otherwise result, any overextractions by a party shall be deemed pursuant to paragraph 2, Subpart B of Part III of this judgment (p. 61), and it shall be deemed that the Watermaster has made the determination of unreasonable hardship to which reference is therein made.

II. APPOINTMENT OF WATERMASTER; WATERMASTER ADMINISTRATION PROVISIONS. Department of Water Resources of the State of California is hereby appointed Watermaster, for an indefinite term, but subject to removal by the Court, to administer this judgment and shall have the following powers, duties and responsibilities:

1. Duties, Powers and Responsibilities of Watermaster. In order to assist the Court in the administration and enforcement of the provisions of this judgment and to keep the Court

fully advised in the premises, the Watermaster shall have the following duties, powers and responsibilities in addition to those before or hereafter provided in this judgment:

(a) Watermaster May Require Reports, Information and Records. To require of parties the furnishing of such reports, information and records as may be reasonably necessary to determine compliance or lack of compliance by any party with the provisions of this judgment.

(b) Requirement of Measuring Devices. To require all parties or any reasonable classification of parties owning or operating any facilities for the extraction of ground water from Central Basin to install and maintain at all times in good working order at such party's own expense, appropriate measuring devices at such times and as often as may be reasonable under th circumstances and to calibrate or test such devices.

(c) Inspections by Watermaster. To make inspections of ground water production facilities and measuring devices at such times and as often as may be reasonable under the circumstances and to calibrate or test such devices.

(d) Annual Report. The Watermaster shall prepare, file with the Court and mail to each of the parties on or before the 15th day of the fourth month following the end of the preceding Administrative year, an annual report for such year, the scope of which shall include but not be limited to the following:

1. Ground Water Extractions
2. Exchange Pool Operation
3. Use of Imported Water

4. Violations of Judgment and Corrective Action Taken

5. Change of Ownership of Total Water Rights

6. Watermaster Administration Costs

7. Recommendations, if any.

(e) Annual Budget and Appeal Procedure in Relation Thereto. The Watermaster shall annually prepare a tentative budget for each Administrative year stating the anticipated expense for administering the provisions of this judgment. The Watermaster shall mail a copy of said tentative budget to each of the parties hereto at least 60 days before the beginning of each Administrative year. For the first Administrative year of operation under this judgment, if the Watermaster is unable to meet the above time requirement, the Watermaster shall mail said copies as soon as possible. If any party hereto has any objection to said tentative budget, it shall present the same in writing to the Watermaster within 15 days after the date of mailing of said tentative budget by the Watermaster. If no objections are received within said period, the tentative budget shall become the final budget. If objections are received, the Watermaster shall, within 10 days thereafter, consider such objections, prepare a final budget and mail a copy thereof to each party hereto, together with a statement of the amount assessed to each party. Any party may apply to the Court within 15 days after the mailing of such final budget for a revision thereof based on specific objections thereto. The parties hereto shall make the payments otherwise required of them to the Watermaster even though such a request for revision has been filed with the Court. Upon any revision by the Court the

Watermaster shall either remit to the parties their prorata portions of any reduction in the budget, or credit their accounts with respect to their budget assessments for the next ensuing Administrative year, as the Court shall direct.

The amount to be assessed to each party shall be determined as follows: If that portion of the final budget to be assessed to the parties is equal to or less than $20.00 per party then the cost shall be equally apportioned among the parties. If that portion of the final budget to be assessed to parties is greater than $20.00 per party then each party shall be assessed a minimum of $20.00. The amount of revenue expected to be received through the foregoing minimum assessments shall be deducted from that portion of the final budget to be assessed to the parties and the balance shall be assessed to the parties having Allowed Pumping Allocations, such balance being divided among them proportionately in accordance with their respective Allowed Pumping Allocations.

Payment of the assessment provided for herein, subject to adjustment by the Court as provided, shall be made by each such party prior to beginning of the Administrative year to which the assessment relates, or within 40 days after the mailing of the tentative budget, whichever is later. If such payment by any party is not made on or before said date, the Watermaster shall add a penalty of 5% thereof to such party's statement. Payment required of any party hereunder may be enforced by execution issued out of the Court, or as may be provided by order hereinafter made by the court, or by other proceedings by the Watermaster or by any party hereto on the Watermaster's behalf.

Any money unexpended at the end of any Administrative year shall be applied to the budget of the next succeeding Administrative year.

Notwithstanding the above, no part of the budget of the Watermaster shall be assessed to the Plaintiff District or to any party who has not extracted water from Central Basin for a period of two successive Administrative years prior to the Administrative year in which the tentative budget should be mailed by the Watermaster under the provisions of this subparagraph (e).

(f) Rules. The Watermaster may adopt and amend from time to time such rules as may be reasonably necessary to carry out its duties, powers and responsibilities under the provisions of this judgment. The rules shall be effective on such date after the mailing thereof to the parties as is specified by the Watermaster, but not sooner than 30 days after such mailing.

2. Use of Facilities and Data Collected by Other Governmental Agencies. The Watermaster is directed not to duplicate the collection of data relative to conditions of the Central Basin which is then being collected by one or more governmental agencies, but where necessary the Watermaster may collected supplemental data. Where it appears more economical to do so, the Watermaster is directed to use such facilities of other governmental agencies as are available to it under either no cost or cost agreements with respect to the receipt of reports, billings to parties, mailings to parties, and similar matters.

3. Appeal from Watermaster Decisions Other Than With Respect to Budget. Any party interested therein who has objection to any rule, determination, order or finding made by the Watermaster, may make objection thereto in writing delivered to the Watermaster within 30 days after the date the Watermaster mails written notice of the making of such rule, determination, order or finding, and within 30 days after such delivery the Watermaster shall consider said objection and shall amend or affirm his rule, determination, order or finding and shall give notice thereof to all parties. Any such party may file with the Court within 30 days from the date of said notice any objection to such rule, determination, order or finding of the Watermaster and bring the same on for hearing before the Court at such time as the Court may direct, after first having served said objectio upon all other parties. The Court may affirm, modify, amend or overrule any such rule, determination, order or finding of the Watermaster. The provisions of this paragraph shall not apply to budgetary matters, as to which the appellate procedure has heretofore been set forth. Any objection under this paragraph shall not stay the rule, determination, order or finding of the Watermaster. However, the Court, by ex parte order, may provide for a stay thereof on application of any interested party on or after the date that any such party delivers to the Watermaster any written objection.

4. Effect of Non-Compliance by Watermaster With Time Provisions. Failure of the Watermaster to perform any duty, power or responsibility set forth in this judgment within the time limitation herein set forth shall not deprive the

Watermaster of authority to subsequently discharge such duty, power or responsibility, except to the extent that any such failure by the Watermaster may have rendered some otherwise required act by a party impossible.

III. PROVISIONS FOR PHYSICAL SOLUTION TO MEET THE WATER REQUIREMENTS IN CENTRAL BASIN. In order to provide flexibility to the injunction set forth in Part I of the judgment, and to assist in a physical solution to meet water requirements in Central Basin, the injunction so set forth is subject to the following provisions.

A. Carryover of Portion of Allowed Pumping Allocation.

(1) Each party adjudged to have a Total Water Right or water rights and who, during a particular Administrative year, does not extract from Central Basin a total quantity equal to such party's Allowed Pumping Allocation for the particular Administrative year, less any allocated subscriptions by such party to the Exchange Pool, or plus any allocated requests by such party for purchase of Exchange Pool water, is permitted to carry over (the "One Year Carryover") from such Administrative year the right to extract from Central Basin in the next succeeding Administrative year so much of said total quantity as it did not extract in the particular Administrative year, not to exceed 20% of such party's Allowed Pumping Allocation, or 20 acre feet, whichever of said 20% or 20 acre feet is the larger.

(2) Following the declaration of a Declared Water Emergency and until the Declared Water Emergency ends either

by expiration or by resolution of the Board of Directors of the Central and West Basin Water Replenishment District, each party adjudged to have a Total Water Right or water rights and who, during a particular Administrative year, does not extract from Central Basin a total quantity equal to such party's Allowed Pumping Allocation for the particular Administrative year, less any allocated subscriptions by such party to the Exchange Pool, or plus any allocated requests by such party for purchase of Exchange Pool water, is permitted to carry over (the "Drought Carryover") from such Administrative year the right to extract from Central Basin so much of said total quantity as it did not extract during the period of the Declared Water Emergency, to the extent such quantity exceeds the One Year Carryover, not to exceed an additional 35% of such party's Allowed Pumping Allocation, or additional 35 acre feet, whichever of said 35% or 35 acre feet is the larger. Carryover amounts shall first be allocated to the One Year Carryover and any remaining carryover amount for that year shall be allocated to the Drought Carryover.

(3) No further amounts shall be added to the Drought Carryover following the end of the Declared Water Emergency, provided however that in the event another Declared Water Emergency is declared, additional Drought Carryover may be added, to the extent such additional Drought Carryover would not cause the total Drought Carryover to exceed the limits set forth above.

(4) The Drought Carryover shall be supplemental to and shall not affect any previous drought carryover acquired by a party pursuant to previous order of the court.

B. When Over-extractions May be Permitted.

1. Underestimation of Requirements for Water. Any party hereto having an Allowed Pumping Allocation and not in violation of any provision of this judgment may extract in an Administrative year an additional quantity of water not to exceed: (a) 20% of such party's Allowed Pumping Allocation or 20 acre feet, whichever is greater, and (b) any amount in addition thereto which may be approved in advance by the Watermaster.

2. Reductions in Allowed Pumping Allocations in Succeeding Years to Compensate for Permissible Overextractions. Any such party's Allowed Pumping Allocation for the following Administrative year shall be reduced by the amount over-extracted pursuant to paragraph 1 above, provided that if the Watermaster determines that such reduction in the party's Allowed Pumping Allocation in one Administrative year will impose upon such a party an unreasonable hardship, the said reduction in said party's Allowed Pumping Allocation shall be prorated over a period of five (5) Administrative years succeeding that in which the excessive extractions by the party occurred. Application for such relief to the Watermaster must be made not later than the 40th day after the end of the Administrative year in which such excessive pumping occurred. Watermaster shall grant such relief if such over-extraction, or any portion thereof, occurred during a period of Declared Water Emergency.

3. Reductions in Allowed Pumping Allocations for the Next Succeeding Administrative Year to Compensate for Overpumping. Whenever a party over-extracts in excess of 20% of such party's Allowed Pumping Allocation, or 20 acre feet, whichever is greater, and such excess has not been approved in advance by the Watermaster, then such party's Allowed Pumping Allocation for the following Administrative year shall be reduced by an amount equivalent to its total over-extractions in the particular Administrative year in which it occurred.

4. Reports of Certain over-extractions to the Court. Whenever a party over-extracts in excess of 20% of such party's Allowed Pumping Allocation, or 20 acre feet, whichever is greater, without having obtained prior approval of the Watermaster, such shall constitute a violation of the judgment and the Watermaster shall make a written report to the Court for such action as the Court may deem necessary. Such party shall be subject to such injunctive and other processes and action as the Court might otherwise take with regard to any other violation of such judgment.

5. Effect of Over-extractions on Rights. Any party who over-extracts from Central Basin in any Administrative year shall not acquire any additional rights by reason of such over-extractions; nor, shall any required reductions in extractions during any subsequent years reduce the Total Water Right or water rights of any party to t he extent said over-extractions are in compliance with paragraph 1 above.

6. Pumping Under Agreement With Plaintiff During Periods of Emergency. Plaintiff overlies Central Basin and

engages in activities of replenishing the ground waters thereof. Plaintiff by resolution has appropriated for use during emergencies the quantity of 17,000 acre feet of imported and reclaimed water replenished by it into Central Basin, and pursuant to such resolution Plaintiff reserves the right to use or cause the use of such quantity during such emergency periods.

(a) Notwithstanding any other provision of this judgment, parties who are water purveyors (including successors in interest) are authorized to enter into agreements with Plaintiff under which such water purveyors may exceed their respective Allowed Pumping Allocations for the particular administrative year when the following conditions are met:

(1) Plaintiff is in receipt of a resolution of the Board of Directors of the Metropolitan Water District of Southern California ("MWD") that there is an actual or immediately threatened temporary shortage of MWD's imported water supply compared to MWD's needs, or a temporary inability to deliver MWD's imported water supply throughout its area, which will be alleviated by overpumping from Central Basin.

(2) The Board of Directors of both Plaintiff and Central Basin Municipal Water District by resolutions concur in the resolution of MWD's Board of Directors, and the Board of Directors of Plaintiff finds in its resolution that the average minimum elevation of water surface among those wells in the Montebello Forebay of the Central Basin designated as Los Angeles County Flood Control District Wells Nos. 1601T, 1564P, 1641P,

and 1626L, is at least 43.7 feet above sea level. This computation shall be based upon the most recent "static readings" taken, which shall have been taken not more than four weeks prior. Should any of the wells designated above become destroyed or otherwise be in an condition so that readings cannot be made, or the owner prevent their use for such readings the Board of Directors of the Plaintiff may, upon appropriate engineering recommendation substitute such other well or wells as it may deem appropriate.

(3) In said resolution, Plaintiff's Board of Directors sets a public hearing, and notice of the time, place and date thereof (which may be continued from time to time without further notice) is given by First Class Mail to the current designees of the parties, filed and served in accordance with Part V, paragraph 3 of this Judgment. Said notice shall be mailed at least five (5) days before the scheduled hearing date.

(4) At said public hearing, parties (including successors in interest) are given full opportunity to be heard, and at the conclusion thereof the Board of Directors of Plaintiff by resolution decides to proceed with agreements under this Part III-B.

(5) For purposes of this Part III-B, "water purveyors" mean those parties (and successors in interest) which sell water to the public whether regulated public utilities, mutual water companies or public entities, which have a connection or connections for the taking

of imported water of MWD, or access to imported water of MWD through a connection, and which normally supply part of their customer's needs with such imported water.

(b) All such agreements shall be subject to the following requirements, and such others as Plaintiff's Board of Directors shall require:

(1) They shall be of uniform content except as to quantity involved, and any special provisions considered necessary or desirable with respect to local hydrological conditions or good hydrologic practice.

(2) They shall be offered to all water purveyors, excepting those which Plaintiff's Board of Directors determine should not over pump because such over pumping would occur in undesirable proximity to a sea water barrier project designed to forestall sea water intrusion, or within or in undesirable proximity to an area within Central Basin wherein groundwater levels are at an elevation where over pumping is under all the circumstances then undesirable.

(3) The maximum terms for the agreements shall be four months, which agreements shall commence on the same date and end on the same date (and which may be executed at any time within the four month period), unless an extension thereof is authorized by the Court, under Part IV of this judgment.

(4) They shall contain provisions that the w3ater purveyor executing the agreement pay to the Plaintiff a

pice in addition to the applicable replenishment assessment determined on the following formula. The normal price per acre-foot of Central Basin Municipal Water District's (CBMWD) treated domestic and municipal water, as "normal" price of such category of water is defined in Part C, paragraph 10 (price to be paid for Exchange Pool Water) as of the beginning of the contract term less the deductions set forth in said paragraph 10 for the administrative year in which the contract term commences. The agreement shall provide for adjustments in the first of said components for any proportional period of the contract term during which the CBMWD said normal price is changed, and if the agreement straddles two administrative years, the said deductions shall be adjusted for any proportionate period of the contract term in which the amount thereof or of either subcomponent changes for purposes of said paragraph 10. Any price for a partial acre-foot shall be computed prorata. Payments shall be due and payable on the principle that over extractions under the agreement are of the last water pumped in the fiscal year, and shall be payable as the agreement shall provide.

(5) They shall contain provisions that:

(a) All of such agreements (but not less than all) shall be subject to termination by Plaintiff if, in the Judgment of Plaintiff's Board of Directors, the conditions or threatened conditions upon which they

were based have abated to the extent over extractions are no longer considered necessary; and (b) that any individual agreement or agreements may be terminated if the Plaintiff's Board of Directors finds that adverse hydrologic circumstances have developed as a result of over extractions by any water purveyor or purveyors which have executed said agreements, or for any other reason that Plaintiff's Board of Directors finds good and sufficient.

(c) Other matters applicable to such agreements and over pumping thereunder are as follows, without need for express provisions in the agreements;

(1) The quantity of over pumping permitted shall be additional to that which the water purveyor could otherwise over pump under this Judgment.

(2) The total quantity of permitted over pumping under all said agreements during said four months shall not exceed Seventeen thousand (17,000) acre feet, but the individual water purveyor shall not be responsible or affected by any violation of this requirement. That total is additional to over extractions otherwise permitted under this Judgment.

(3) Only one four month period may be utilized by Plaintiff in entering into such agreements, as to any one emergency or continuation thereof declared by MWD's Board of Directors under paragraph 6(a).

(4) Plaintiff may utilize the ex parte provisions of Part IV of this Judgment in lieu of the authority

contained herein (which ex parte provisions are not limited as to time, nature of relief, or terms of any agreements), but neither Plaintiff nor any other party shall utilize both as to any one such emergency or continuation thereof.

(5) If any party claims it is being damaged or threatened with damage by the over extractions by an party to such an agreement, the first party or the Watermaster may seek appropriate action of the Court for termination of any such agreement upon notice of hearing to the party complaining, to the party to said agreement, to the plaintiff, and to any parties who have filed a request for special notice. Any termination shall not affect the obligation of the party to make payments under the agreement for over extractions which did occur thereunder.

(6) Plaintiff shall maintain separate accounting of the proceeds from payments made pursuant to agreements entered into under this part. Said fund shall be utilized solely for purposes of replenishment in replacement of waters in Central Basin and West Basin. Plaintiff shall as soon as practicable cause replenishment in Central Basin by the amounts to be overproduced pursuant to this Paragraph 6 commencing at Page 63, whether through spreading, injection, or in lieu agreements.

(7) Over extractions pursuant to the agreements shall not be subject to the "make up" provisions of the

Judgment as amended, provided that if any party fails to make payment as required by the agreement, Plaintiff may require such "make up" under Paragraph 3, Subpart B, Part III of the Judgment (Page 62).

(8) Water Purveyor under any such agreement may, and is encouraged to enter into appropriate arrangements with customers who have water rights in Central Basin under or pursuant to this Judgment whereby the Water Purveyor will be assisted in meeting the objectives of the agreement.

(9) Nothing in this Paragraph 6 limits the exercise of the reserved jurisdiction of the court except as provided in subparagraph (c) (4) above.

7. Exemption for Extractors of Contaminated Groundwater. Any party herein may petition the Replenishment District for a Non-consumptive Water Use Permit as part of a project to remedy or ameliorate groundwater contamination. If the petition is granted as set forth in this part, the petitioner may extract the groundwater as permitted hereinafter, without the production counting against the petitioner's production rights.

(a) If the Board of the Replenishment District determines by Resolution that there is a problem of groundwater contamination that a proposed program will remedy or ameliorate, an operator may make extractions of groundwater to remedy or ameliorate that problem without the production counting against the petitioner's production rights if the water is not applied to beneficial surface use, its extractions are made in compliance with all the terms and conditions of the Board Resolution, and

the Board has determined in the Resolution either of the following:

(1) The groundwater to be extracted is unusable and cannot be economically treated or blended for use with other water.

(2) The proposed program involves extraction of usable water in the same quantity as will be returned to the underground without degradation of quality.

(b) The Resolution may provide those terms and conditions the Board deems appropriate, including, but not limited to, restrictions on the quantity of the extractions to be so exempted, limitations on time, periodic reviews, requirement of submission of test results from a Board-approved laboratory, and any other relevant terms or conditions.

(c) Upon written notice to the operator involved, the Board may rescind or modify its Resolution. The rescission or modification of the Resolution shall apply to groundwater extractions occurring more than ten days after the rescission or modification. Notice of recission or modification shall be either mailed first class mail, postage prepaid, at least two weeks prior to the meeting of the Board at which the rescission or modification will be made to the address of record of the operator or personally delivered two weeks prior to the meeting.

(d) The Board's decision to grant, deny, modify or revoke a permit or to interrupt or stop a permitted project may be appealed to this court within thirty days of the notice thereof to the applicant and upon thirty days notice to the designees of all parties herein.

(e) The Replenishment District shall monitor and periodically inspect the project for compliance with the terms and conditions for any permit issued pursuant to these provisions.

(f) No party shall recover costs from any other party herein on connection with determinators made with respect to this part.

C. Exchange Pool Provisions.

(1) Definitions.

For purposes of these Exchange Pool provisions, the following words and terms have the following meanings:

(a) "Exchange Pool" is the arrangement hereinafter set forth whereby certain of the parties, ("Exchangees") may, notwithstanding the other provisions of the judgment, extract additional water from Central Basin to meet their needs, and certain other of the parties ("Exchangors"), reduce their extractions below their Allowed Pumping Allocations in order to permit such additional extractions by others.

(b) "Exchangor" is one who offers, voluntarily or otherwise, pursuant to subsequent provisions, to reduce its extractions below its Allowed Pumping Allocation in order to permit such additional extractions by others.

(c) "Exchangee" is one who requests permission to extract additional water from Central Basin.

(d) "Undue hardship" means unusual and severe economic or operational hardship, other than that arising (i) by reason of any differential in quality that might exist between water extracted from Central Basin and water available for importation

or (ii) by reason of any difference in cost to a party in subscribing to the Exchange Pool and reducing its extractions of water from Central Basin in an equivalent amount as opposed to extracting any such quantity itself.

2. Parties who May Purchase Water Through the Exchange Pool. Any party not having existing facilities for the taking of imported water as of the beginning of any Administrative year, and any party having such facilities as of the beginning of any Administrative year who is unable, without undue hardship, to obtain, take, and put to beneficial use, through its distribution system or systems existing as of the beginning of the particular Administrative year, imported water in a quantity which, when added to its Allowed Pumping Allocation for that particular Administrative year, will meet its estimated needs for that particular Administrative year, may purchase water from the Exchange Pool, subject to the limitations contained in this Subpart C of this Part III (Subpart "C" hereinafter).

3. Procedure of Purchasing Exchange Pool Water. Not later than the 40th day following the commencement of each Administrative year, each such party desiring to purchase water from the Exchange Pool shall file with the Watermaster a request to so purchase, setting forth the amount of water in acre feet that such party estimates that it will require during the then current Administrative year in excess of the total of:

(a) Its Allowed Pumping Allocation for that particular Administrative year; and

(b) The imported water, if any, which it estimates it will be able, without undue hardship, to obtain, take and put to

beneficial use, through its distribution system or systems existing as of the beginning of that particular Administrative year.

Any party who as of the beginning of any Administrative year has existing facilities for the taking of imported water and who makes a request to purchase from the Exchange Pool must provide with such request substantiating data and other proof which, together with any further data and other proof requested by the Watermaster, establishes that such party is unable without undue hardship, to obtain, take and put to beneficial use through its said distribution system or systems a sufficient quantity of imported water which, when added to its said Allowed Pumping Allocation for the particular Administrative year, will meet its estimated needs. As to any such party, the Watermaster shall make a determination whether the party has so established such inability, which determination shall be subject to review by the court under the procedure set forth in Part II of this judgment. Any party making a request to purchase from the Exchange Pool shall either furnish such substantiating data and other proof, or a statement that such party had no existing facilities for the taking of imported water as of the beginning of that Administrative year, and in either event a statement of the basis for the quantity requested to be purchased.

4. Subscriptions to Exchange Pool.

(a) Required Subscription. Each party having existing facilities for the taking of imported water as of the beginning of any Administrative year hereby subscribed to the Exchange Pool for purposes of meeting Category (a) requests thereon, as more

1 particularly defined in paragraph 5 of this Subpart C, twenty
2 percent (20%) of its Allowed Pumping Allocation, or the quantity
3 of imported water which it is able, without undue hardship, to
4 obtain, take and put to beneficial use through its distribution
5 system or systems existing as of the beginning of the particular
6 Administrative year in addition to such party's own estimated
7 needs for imported water during that water year, whichever is the
8 lesser. A party's subscription under this subparagraph (a) and
9 subparagraph (b) of this paragraph 4 is sometimes hereinafter
10 referred to as a 'required subscription'.
11 (b) Report to Watermaster by Parties with Connections
12 and Unable to Subscribe 20%. Any party having existing
13 facilities for the taking of imported water and estimating that
14 it will be unable, without undue hardship, in that Administrativ
15 year to obtain, take and put to beneficial use through its
16 distribution system or systems existing as of the beginning of
17 that Administrative year, sufficient imported water to further
18 reduce its extractions from the Central Basin by twenty percent
19 (20%) of its Allowed Pumping Allocation for purposes of providing
20 water to the Exchange Pool must furnish not later than the 40th
21 day following the commencement of such Administrative year sub-
22 stantiating data and other proof which, together with any further
23 data and other proof requested by the Watermaster, establishes
24 said inability or such party shall be deemed to have subscribed
25 twenty percent (20%) of its Allowed Pumping Allocation for the
26 purpose of providing water to the Exchange Pool As to any such
27 party so contending such inability, the Watermaster shall make a
28 determination whether the party has so established such

inability, which determination shall be subject to review by the Court under the procedure set forth in Part II of this judgment.

(c) Voluntary Subscriptions. Any party, whether or not having facilities for the taking of imported water, who desires to subscribe to the Exchange Pool a quantity or further quantity of its Allowed Pumping Allocation, may so notify the Watermaster in writing of the quantity of such offer on or prior to the 40th day following the commencement of the particular Administrative year. Such subscriptions are referred to hereinafter as "voluntary subscriptions." Any Exchangor who desires that any part of its otherwise required subscription not needed to fill Category (a) requests shall be available for Category (b) requests may so notify the Watermaster in writing on or prior to said 40th day. If all of that Exchangor's otherwise required subscription is not needed in order to fill Category (a) requests, the remainder of such required subscription not so used, or such part thereof as such Exchangor may designate, shall be deemed to be a voluntary subscription.

5. Limitations on Purchases of Exchange Pool Water and Allocation of Requests to Purchase Exchange Pool Water Among Exchangors.

(a) Categories of Requests. Two categories of Exchange Pool requests are established as follows:

(1) Category (a) requests. The quantity requested by each Exchangee, whether or not that Exchangee has an Allowed Pumping Allocation, which quantity is not in excess of 150% of its Allowed Pumping Allocation, if any, or 100 acre feet, whichever is greater. Requests or portions thereof within the

above criteria are sometimes hereinafter referred to as "Category "a) requests."

(2) Category (b) requests. The quantity requested by each Exchangee having an Allowed Pumping Allocation to the extent the request is in excess of 150% of that Allowed Pumping Allocation or 100 acre feet, whichever is greater, and the quantity requested by each Exchangee having no Allowed Pumping Allocation to the extent the request is in excess of 100 acre feet. Portions of requests within the above criteria are sometimes hereinafter referred to as "Category (b) requests."

(b) Filling of Category (a) Requests. All Exchange Pool subscriptions, required and voluntary, shall be available to fill Category (a) requests. Category (a) requests shall be filled first from voluntary subscriptions, and if voluntary subscriptions should be insufficient to fill all Category (a) requests required subscriptions shall be then utilized to fill Category (a) requests. All Category (a) requests shall be first filled before any Category (b) requests are filled.

(c) Filling of Category (b) Requests. To the extent that voluntary subscriptions have not been utilized in filling Category (a) requests, Category (b) requests shall be filled only out of any remaining voluntary subscriptions. Required subscriptions will then be utilized for the filling of any remaining Category (b) requests.

(d) Allocation of Requests to Subscriptions When Available Subscriptions Exceed Requests. In the event the quantity of subscriptions available for any category of requests exceeds those requests in that category, or exceeds the remainder

of those requires in that category, such requests shall be filled out of such subscriptions proportionately in relation to the quantity of each subscription.

(e) Allocation of Subscriptions to Category (b) Requests in the Event of Shortage of Subscriptions. In the event available subscriptions are insufficient to meet Category (b) requests, available subscriptions shall be allocated to each request in the proportion that the particular request bears to the total requests of the particular category.

6. Additional Voluntary Subscriptions. If subscriptions available to meet the requests of Exchangees are insufficient to meet all requests, additional voluntary subscriptions may be solicited and received from parties by the Watermaster. Such additional subscriptions shall be allocated first to Category (a) requests to the extent unfilled, and next to Category (b) requests to the extent unfilled. All allocations are to be otherwise in the same manner as earlier provided in paragraph 5 (a) through 5 (e) inclusive.

7. Effect if Category (a) Requests Exceed Available Subscriptions, Both Required and Voluntary. In the event that the quantity of subscriptions available to fill Category (a) requests is less than the total quantity of such requests, the Exchangees may, nonetheless, extract the full amount of their Category (a) requests otherwise approved by the Watermaster as if sufficient subscriptions were available. The amounts received by the Watermaster on account of that portion of the approved requests in excess of the total quantities available from Exchangors shall either be paid by the Watermaster to Central &

West Basin Water Replenishment District in trust for the purpose of purchasing imported water and spreading the same in Central Basin for replenishment thereof, or credited to an account of said Plaintiff District on the books of the Watermaster, at the option of said Plaintiff District. Thereafter said Plaintiff District may, at any time, withdraw said funds or any part thereof so credited in trust for the aforesaid purpose, or may by the 40th day of any Administrative year notify the Watermaster that it desires all or any portion of said funds to be expended by the Watermaster for the purchase of water available from subscriptions by Exchangors in the event the total quantity of such subscriptions exceeds the total quantity of approved requests by parties to purchase Exchange Pool water. To the extent that there is such an excess of available subscriptions over requests and to the extent that the existing credit in favor of Plaintiff District is sufficient to purchase such excess quantity at the price established for Exchange Pool purchases during that Administrative year, the account of the Plaintiff District shall be debited and the money shall be paid to the Exchangors in the same manner as if another party had made such purchase as an Exchangee. The Plaintiff District shall not extract any such Exchange Pool water so purchased.

8. <u>Additional Pumping by Exchangees Pursuant to Exchange Pool Provisions</u>. An Exchangee may extract from Central Basin in addition to its Allowed Pumping Allocation for a particular Administrative year that quantity of water which it has requested to purchase from the Exchange Pool during that Administrative year and which has been allocated to it pursuant

to the provisions of paragraphs 5, 6 and 7. The first pumping by an Exchangee in any Administrative year shall be deemed to be pumping of the party's allocation of Exchange Pool water.

9. Reduction in Pumping by Exchangors. Each Exchangor shall in each Administrative year reduce its extractions of water from Central Basin below its Allowed Pumping allocation for the particular year in a quantity equal to the quantity of Exchange Pool requests allocated to it pursuant to the provisions of paragraphs 4, 5, 6 and 7 of this Subpart C.

10. Price to be Paid for Exchange Pool Water. The price to be paid by Exchangees and to be paid to Exchangors per acre foot for required and voluntary subscriptions of Exchangors utilized to fill requests on the Exchange Pool by Exchangees shall be the dollar amount computed as follows by the Watermaster for each Administrative year. The "normal" price as of the beginning of the Administrative year charged by Central Basin Municipal Water District (CBMWD) for treated MWD (Metropolitan Water District of Southern California) water used for domestic and municipal purposes shall be determined, and if on that date there are any changes scheduled during that Administrative year in CBMWD's "normal" price for such category of water, the weighted daily "normal" CBMWD price shall be determined and used in lieu of the beginning such price; and there shall be deducted from such beginning or weighted price, as the case may be, the "incremental cost of pumping water in Central Basin" at the beginning of the Administrative year and any then current rate or rates, of assessments levied on the pumping of ground water in Central Basin by Plaintiff District and any other governmental

agency. The "normal" price charged by CBMWD shall be the highest price of CBMWD for normal service excluding any surcharge or higher rate for emergency deliveries or otherwise failing to comply with CBMWD rates and regulations relating to earlier deliveries. The "incremental cost of pumping water in Central Basin" as of the beginning of the Administrative year shall be deemed to be the Southern California Edison Company Schedule No. PA-1 rate per kilowatt-hour, including all adjustments and all uniform authorized additions to the basic rate, multiplied by 560 kilowatt-hours per acre-foot, rounded to the nearest dollar (which number of kilowatt-hours has been determined to represent the average energy consumption to pump an acre-foot of water in Central Basin). In applying said PA-1 rate the charge per kilowatt-hour under the schedule shall be employed and if there are any rate blocks then the last rate block shall be employed. Should a change occur in Edison schedule designations, the Watermaster shall employ that applicable to motors used for pumping water by municipal utilities.

11. Carry-over of Exchange Pool Purchases by Exchangees. An Exchangee who does not extract from Central Basin in a particular Administrative year a quantity of water equal to the total of (a) its Allowed Pumping Allocation for that particular Administrative year, reduced by any authorized amount of carry-over into the next succeeding Administrative year pursuant to the provisions of Subpart A of Part III of this judgment, and (b) the quantity that it purchased from the Exchange Pool for that particular Administrative year, may carry over into the next succeeding Administrative year the right to

extract from Central Basin a quantity equal to the difference between said total and the quantity actually extracted in that Administrative year, but not exceeding the quantity purchased from the Exchange Pool for that Administrative year. Any such carry-over shall be in addition to that provided in said Subpart A of Part III.

If the 'Basinwide Average Exchange Pool Price' in the next succeeding Administrative year exceeds the 'Exchange Pool Price' in the previous Administrative year any such Exchangee exercising such carry-over rights hereinabove provided shall pay to the Watermaster, forthwith upon the determination of the 'Exchange Pool Price' in said succeeding Administrative year, and as a condition to such carry-over rights, an additional amount determined by multiplying the number of acre feet of carry-over by the difference in 'Exchange Pool Price' as between the two Administrative years. Such additional payment shall be miscellaneous income to the Watermaster which shall be applied by him against that share of the Watermaster's budget to be paid by the parties to this Agreement for the second Administrative year succeeding that in which the Exchange Pool water was so purchased.

12. Notification by Watermaster to Exchangors and Exchangees of Exchange Pool Requests and Allocations Thereof and Price of Exchange Pool Water. Not later than the 65th day after the commencement of each Administrative year, the Watermaster shall determine and notify all Exchangors and Exchangees of the total of the allocated requests for Exchange Pool water and shall provide a schedule divided into categories of requests showing

the quantity allocated to each Exchangee and a schedule of the allocation of the total Exchange Pool requirements among the Exchangors. Such notification shall also advise Exchangors and Exchangees of the prices to be paid to Exchangors for subscriptions utilized and the Exchange Pool Price for that Administrative year as determined by the Watermaster. The determinations of the Watermaster in this regard shall be subject to review by the Court in accordance with the procedure set forth in Part II of this judgment.

13. Payment by Exchangees. Each Exchangee shall, on or prior to last day of the third month of each Administrative year, pay to the Watermaster one-quarter of said price per acre-foot multiplied by the number of acre feet of such party's approved request and shall, on or before the last day of each of the next succeeding three months, pay a like sum to the Watermaster. Such amounts must be paid by each Exchangee regardless of whether or not it in fact extracts or uses any of the water it has requested to purchase from the Exchange Pool.

14. Payments to Exchangors. As soon as possible after receipt of moneys from Exchangees, the Watermaster shall remit to the Exchangors their prorata portions of the amount so received in accordance with the provisions of paragraph 10 above.

15. Delinquent Payments. Any amounts not paid on or prior to any due date above shall carry interest at the rate of 1% per month or any part of a month. Any amounts required to be so paid may be enforced by the equitable powers of the Court, including, but not limited to, the injunctive process of the Court. In addition thereto, the Watermaster, as Trustee for the

Exchangors, may enforce such payment by an appropriate legal action, and shall be entitled to recover as additional damages reasonable attorneys' fees incurred in connection therewith. If any Exchangee shall fail to make any payments required of it on or before 30 days after the last payment is due, including any accrued interest, said party shall thenceforward not be entitled to purchase water from the Exchange Pool in any succeeding Administrative year except upon order of the Court, upon such conditions as the Court may impose.

IV. CONTINUING JURISDICTION OF THE COURT.

The Court hereby reserves continuing jurisdiction and upon application of any interested party, or upon its own motion, may review and redetermine the following matters and any matters incident thereto:

(a) Its determination of the permissible level of extractions from Central Basin in relation to achieving a balanced basin and an economic utilization of Central Basin for ground water storage, taking into account any then anticipated artificial replenishment of Central Basin by governmental agencies for the purpose of alleviating what would otherwise be annual overdrafts upon Central Basin and all other relevant factors.

(b) Whether in accordance with applicable law any party has lost all or any portion of his rights to extract ground water from Central Basin and, if so, to ratably adjust the Allowed Pumping Allocations of the other parties and ratably thereto any remaining Allowed Pumping Allocation of such party.

(c) To remove any Watermaster appointed from time to time and appoint a new Watermaster; and to review and revise the duties, powers and responsibilities of the Watermaster and to make such other and further provisions and orders of the Court that may be necessary or desirable for the adequate administration and enforcement of the judgment.

(d) To revise the price to be paid by Exchangees and to Exchangors for Exchange Pool purchases and subscriptions.

(e) In case of emergency or necessity, to permit extractions from Central Basin for such periods as the Court may determine: (i) ratably in excess of the Allowed Pumping Allocations of the parties; or (ii) on a non-ratable basis by certain parties if either compensation or other equitable adjustment for the benefit of the other parties is provided. Such overextractions may be permitted only for emergency and necessity arising within Central Basin area, but to assist the remainder of the areas within The Metropolitan Water District of Southern California in the event of temporary shortage or threatened temporary shortage of its imported water supply, or temporary inability to deliver the same throughout its area, but only if the court is reasonably satisfied that no party will be irreparably damaged thereby. Increased energy cost for pumping shall not be deemed irreparable damage. Provided, however, that the provisions of this subparagrpah will apply only if the temporary shortage, threatened temporary shortage, or temporary inability to deliver was either not reasonably avoidable by the Metropolitan Water District, or if reasonably avoidable, good reason existed for not taking the steps necessary to avoid it.

(f) To review actions of the Watermaster.

(g) To assist the remainder of the areas within The Metropolitan Water District of Southern California within the parameter set forth in subparagraph (e) above.

(h) To provide for such other matters as are not contemplated by the judgment and which might occur in the future, and which if not provided for would defeat any or all of the purposes of this judgment to assure a balanced Central Basin subject to the requirements of Central Basin Area for water required for its needs, growth and development.

The exercise of such continuing jurisdiction shall be after 30 days notice to the parties, with the exception of the exercise of such continuing jurisdiction in relation to subparagraphs (e) and (g) above, which may be ex parte, in which event the matter shall be forthwith reviewed either upon the Court's own motion or the motion of any party upon which 30 days notice shall be so given. Within ten (10) days of obtaining any ex parte order, the party so obtaining the same shall mail notice thereof to the other parties. If any other party desires Court review thereof, the party obtaining the ex parte order shall bear the reasonable expenses of mailing notice of the proceedings, or may in lieu thereof undertake the mailing. Any contrary or modified decision upon such review shall not prejudice any party who relied on said ex parte order.

V. GENERAL PROVISIONS.

1. Judgment Constitutes Inter Se Adjudication. This judgment constitutes an inter se adjudication of the respective rights of all parties, except as may be otherwise specifically

indicated in the listing of the rights of the parties at pages 12 through 52 of this judgment, or in Appendix "2" hereof.

2. Assignment, Transfer, Etc., of Rights. Subject to the other provision of this judgment, and any rules and regulations of the Watermaster requiring reports relative thereto, nothing herein contained shall be deemed to prevent any party hereto from assigning, transferring, licensing or leasing all or any portion of such water rights as it may have with the same force and effect as would otherwise be permissible under applicable rules of law as exist from time to time.

3. Service Upon and Delivery to Parties of Various Papers. Service of the judgment on those parties who have executed that certain Stipulation and Agreement for Judgment or who have filed a notice of election to be bound by the Exchange Pool provisions shall be made by first class mail, postage prepaid, addressed to the designee and at the address designated for that purpose in the executed and filed Counterpart of the Stipulation and Agreement for Judgment or in the executed and filed "Notice of Election to be Bound by Exchange Pool Provisions", as the case may be, or in any substitute designation filed with the Court.

Each party who has not heretofore made such a designation shall, within 30 days after the judgment shall have been served upon that party, file with the Court, with proof of service of a copy upon the Watermaster, a written designation of the person to whom and the address at which all future notices, determinations, requests, demands, objections, reports and other

papers and processes to be served upon that party or delivered that party are to be so served or delivered.

A later substitute designation filed and served in the same manner by any party shall be effective from the date of filing as to the then future notices, determinations, requests, demands, objections, reports and other papers and processes to be served upon or delivered to that party.

Delivery to or service upon any party by the Watermaster, by any other party, or by the Court, or any item required to be served upon or delivered to a party under or pursuant to the judgment may be by deposit in the mail, first class, postage, prepaid, addressed to the designee and at the address in the latest designation filed by that party.

4. Judgment Does Not Affect Rights, Powers, Etc., of Plaintiff District. Nothing herein constitutes a determination or adjudication which shall foreclose Plaintiff District from exercising such rights, powers, privileges and prerogatives as it may now have or may hereafter have by reason of provisions of law.

5. Continuation of Order Under Interim Agreement. The order of Court made pursuant to the "Stipulation and Interim Agreement and Petition for Order" shall remain in effect through the water year in which this judgment shall become final (subject to the reserved jurisdiction of the Court).

6. Effect of: Extractions by Exchangees; Reductions in Extractions. With regard to Exchange Pool purchases, the first extractions by each Exchangee shall be deemed the extractions of the quantities of water which that party is

Exhibit B

entitled to extract pursuant to his allocation from the Exchange Pool for that Administrative year. Each Exchangee shall be deemed to have pumped his Exchange Pool request so allocated for and on behalf of each Exchangor in proportion to each Exchangor's subscription to the Exchange Pool which is utilized to meet Exchange Pool requests. No Exchangor shall ever be deemed to have relinquished or lost any of its rights determined in this judgment by reason of allocated subscriptions to the Exchange Pool. Each Exchangee shall be responsible as between Exchangors and that Exchangee, for any tax or assessment upon the production or ground water levied for replenishment purposes by the Central and West Basin Water Replenishment District or by any other governmental agency with respect to water extracted by such Exchangee by reason of Exchange Pool allocations and purchases. No Exchangor or Exchangee shall acquire any additional rights, with respect to any party to this action, to extract waters from Central Basin pursuant to Water Code Section 1005.1 by reason of the obligations pursuant to and the operation of the Exchange Pool.

7. Judgment Binding on Successors, Etc. This judgment and all provisions thereof are applicable to and binding upon not only the parties to this action, but as well to their respective heirs, executors, administrators, successors, assigns, lessees, licensees and to the agents, employees and attorneys in fact of any such persons.

8. Costs. No party shall recover its costs herein as against any other party.

9. Intervention of Successors in Interest and New Parties. Any person who is not a party (including but not limited to successors or parties who are bound by this judgment) and who proposes to produce water from the basin or exercise water rights of a predecessor may seek to become a party to this Judgment through a Stipulation in Intervention entered into with the Plaintiff. Plaintiff may execute said Stipulation on behalf of the other parties herein, but such Stipulation shall not preclude a party from opposing such intervention at the time of the court hearing thereon. Said Stipulation for Intervention must thereupon be filed with the Court, which will consider an order confirming said intervention following thirty (30) days notice to the parties. Thereafter, if approved by the Court, such intervenor shall be a party bound by this Judgment and entitled to the rights and privileges accorded under the physical solution herein.

10. Effect of this Amended Judgment on Orders Filed Herein. This Second Amended Judgment shall not abrogate such rights of additional carry-over of unused water rights as may otherwise exist pursuant to orders herein filed June 2, 1977 and September 29, 1977.

THE CLERK WILL ENTER THIS SECOND AMENDED JUDGMENT FORTHWITH.

DATED: May 6, 1991

/s/ Florence T. Packard
Judge of the Superior Court

That certain area in the County of Los Angeles, State of California, situated within the following exterior boundaries:

1. Commencing at the southernmost corner of the basin at a point on the Los Angeles-Orange County boundary 2,000 feet, more or less, northeasterly of the intersection of the center line of Pacific Coast Highway with said County boundary;

2. Thence in a straight line along the trace of the Reservoir Hill Fault to a point about 650 feet north and about 700 feet east of the intersection of Anaheim Street and Ximeno Avenue;

3. Thence in a straight line along the trace of said Reservoir Hill Fault to a point on the center line of Pacific Coast Highway, 650 feet west of the intersection of the center lines of said Pacific Coast Highway and Lakewood Boulevard;

4. Thence westerly along the center line of said Pacific Coast Highway to a point 300 feet west of its intersection with the center line of Obispo Avenue;

5. Thence in a straight line to a point about 400 feet east of the intersection of the center lines of Walnut and Creston Avenues;

6. Thence in a straight line along the escarpment of the Cherry Hill Fault to a point about 750 feet west and about 730 feet south of the intersection of Wardlow Road and Long Beach Boulevard;

7. Thence in a straight line to a point about 100 feet north and about 100 feet west of the intersection of Bixby Road and Del Mar Avenue;

8. Thence in a straight line extending through a point in the center line of Del Amo Boulevard about 900 feet west of the center line of the Pacific

Electric Railway to a point in the center line of Alameda Street about 2, 900 feet north of Del Amo Boulevard, the latter distance measured along the center line of Alameda Street;

9. Thence in a straight line along the crest of the Dominguez Hills to a point about 1, 300 feet north and about 850 feet west of the intersection of the center lines of Central Avenue and Victoria Street;

10. Thence in a straight line along the escarpment of the Avalon-Compton Fault to a point about 700 feet west of the intersection of the center lines of Avalon Boulevard and Rosecrans Avenue;

11. Thence in a straight line to a point 400 feet north of the intersection of El Segundo Boulevard and Vermont Avenue and continuing in another straight line to a point 2, 400 feet south and 1, 000 feet east of the intersection of the center lines of Crenshaw and Century Boulevards, the latter point being the approximate southeasterly end of the escarpment of the Potrero Fault;

12. Thence in a straight line along the escarpment of the Potrero Fault and continuing to a point on Northridge Drive about 200 feet northeasterly of its intersection with Marvale Drive, measured along the center line of Northridge Drive;

13. Thence in a straight line to a point on the center line of Stocker Street 1, 800 feet, more or less, northeasterly of the intersection of the center lines of Stocker Street and La Brea Avenue, measured along the center line of Stocker Street;

14. Thence easterly along said last mentioned center line and continuing along said center line, following the same in all its various courses and curves to its first intersection with the boundary line of said City of Los Angeles, being a boundary line in that certain annexation to the City of Los Angeles on April 22, 1948, designated Angeles Mesa Addition No. 5;

15. Thence southeasterly along said boundary line of the City of Los Angeles and continuing along the boundary line of said City of Los Angeles, following the same in all its various courses and curves, to an angle point in said boundary line of the City of Los Angeles being also an angle point in the boundary line of that certain territory annexed to the City of Los Angeles September 18, 1946 and known as Mesa Addition No. 3, said angle point being at the intersection of the southeasterly line of Stocker Avenue, 80 feet wide, as said Stocker Avenue is described in deed to the County of Los Angeles, recorded in Book 13445, page 197, of Official Records, in the office of said Recorder, with the westerly boundary line of that certain territory annexed to the City of Los Angeles July 27, 1922 and known as the Angeles Mesa Addition;

16. Thence northeasterly in a direct line to the intersection of the center line of Stocker Avenue, 80 feet wide, as shown on map of Tract No. 10023, recorded in Book 150, page 46, of Maps, in the office of said Recorder, with that certain center line of Crenshaw Boulevard, formerly Angeles Mesa Drive, 60 feet wide, shown on said map of Tract No. 10023 as the center line of Angeles Mesa Drive per book 6053, page 120, of Deeds;

17. Thence northerly along said certain center line of Crenshaw Boulevard, formerly Angeles Mesa Drive, 60 feet wide, to the southerly line of the northerly 30 feet of Santa Barbara Avenue, 75 feet wide, shown on said map of Tract No. 10023 as the line described in deed recorded in Book 347, page 35, of Official Records;

18. Thence easterly along said line shown on said map of Tract No. 10023 as the line described in deed recorded in Book 347, page 35, of Official Records, to the easterly terminus thereof as shown on said map;

19. Thence northerly in a direct line to the southwesterly corner of Lot 273, Tract No. 809, as shown on map recorded in Book 16, page 74, of Maps, in the office of said Recorder, said southwesterly corner of Lot 273 being a point on the northerly line of the north roadway, 30 feet wide, of Santa Barbara Avenue, as shown on said last mentioned map;

20. Thence easterly along said northerly line of the north roadway, 30 feet wide, of Santa Barbara Avenue, to the southeasterly corner of Lot 52 of said Tract No. 809;

21. Thence in a direct line to the southwesterly corner of Lot 280, Tract No. 4463, as shown on map recorded in Book 48, page 31, of Maps, in the office of said Recorder, said southwesterly corner of Lot 280 being a point in the northerly line of the north roadway of Santa Barbara Avenue as shown on said last mentioned map;

22. Thence easterly along said northerly line of the north roadway of Santa Barbara Avenue to the southeasterly corner of Lot 39 of said Tract No. 4463;

23. Thence continuing easterly along said northerly line of the north roadway of Santa Barbara Avenue to the westerly line of Western Avenue, 60 feet wide, as shown on said map of Tract No. 4463;

24. Thence easterly in a direct line to the intersection of the easterly line of Western Avenue, 60 feet wide, with the northerly line of the north roadway of Santa Barbara Avenue, as said intersection is shown on map of Tract No. 2583, recorded in Book 32, page 58, of Maps, in the office of said Recorder;

25. Thence easterly along said northerly line of the north roadway of Santa Barbara Avenue to its intersection with the westerly line of Denker Avenue, 60 feet wide, as shown on said map of Tract No. 2583;

26. Thence easterly in a direct line to the southwesterly corner of Lot 7 of Dalton Avenue Square as shown on map recorded in Book 14, page 116, of Maps, in the office of said Recorder, said southwesterly corner being a point in the northerly line of the north roadway, 20 feet wide, of Santa Barbara Avenue, as shown on said last mentioned map;

27. Thence easterly along said northerly line of the north roadway, 20 feet wide, of Santa Barbara Avenue, to the southeasterly corner of Lot 56 of said Dalton Avenue Square;

28. Thence easterly in a direct line to the intersection of the center line of Normandie Avenue, 60 feet wide, with the southerly line of the northerly 30 feet of the north roadway, 45 feet wide, of Santa Barbara Avenue, as said intersection is shown on map of Tract No. 11593, recorded in Book 247, page 42, of Maps, in the office of said Recorder;

29. Thence easterly along said southerly line of the northerly 30 feet of the north roadway, 45 feet wide, of Santa Barbara Avenue to the center line of Vermont Avenue, 80 feet wide, as shown on said map of Tract No. 11593;

30. Thence easterly in a direct line to the southwesterly corner of Lot 10, Tract No. 2411, as shown on map recorded in Book 26, Page 77, of Maps, in the office of said Recorder, said southwesterly corner of Lot 10 being a point on the northerly line of the north roadway of Santa Barbara Avenue, as shown on said last mentioned map;

31. Thence easterly along said northerly line of the north roadway of Santa Barbara Avenue to the southeasterly corner of Lot 7 of said Tract No. 2411;

32. Thence easterly in a direct line to the southwesterly corner of Lot 1, Block A of Tract No. 4719, as shown on map recorded in Book 52, page 48, of Maps, in the office of said Recorder, said southwesterly corner of Lot 1, Block A, being a point on the northerly line of the north roadway of Santa Barbara Avenue as shown on said last mentioned map;

33. Thence easterly along said northerly line of the north roadway of Santa Barbara Avenue to the southeasterly corner of Lot 1, Block B, of said Tract No. 4719;

34. Thence southeasterly in a direct line to the intersection of the center line of Figueroa Street, 100 feet wide, with the center line of Santa Barbara Avenue, 60 feet wide, as said intersection is shown on Map of Bowen and Chamberlin's Main and Figueroa Street Tract No. 2, recorded in Book 7, page 5, of Maps, in the office of said Recorder;

35. Thence easterly along said center line of Santa Barbara Avenue, 60 feet wide, as shown on said map of Bowen and Chamberlin's Main and Figueroa Street Tract No. 2, to the center line of Broadway Place, formerly Moneta Avenue, 76 feet wide, as shown on said last mentioned map;

36. Thence easterly along the northerly line of the southerly 30 feet of Santa Barbara Avenue as shown on map of Main Street Boulevard Tract, recorded in Book 5, page 32, of Maps, in the office of said Recorder, to the center line of Main Street, 80 feet wide, as shown on said last mentioned map;

37. Thence easterly along the center line of Santa Barbara Avenue, 60 feet wide, as shown on Map of South Woodlawn, recorded in Book 4, page 5, of Maps, in the office of said Recorder, to the southeasterly line of the northwesterly 40 feet of San Pedro Street, as shown on said last mentioned Map;

38. Thence along said southeasterly line of the northwesterly 40 feet of San Pedro Street as shown on said Map of South Woodlawn to the center line of Santa Barbara Avenue, formerly Defiance Street, 60 feet wide, as shown on map of the Mettler Tract, recorded in Book 6, page 50, of Maps, in the office of said Recorder;

39. Thence easterly along said center line of Santa Barbara Avenue, formerly Defiance Street, 60 feet wide, to the center line of Griffith Avenue, 60 feet wide, as said Griffith Avenue is shown on said map of the Mettler Tract;

40. Thence southeasterly in a direct line to the point of intersection of the westerly line of McKinley Avenue, formerly Eureka Street, with the westerly prolongation of the center line of Santa Barbara Avenue, formerly Reno Street, 60 feet wide, as said streets are shown on Map of the Nadeau Orange Tract, recorded in Book 25, page 34, of Miscellaneous Records, in the office of said Recorder;

41. Thence easterly along said westerly prolongation and along said center line of Santa Barbara Avenue, formerly Reno Street, 60 feet wide, as said street is shown on said Map of the Nadeau Orange Tract, and continuing easterly along the easterly prolongation of said center line to the easterly line of Central Avenue, 80 feet wide, as shown on Map of Lienau's

Cottage Home Tract, recorded in Book 28, page 48, of Miscellaneous Records, in the office of said Recorder;

42. Thence northerly along said easterly line of Central Avenue, 80 feet wide, as shown on said map of Lienau's Cottage Home Tract, to the northwesterly corner of Lot 11, Block 1, of said Lienau's Cottage Home Tract, said northwesterly corner of Lot 11 being a point on the southerly line of Santa Barbara Avenue, formerly Herbert Street, as shown on said last mentioned map;

43. Thence easterly along said southerly line of Santa Barbara Avenue, formerly Herbert Street, to the northeasterly corner of Lot 1, Block 1, of said Lienau's Cottage Home Tract;

44. Thence easterly in a direct line to the northwesterly corner of Lot 1 of the Oakley's Home Tract, as shown on map recorded in Book 5, page 18, of Maps, in the office of said Recorder, said northwesterly corner of Lot 1 being a point on the southerly line of Santa Barbara Avenue, formerly 36th Street, 60 feet wide, as shown on said last mentioned map;

45. Thence easterly along said southerly line of Santa Barbara Avenue, formerly 36th Street, 60 feet wide, as shown on said map of Oakley's Home Tract and continuing easterly along the easterly prolongation of said southerly line to the westerly line of that certain tract of land shown on Plat Showing the Property of George Stephenson, recorded in Book 53, page 31, of Miscellaneous Records, in the office of said Recorder;

46. Thence southerly along said westerly line of said certain tract of land shown on Plat Showing the Property of George Stephenson to the southerly line of said certain tract of land, said southerly line being shown on said Plat as having a bearing of S 81° E and a distance of 7.03 chains;

47. Thence easterly along said southerly line of said certain tract of land to the southeasterly line of said certain tract of land, said southeasterly line being shown on said Plat as having a bearing of N 25° E and a distance of 18.84 chains;

48. Thence northeasterly along said southeasterly line of said certain tract of land, being also along the northwesterly line of Compton Avenue, formerly Orange Street, 60 feet wide, as shown on said Plat, to the westerly prolongation of the center line of Santa Barbara Avenue, formerly 30th Street, 60 feet wide, as shown on map of the Deeble Tract, recorded in Book 9, page 188, of Maps, in the office of said Recorder;

49. Thence easterly along said westerly prolongation and along said center line of Santa Barbara Avenue, formerly 30th Street, 60 feet wide, as

shown on said map of the Deeble Tract, to the westerly line of The Morgan Tract, as shown on map recorded in Book 5, page 5, of Maps, in the office of said Recorder;

50. Thence easterly in a direct line to the point of intersection of the easterly line of said Morgan Tract with the center line of Santa Barbara Avenue, formerly 30th Street, 50 feet wide, as said street is shown on Map of East Jefferson Street Tract No. 2, recorded in Book 7, page 92, of Maps, in the office of said Recorder;

51. Thence easterly along said center line of Santa Barbara Avenue, formerly 30th Street, 50 feet wide, and continuing easterly along the easterly prolongation of said center line of Santa Barbara Avenue to the east line of the west roadway, 40 feet wide, of Long Beach Avenue as shown on said map of East Jefferson Street Tract No. 2;

52. Thence easterly in a direct line to the point of intersection of the westerly line of the east roadway, 40 feet wide, of Long Beach Avenue as shown on Map of East Jefferson Street Tract No. 1, recorded in Book 7, page 113, of Maps, in the office of said Recorder, with the westerly prolongation of the center line of Santa Barbara Avenue, formerly 30th Street, 50 feet wide, as said street is shown on said last mentioned Map;

53. Thence easterly along said westerly prolongation and along said center line of Santa Barbara Avenue, formerly 30th Street, 50 feet wide, and continuing easterly along the easterly prolongation of said center line to the first intersection with the boundary line of the City of Los Angeles, said intersection being in Alameda Street;

54. Thence northerly and easterly along said boundary line of the City of Los Angeles to the easterly line of Alameda Street, 80 feet wide, as shown on map of Huntington Industrial Tract recorded in Book 6, page 10, of Maps, in the office of said Recorder;

55. Thence northerly along said easterly line of Alameda Street, 80 feet wide, as shown on said map of Huntington Industrial Tract to the northwesterly corner of Block A of said Huntington Industrial Tract;

56. Thence in a direct line to the southeasterly corner of Lot 73 of the Weiss Tract No. 2, as shown on map recorded in Book 2, page 42, of Maps, in the office of said Recorder, said southeasterly corner of Lot 73 being a point on the westerly line of Alameda Street, 80 feet wide, as shown on said last mentioned map;

57. Thence northerly along said westerly line of Alameda Street, 80 feet wide, to the northeasterly corner of Lot 62 of said Weiss Tract No. 2.

58. Thence northerly in a direct line to the southeasterly corner of Lot 189, Block A, of the Meade and Dalton Tract, as shown on map recorded in Book 37, page 50, of Miscellaneous Records, in the office of said Recorder, said southeasterly corner of Lot 189 being a point on the westerly line of Alameda Street, 80 feet wide, as shown on said last mentioned map;

59. Thence northerly along said westerly line of Alameda Street, 80 feet wide, to the northeasterly corner of Lot 1, Block A, of said Meade and Dalton Tract;

60. Thence easterly along the easterly prolongation of the northerly line of said Lot 1, Block A, of the Meade and Dalton Tract to the easterly line of Alameda Street, 80 feet wide, as shown on map of the Central Industrial Tract, recorded in Book 4, page 21, of Maps, in the office of said Recorder;

61. Thence northerly along said easterly line of Alameda Street, 80 feet wide, to the northwesterly corner of said Central Industrial Tract;

62. Thence continuing northerly along the easterly line of Alameda Street, 80 feet wide, as shown on map of the Hughes Manufacturing Co.'s Tract, recorded in Book 7, page 105, of Maps, in the office of said Recorder, to the southwesterly corner of Lot 7, Block A, of Ninth Street Tract Extension, as shown on map recorded in Book 55, page 89, of Miscellaneous Records, in the office of said Recorder;

63. Thence continuing northerly along the easterly line of Alameda Street as shown on said map of Ninth Street Tract Extension to northwesterly corner of Lot 1, Block A, of said Ninth Street Extension, said northwesterly corner of Lot 1 being a point on the easterly line of Alameda Street as shown on map of H. N. Elliott's Ninth Street Tract, recorded in Book 53, page 98, of Miscellaneous Records, in the office of said Recorder;

64. Thence continuing northerly along said easterly line of Alameda Street as shown on said map of H. N. Elliott's Ninth Street Tract and continuing northerly along the northerly prolongation of said easterly line to that certain line designated City Engineer's center line of Olympic Boulevard on map of Tract No. 11512, recorded in Book 221, page 29, of Maps, in the office of said Recorder;

65. Thence easterly along said certain line designated City Engineer's center line of Olympic Boulevard to the intersection with the center line of Mateo Street, as shown on said map of Tract No. 11512, said intersection being also shown on map of Tract No. 10068, recorded in Book 141, page 44, of Maps, in the office of said Recorder, as the intersection of the city center lines of Mateo Street, 60 feet wide, and Olympic Boulevard, formerly Ninth Street, 80 feet wide;

66. Thence continuing easterly along said city center line of Olympic Boulevard, formerly Ninth Street, 80 feet wide, to the intersection with the westerly prolongation of that certain center line of Olympic Boulevard shown on map filed in Book 52, page 5, of Record of Surveys, in the office of said Recorder, as having a bearing of North 89° 33' 00" West;

67. Thence easterly along said westerly prolongation and continuing easterly along said certain center line of Olympic Boulevard, shown on said map filed in Book 52, page 5, of Record of Surveys, as having a bearing of North 89° 33' 00" West, to the westerly line of the Official Bed of the Los Angeles River, as shown on said last mentioned map;

68. Thence easterly in a direct line to a point on the easterly line of the Official Bed of the Los Angeles River as shown on map of Tract No. 12316, recorded in Book 263, page 5, of Maps, in the office of said Recorder, said point being at the westerly terminus of that certain course of the center line of Olympic Boulevard shown on said last mentioned map as having a bearing of North 89° 21' West and a distance of 214.13 feet;

69. Thence easterly along said center line of Olympic Boulevard and continuing easterly along the center line of Olympic Boulevard as shown on said map of Tract No. 12316 to the intersection with the center line of that portion of Rio Vista Avenue, 60 feet wide, extending northerly from said Olympic Boulevard, as shown on said map of Tract No. 12316, said intersection being also shown on map of Tract No. 6783 recorded in Book 99, page 77, of Maps, in the office of said Recorder, as the intersection of Olympic Boulevard, formerly Ninth Street, 100 feet wide, with said center line of Rio Vista Avenue;

70. Thence southeasterly along said center line of Olympic Boulevard, formerly Ninth Street, 100 feet wide, and continuing southeasterly along said center line to the intersection with the center line of Mines Avenue, as shown on said map of Tract No. 6783;

71. Thence easterly along said center line of Olympic Boulevard to the intersection with the center line of Lorena Street, 82.50 feet wide, as shown on said map of Tract No. 6783;

72. Thence easterly in a direct line to the most westerly corner of Lot 636 of Tract No. 941, as shown on map recorded in Book 16, pages 194 and 195, of Maps, in the office of said Recorder, said most westerly corner being a point on the southerly boundary line of said Tract No. 941;

73. Thence easterly along said southerly boundary line of Tract No. 941 to the most easterly corner of Lot 480 of said Tract No. 941;

74. Thence easterly in a direct line to the intersection of the northeasterly line of Hollenbeck Avenue, 82.50 feet wide, as shown on said map of Tract No. 941, with the southerly boundary line of said Tract No. 941;

75. Thence easterly along said last mentioned southerly boundary line of Tract No. 941 to the boundary line of the City of Los Angeles;

76. Thence northerly and easterly along the boundary line of the City of Los Angeles to an angle point in the boundary line, said point also being a point in the boundary of the City of Monterey Park, at the northwest corner of Section 29, Township 1 South, Range 12 West, S.B.B. & M.;

77. Thence southerly along the boundary line of said City of Monterey Park and continuing along the boundary line of said City of Monterey Park, following all its various courses and curves, to its first intersection with the boundary line of the City of Montebello, said intersection being in Pomona Boulevard (formerly Third Street) between Gerhart Avenue and Bradshaw Avenue, at the north quarter section corner of fractional Section 4, Township 2 South, Range 12 West, S.B.B. & M., as shown on map of the Repetto Rancho recorded in Book 759, pages 21 and 22, of Deeds, in the Office of the Recorder of the County of Los Angeles;

78. Thence easterly along the common boundary line of said City of Monterey Park and said City of Montebello to the easterly terminus of said common boundary line, said easterly terminus being at the intersection of said common boundary line with the southwesterly line of Rancho La Merced, as shown on map recorded in Book 13, page 24, of Patents, in the office of said Recorder, and being in the south line of Township 1 South, Range 12 West, S.B.B. & M.;

79. Thence easterly along the boundary line of said City of Monterey Park and said south line of Township 1 South, Range 12 West, S.B.B. & M., to an angle point in said boundary line of the City of Monterey Park;

80. Thence easterly along said south line of Township 1 South, Range 12 West, S.B.B. & M., to the easterly line of Tract No. 10063 as shown on map recorded in Book 179, pages 32 to 34, inclusive, of Maps, in the office of said Recorder;

81. Thence southerly along said easterly line of Tract No. 10063 to its first intersection with the boundary line of said City of Montebello;

82. Thence easterly along the boundary line of said City of Montebello and continuing along the boundary line of said City of Montebello, following all its various courses and curves, to its intersection with the Compromised Dividing Line between the Rancho Paso de Bartolo on the South Side and the Ranchos La Puente, Potrero de Felipe Lugo and La Merced on the North Side, as shown on map filed in Book 1, page 73, Record of Surveys, in the office of said Recorder;

83. Thence easterly along said Compromised Dividing Line to a point thereon, distant 1068.62 feet westerly, measured along said Compromised Dividing Line, from the center line of Cate Road (now Durfee Avenue), 40 feet wide, as described in deed to the County of Los Angeles, recorded in Book 1207, page 74, of Deeds, in the office of said Recorder;

84. Thence easterly in a direct line to the point of intersection of said center line of Cate Road (now Durfee Avenue), with a line bearing South 86° 40' 44" West from a point in the northwesterly line of Lot 12, Tract No. 688, as shown on map recorded in Book 15, page 171, of Maps, in the office of said Recorder, said last mentioned point being distant North 24° 55' 13" East 556.72 feet, measured along said northwesterly line of Lot 12, from the southwesterly corner of said Lot 12;

85. Thence North 86° 40' 44" East 2759.06 feet, more or less, to the northwesterly prolongation of the northeasterly line of Parcel 1 of land described in deed to Walter G. Kruse, et ux., recorded in Book 25982, page 70, of Official Records, in the office of said Recorder;

86. Thence easterly in a direct line to an angle point in the southerly line of Lot 11, of aforementioned Tract No. 688, from which angle point the most westerly corner of said Lot 11 is shown on said map of Tract No. 688 to be distant 453.30 feet S. 68° 51-1/2' W., measured along said southerly line of Lot 11;

87. Thence southerly in a direct line to an angle point in the northwesterly line of Lot 1, Cohn's Partition of Lots 26, 27, 29 and 32 as shown on map recorded in Book 60, pages 3 and 4, of Miscellaneous Records, in the office of said Recorder, said last mentioned angle point being shown on said map of Cohn's Partition of Lots 26, 27, 29 and 32 to be located as follows:

Beginning at the most westerly corner of said Lot 1; thence, N. 49° 52' E. 9.00 chains; thence N. 23° 13' E. 5.09 chains to said last mentioned angle point;

88. Thence southwesterly along said northwesterly line of Lot 1 to said most westerly corner of Lot 1, said most westerly corner also being the most northerly corner of Lot 2 of said Cohn's Partition of Lots 26, 27, 29 and 32;

89. Thence southwesterly along the northwesterly line of said Lot 2 and continuing along the line of said Lot 2, following all its various courses, to the most westerly corner of Lot 7, of said Cohn's Partition of Lots 26, 27, 29 and 32;

90. Thence southerly along the westerly line of said Lot 7 and continuing along the southerly prolongation of said westerly line of Lot 7 to the easterly prolongation of the center line of Guirado Street, 40 feet wide, (now Pioneer Boulevard) as shown on map of Tract No. 3584, recorded in Book 38, page 70, of Maps, in the office of said Recorder;

91. Thence along said easterly prolongation of the center line of Guirado Street, 40 feet wide, (now Pioneer Boulevard), to the center line of Workman Mill Road as described in deed to the County of Los Angeles recorded in Book 12367, page 75, of Official Records, in the office of said Recorder;

92. Thence southerly along said center line of Workman Mill Road, following all its various courses and curves, to the northerly terminus of that certain course having a bearing of N. 6° 10' 15" E. in the center line of Workman Mill Road, as shown on map of Tract No. 6041 recorded in Book 180, pages 12 to 14, inclusive, of Maps, in the office of said Recorder;

93. Thence southerly along the center line of Workman Mill Road as shown on said map of Tract No. 6041 and as shown on map of Tract No. 14971, recorded in Book 341, pages 5 to 10 inclusive, of Maps, in the office of said Recorder, to the westerly prolongation of the northerly line of Lot 3, shown on said map of Tract No. 14971 as having a bearing and length of S. 83° 49' 45" E., 221.86 feet, said northerly line of Lot 3 also being in the northerly boundary line of said Tract 14971;

94. Thence easterly along said westerly prolongation, said northerly line of Lot 3 and said northerly boundary line of Tract No. 14971 and continuing along the boundary line of said Tract No. 14971, following all its various courses, to the westerly line of Lot 24, of Cohn's Partition of Lot 31, as shown on map recorded in Book 60, page 6, of Miscellaneous Records, in the office of said Recorder;

95. Thence northerly along said westerly line of Lot 24 to the westerly prolongation of the north line of Section 16, Township 2 South, Range 11 West, S.B.B. U M.;

96. Thence easterly along said westerly prolongation and along the north line of said Section 16, to the northeast corner of said Section 16;

97. Thence southerly in a direct line to the northeasterly corner of the City of Whittier, said northeasterly corner being also the northeasterly corner of that certain annexation to said City of Whittier designated Annexation of 1907;

98. Thence southerly along the boundary line of said City of Whittier to its intersection with the north line, or its westerly prolongation, of Section 22, said last mentioned Township and Range;

99. Thence easterly along said north line of Section 22, or along said westerly prolongation and said north line of Section 22, to the northeast corner of said Section 22;

100. Thence southerly along the east line of said Section 22 to the west quarter corner of Section 23, said last mentioned Township and Range;

101. Thence easterly along the east and west quarter section lines of said Section 23 to the east quarter corner of said Section 23;

102. Thence southerly along the east line of said Section 23 to the northwest corner of Section 25, said last mentioned Township and Range;

103. Thence easterly along the north line of said Section 25 to the westerly line of Tract No. 2390 as shown on map recorded in Book 23, page 29, of Maps, in the office of said Recorder;

104. Thence northerly along said westerly line of Tract No. 2390, to the northwesterly corner of said Tract;

105. Thence easterly along the northerly line of said Tract No. 2390 to the northeasterly corner of said Tract;

106. Thence southerly along the easterly line of said Tract No. 2390 to the southeasterly corner of said Tract, said corner also being in northerly line of Lot 3 of the New England Oil Company Tract, as shown on map recorded in Book 17, page 131, of Maps, in the office of said Recorder;

107. Thence easterly and southerly along the northerly and easterly lines of said Lot 3 to the southeasterly corner of said Lot 3, said corner also being in the southerly line of said New England Oil Company Tract;

108. Thence easterly and northerly along the southerly and easterly lines of said New England Oil Company Tract to the northeasterly corner of Lot 13 of said last mentioned Tract, said northeasterly corner also being in the southerly line of Lot 5, Tract No. 4380, as shown on map recorded in Book 48, pages 46 and 47, of Maps, in the office of said Recorder;

109. Thence easterly along said southerly line of Lot 5 to the southeasterly corner of said Lot 5;

110. Thence easterly in a direct line to the southwesterly corner of Lot 2, Tract No. 3422, as shown on map recorded in Book 37, page 51, of Maps, in the office of said Recorder;

111. Thence easterly along the southerly line of said Lot 2, to the easterly line of Rancho La Habra, as shown on map recorded in Book 1, pages 275 and 276, of Patents, in the office of said Recorder;

112. Thence southerly along said easterly line of Rancho La Habra to its intersection with the southerly boundary line of the County of Los Angeles;

113. Thence westerly along said southerly boundary line of the County of Los Angeles and continuing along the boundary line of said County of Los Angeles, following all its various courses and curves to the point of beginning.

The boundary line of the County of Los Angeles and the boundary line of the City of Los Angeles referred to herein, except where otherwise expressly designated, are such boundary lines as the same existed at 12:00 noon on October 31, 1958.

Appendix J
Summary of Population Based on Census Tract Data

Appendix J: Demographic Information for Artesia System

Table J-1: Census Tracts within the Artesia System

County	Subregion	City Code	City	Census Tract Number	Percentage of Census Tract in System
Los Angeles	Gateway Cities COG	2896	Artesia city	554801	70%
Los Angeles	Gateway Cities COG	2896	Artesia city	554802	100%
Los Angeles	Gateway Cities COG	2896	Artesia city	554900	90%
Los Angeles	Gateway Cities COG	32506	Hawaiian Gardens city	555102	100%
Los Angeles	Gateway Cities COG	32506	Hawaiian Gardens city	555211	100%
Los Angeles	Gateway Cities COG	32506	Hawaiian Gardens city	555212	100%
Los Angeles	Gateway Cities COG	43000	Long Beach city	555202	45%
Los Angeles	Gateway Cities COG	32506	Hawaiian Gardens city	555104	100%
Los Angeles	Gateway Cities COG	39892	Lakewood city	555103	100%
Los Angeles	Gateway Cities COG	39892	Lakewood city	555104	100%
Los Angeles	Gateway Cities COG	39892	Lakewood city	555001	100%
Los Angeles	Gateway Cities COG	39892	Lakewood city	555002	100%
Los Angeles	Gateway Cities COG	99999	Unincorporated	555103	20%
Los Angeles	Gateway Cities COG	12552	Cerritos city	554515	5%
Los Angeles	Gateway Cities COG	39892	Lakewood city	555102	100%

Table J-2: Population, Household and Employment Projections for Year 2000, 2005, 2010, 2015, 2020, 2025 and 2030 for Artesia System

Artesia System Population, Household and Employment Projections for 2000

County	Subregion	City Code	City	Census Tract	Total Population	Number of Households	Total Employees
Los Angeles	Gateway Cities COG	2896	Artesia city	554801	2638	536	1006
Los Angeles	Gateway Cities COG	2896	Artesia city	554802	5974	1687	1510
Los Angeles	Gateway Cities COG	2896	Artesia city	554900	6048	1820	1658
Los Angeles	Gateway Cities COG	32506	Hawaiian Gardens city	555102	2118	633	1633
Los Angeles	Gateway Cities COG	32506	Hawaiian Gardens city	555211	6405	1263	1449
Los Angeles	Gateway Cities COG	32506	Hawaiian Gardens city	555212	4484	1155	896
Los Angeles	Gateway Cities COG	43000	Long Beach city	555202	1508	520	139
Los Angeles	Gateway Cities COG	32506	Hawaiian Gardens city	555104	1837	457	236
Los Angeles	Gateway Cities COG	39892	Lakewood city	555103	4870	1454	169
Los Angeles	Gateway Cities COG	39892	Lakewood city	555104	2444	2224	2224
Los Angeles	Gateway Cities COG	39892	Lakewood city	555001	5610	1537	259
Los Angeles	Gateway Cities COG	39892	Lakewood city	555002	3511	1124	298
Los Angeles	Gateway Cities COG	99999	Unincorporated	555103	0	0	2
Los Angeles	Gateway Cities COG	12552	Cerritos city	554515	184	53	29
Los Angeles	Gateway Cities COG	39892	Lakewood city	555102	4535	1244	150

Artesia System Population, Household and Employment Projections for 2005

County	Subregion	City Code	City	Census Tract	Total Population	Number of Households	Total Employees
Los Angeles	Gateway Cities COG	2896	Artesia city	554801	2652	543	1014
Los Angeles	Gateway Cities COG	2896	Artesia city	554802	6453	1693	1532
Los Angeles	Gateway Cities COG	2896	Artesia city	554900	6167	1841	1674
Los Angeles	Gateway Cities COG	32506	Hawaiian Gardens city	555102	2239	652	1653
Los Angeles	Gateway Cities COG	32506	Hawaiian Gardens city	555211	6904	1301	1453
Los Angeles	Gateway Cities COG	32506	Hawaiian Gardens city	555212	4725	1182	899
Los Angeles	Gateway Cities COG	43000	Long Beach city	555202	1586	525	145
Los Angeles	Gateway Cities COG	32506	Hawaiian Gardens city	555104	1938	472	239
Los Angeles	Gateway Cities COG	39892	Lakewood city	555103	5119	1489	174
Los Angeles	Gateway Cities COG	39892	Lakewood city	555104	2224	2224	2224
Los Angeles	Gateway Cities COG	39892	Lakewood city	555001	5819	1583	261
Los Angeles	Gateway Cities COG	39892	Lakewood city	555002	3661	1159	298
Los Angeles	Gateway Cities COG	99999	Unincorporated	555103	2	0	2
Los Angeles	Gateway Cities COG	12552	Cerritos city	554515	190	53	30
Los Angeles	Gateway Cities COG	39892	Lakewood city	555102	4862	1270	159

Artesia System Population, Household and Employment Projections for 2010

County	Subregion	City Code	City	Census Tract	Total Population	Number of Households	Total Employees
Los Angeles	Gateway Cities COG	2896	Artesia city	554801	2652	553	1086
Los Angeles	Gateway Cities COG	2896	Artesia city	554802	6594	1724	1740
Los Angeles	Gateway Cities COG	2896	Artesia city	554900	6167	1875	1858
Los Angeles	Gateway Cities COG	32506	Hawaiian Gardens city	555102	2239	688	1861
Los Angeles	Gateway Cities COG	32506	Hawaiian Gardens city	555211	7040	1325	1503
Los Angeles	Gateway Cities COG	32506	Hawaiian Gardens city	555212	4899	1217	914
Los Angeles	Gateway Cities COG	43000	Long Beach city	555202	1629	526	203
Los Angeles	Gateway Cities COG	32506	Hawaiian Gardens city	555104	2004	486	270
Los Angeles	Gateway Cities COG	39892	Lakewood city	555103	5121	1546	219
Los Angeles	Gateway Cities COG	39892	Lakewood city	555104	2224	2224	2224
Los Angeles	Gateway Cities COG	39892	Lakewood city	555001	5889	1615	278
Los Angeles	Gateway Cities COG	39892	Lakewood city	555002	3691	1202	298
Los Angeles	Gateway Cities COG	99999	Unincorporated	555103	2	0	5
Los Angeles	Gateway Cities COG	12552	Cerritos city	554515	191	53	36
Los Angeles	Gateway Cities COG	39892	Lakewood city	555102	4862	1338	254

Artesia System Population, Household and Employment Projections for 2015

County	Subregion	City Code	City	Census Tract	Total Population	Number of Households	Total Employees
Los Angeles	Gateway Cities COG	2896	Artesia city	554801	2663	563	1116
Los Angeles	Gateway Cities COG	2896	Artesia city	554802	6619	1756	1799
Los Angeles	Gateway Cities COG	2896	Artesia city	554900	6191	1911	1914
Los Angeles	Gateway Cities COG	32506	Hawaiian Gardens city	555102	2289	707	1914
Los Angeles	Gateway Cities COG	32506	Hawaiian Gardens city	555211	7183	1360	1522
Los Angeles	Gateway Cities COG	32506	Hawaiian Gardens city	555212	4999	1249	929
Los Angeles	Gateway Cities COG	43000	Long Beach city	555202	1679	545	216
Los Angeles	Gateway Cities COG	32506	Hawaiian Gardens city	555104	2048	500	279
Los Angeles	Gateway Cities COG	39892	Lakewood city	555103	5160	1577	224
Los Angeles	Gateway Cities COG	39892	Lakewood city	555104	2224	2224	2224
Los Angeles	Gateway Cities COG	39892	Lakewood city	555001	5936	1643	300
Los Angeles	Gateway Cities COG	39892	Lakewood city	555002	3720	1228	300
Los Angeles	Gateway Cities COG	99999	Unincorporated	555103	2	0	11
Los Angeles	Gateway Cities COG	12552	Cerritos city	554515	192	54	37
Los Angeles	Gateway Cities COG	39892	Lakewood city	555102	4898	1364	287

Artesia System Population, Household and Employment Projections for 2020

County	Subregion	City Code	City	Census Tract	Total Population	Number of Households	Total Employees
Los Angeles	Gateway Cities COG	2896	Artesia city	554801	2673	573	1144
Los Angeles	Gateway Cities COG	2896	Artesia city	554802	6644	1789	1855
Los Angeles	Gateway Cities COG	2896	Artesia city	554900	6216	1947	1968
Los Angeles	Gateway Cities COG	32506	Hawaiian Gardens city	555102	2338	726	1965
Los Angeles	Gateway Cities COG	32506	Hawaiian Gardens city	555211	7324	1397	1540
Los Angeles	Gateway Cities COG	32506	Hawaiian Gardens city	555212	5097	1283	943
Los Angeles	Gateway Cities COG	43000	Long Beach city	555202	1728	565	229
Los Angeles	Gateway Cities COG	32506	Hawaiian Gardens city	555104	2091	514	288
Los Angeles	Gateway Cities COG	39892	Lakewood city	555103	5200	1609	229
Los Angeles	Gateway Cities COG	39892	Lakewood city	555104	2224	2224	2224
Los Angeles	Gateway Cities COG	39892	Lakewood city	555001	5982	1672	321
Los Angeles	Gateway Cities COG	39892	Lakewood city	555002	3749	1256	302
Los Angeles	Gateway Cities COG	99999	Unincorporated	555103	2	0	16
Los Angeles	Gateway Cities COG	12552	Cerritos city	554515	192	54	39
Los Angeles	Gateway Cities COG	39892	Lakewood city	555102	4934	1390	318

Artesia System Population, Household and Employment Projections for 2025

County	Subregion	City Code	City	Census Tract	Total Population	Number of Households	Total Employees
Los Angeles	Gateway Cities COG	2896	Artesia city	554801	2683	583	1169
Los Angeles	Gateway Cities COG	2896	Artesia city	554802	6669	1823	1905
Los Angeles	Gateway Cities COG	2896	Artesia city	554900	6240	1985	2016
Los Angeles	Gateway Cities COG	32506	Hawaiian Gardens city	555102	2386	745	2010
Los Angeles	Gateway Cities COG	32506	Hawaiian Gardens city	555211	7457	1433	1556
Los Angeles	Gateway Cities COG	32506	Hawaiian Gardens city	555212	5190	1316	956
Los Angeles	Gateway Cities COG	43000	Long Beach city	555202	1777	584	240
Los Angeles	Gateway Cities COG	32506	Hawaiian Gardens city	555104	2134	528	296
Los Angeles	Gateway Cities COG	39892	Lakewood city	555103	5235	1640	233
Los Angeles	Gateway Cities COG	39892	Lakewood city	555104	2224	2224	2224
Los Angeles	Gateway Cities COG	39892	Lakewood city	555001	6025	1700	340
Los Angeles	Gateway Cities COG	39892	Lakewood city	555002	3776	1282	304
Los Angeles	Gateway Cities COG	99999	Unincorporated	555103	3	0	21
Los Angeles	Gateway Cities COG	12552	Cerritos city	554515	193	55	40
Los Angeles	Gateway Cities COG	39892	Lakewood city	555102	4967	1415	347

Artesia System Population, Household and Employment Projections for 2030

County	Subregion	City Code	City	Census Tract	Total Population	Number of Households	Total Employees
Los Angeles	Gateway Cities COG	2896	Artesia city	554801	2692	594	1191
Los Angeles	Gateway Cities COG	2896	Artesia city	554802	6691	1856	1950
Los Angeles	Gateway Cities COG	2896	Artesia city	554900	6263	2022	2059
Los Angeles	Gateway Cities COG	32506	Hawaiian Gardens city	555102	2433	764	2051
Los Angeles	Gateway Cities COG	32506	Hawaiian Gardens city	555211	7585	1468	1571
Los Angeles	Gateway Cities COG	32506	Hawaiian Gardens city	555212	5279	1348	967
Los Angeles	Gateway Cities COG	43000	Long Beach city	555202	1823	603	251
Los Angeles	Gateway Cities COG	32506	Hawaiian Gardens city	555104	2175	543	303
Los Angeles	Gateway Cities COG	39892	Lakewood city	555103	5269	1672	237
Los Angeles	Gateway Cities COG	39892	Lakewood city	555104	2224	2224	2224
Los Angeles	Gateway Cities COG	39892	Lakewood city	555001	6067	1727	359
Los Angeles	Gateway Cities COG	39892	Lakewood city	555002	3802	1309	305
Los Angeles	Gateway Cities COG	99999	Unincorporated	555103	3	0	26
Los Angeles	Gateway Cities COG	12552	Cerritos city	554515	194	55	41
Los Angeles	Gateway Cities COG	39892	Lakewood city	555102	4998	1440	374

Appendix K
1965 Agreement of GSWC with the City of Cerritos

FILE

F - Cerritos Int Maint

RECEIVED
REGION II
CENTRAL DISTR

CITY OF CERRITOS

CIVIC CENTER · 18125 BLOOMFIELD AVENUE
P.O. BOX 3130 · CERRITOS, CALIFORNIA 90703-3130
PHONE: (562) 860-0311 · FAX: (562) 916-1371
WWW.CI.CERRITOS.CA.US

December 11, 2002

Mr. Mike Gutierrez
Central Area District Manager
SOUTHERN CALIFORNIA WATER COMPANY
12035 Burke Street, Suite 1
Santa Fe Springs, CA 90670

Dear Mr. Gutierrez:

Following is a breakdown of the maintenance cost of the transmission and distribution main and pressure regulating station from the MWD Service Connection located at Woodruff and South Street. Per the Agreement to Convey and Co-Tenants Agreement, dated November 3, 1965, Section 5, Subsection B, costs for maintenance may be revised every five (5) years. The maintenance costs were last revised on the five (5) year cycle in June 1993 and were modified in June 1995 due to a cost reduction of polyphosphate. The annual maintenance cost for water that Southern California Water Company purchases from the City of Cerritos are revised as follows:

ANNUAL MAINTENANCE COST

1. Maintenance of distribution Mains and Valves:
   2 people, 4 hrs. each, twice per year=
   16 hours/year x $34.87/hour =$557.92

2. Maintenance of Pressure Regulating Station
   And Meter Reads:
   1 person, ½ hour/day, 365 days/year =
   182.5 hours x $34.87/hour =$6,363.78

3. Maintenance of Pressure Regulating Valves.
   Maintenance being provided by Clayton-Valve Company and
   And City of Cerritos
   2 people, 8 hours each, once a year=
   16 hours x $60.00/hour = $960.00----So. Calif Water Costs =1/2 =$480.00
   1 person, 8 hours x $34.87/hour = $278.96-- So. Calif Water Costs =1/2 =$139.48
   1 Vehicle 8 hours x $25.00/hour = $200.00-- So. Calif Water Costs =1/2 =$100.00

4. Materials for Maintenance of Pressure Regulating Valves: =$1000.00

5. Electric Power and SCADA Circuits -- So. Calif Water Costs =1/2 =$1202.00

BRUCE W. BARROWS, MAYOR · GLORIA A. KAPPE, MAYOR PRO TEM · PAUL W. BOWLEN, COUNCILMEMBER · JOHN F. CRAWLEY, COUNCILMEMBER · ROBERT HUGHLETT, Ed.D., COUNCILMEMBER

6. Truck Expense:
   ½ hour/day, 365 days/year =
   182.5 hours x $14.00/hour =$2555.00

7. Billing Costs:
   Labor =$27.94
   Postage =$0.38
   Envelope, Paper, Handling =$0.60
   $28.92/month x 12 months =$347.04

8. Bacteriological samples:
   4 samples/month x 12 months =
   48 x $9.00 each x 50% So. Calif Water Costs =$216.00

9. Chemical Analysis
   2 samples/year @ $90.00 each =$180.00

10. Polyphosphate
    1.08 gallons per acre foot x 4836.25 A/F =
    5223.15 gallons x $10.56/gallon =$55,156.46

    Pumping of Polyphosphate
    2 people, 1 hour, 9 times per year plus vehicle
    18 hours x $34.87/hour = $627.66--- So. Calif Water Costs = 1/2 =$313.83
    1 vehicle, 9 hours x $14.00/hour =$126.00-- So. Calif Water Costs = 1/2 =$63.00

    Total: $68,674.51 / 4836.25 A/F =$14.20/ A.F.

    *Note: 4836.25 A/F is used as Southern California Water Company's annual entitlement based on 3000 GPM.

The City currently adds polyphosphate to the water purchased from MWD to assure that polyphosphate is distributed throughout the water system. If the City adjusts the dosage or if the use of polyphosphate is discontinued, the City will adjust the Charges made to Southern California Water Company.

The new fee structure from Metropolitan Water District and Central Basin Water District will take effect January 1, 2003. We analyzed the new fee structure and applied it to your usage in 2001 and came up with average acre-foot charge for calendar year 2003. Because of the new fee structure, the monthly fees will vary depending on how much water is used.

MWD Water Average Monthly Costs $477.67

Please review and if you have any questions, please contact me.

Very Truly Yours,

Ron Babel

Ron Babel
Water Superintendent

AGREEMENT TO CONVEY
AND
CO-TENANTS AGREEMENT

THIS AGREEMENT TO CONVEY AND CO-TENANTS AGREEMENT is made and entered into as of the 3rd day of November, 1965, by and between the CITY OF DAIRY VALLEY, a charter city in the County of Los Angeles (hereinafter referred to as "City") and SOUTHERN CALIFORNIA WATER COMPANY, an investor owned publicly regulated water utility operating adjacent to the City of Dairy Valley, County of Los Angeles, State of California (hereinafter referred to as "Water Company"),

W I T N E S S E T H:

WHEREAS, the City of Dairy Valley has undertaken a program to construct water transmission and distribution facilities from a water transmission line of The Metropolitan Water District of Southern California in order to provide domestic, industrial and agricultural water to residents of City; and

WHEREAS, Water Company provides service to persons residing adjacent to City of water for domestic, industrial and agricultural uses; and

of connection with facilities of The Metropolitan Water District of Southern California at Woodruff Boulevard to a point at the intersection of 195th Street and Pioneer Boulevard; and

WHEREAS, the construction of water distribution and transmission facilities within City and the supplying of water to residents and property owners of City are a municipal affair of City; and

WHEREAS, City has the power to provide for the disposal of city property or rights therein for the common benefit;

NOW, THEREFORE, in order to carry out the intents and purposes hereof, the parties hereto agree as follows:

Section 1. Benefit to Parties. City and Water Company find that the construction by City of the facilities described hereinafter and the sale of an undivided interest therein to Water Company are in the best interests of the parties and are for the common benefit of the residents and taxpayers of City.

Section 2. Construction by City. City shall construct a connection to the water transmission line of The

Boulevard and shall construct a water transmission line (which line, together with all interests necessary for the use, ownership, maintenance, operation or possession thereof, is referred to herein as the "Line") to be located in South Street to a point adjacent to the intersection of 195th Street and Pioneer Boulevard. The location and size of the Line and connection facility are shown on a map attached hereto as "Exhibit A" and incorporated herein.

Section 3. Conveyance of Interest by City to Water Company. Upon tender to it by Water Company of the purchase price as provided in Section 4, City agrees to convey to Water Company an undivided 210/1000ths of that portion of the Line in South Street between Woodruff Boulevard and Studebaker Street and an undivided 348/1000ths of that portion of the Line in ~~South~~ Studebaker Street from ~~Studebaker~~ South Street to the intersection of 195th Street and Pioneer Boulevard.

Section 4. Purchase Price. Upon completion of the Line and acceptance thereof by City, and discharge by City of all costs incurred in construction of the Line, City shall compute all of its costs and expenses in connection with the construction of the Line. City shall submit its accounting of said costs and expenses to Water Company

accounting pay to City the amounts determined to represent its share of the cost of said Line in accordance with its undivided interests therein as calculated on the basis of said accounting; that is, Water Company shall pay 210/1000ths of the cost to City of that portion of the Line in South Street between Woodruff Boulevard and Studebaker Street and 348/1000ths of the cost to City of that portion of the Line in South Street from Studebaker Street to the intersection of 195th Street and Pioneer Boulevard.

Section 5. Co-Tenants Agreement.

(a) Regulation of Flow. Water Company will install a meter acceptable to City at the point of take-out from the Line to the facilities of Water Company and will install a flow regulator or orifice with a 20 pounds per square inch drop at 3,000 gallons per minute to insure maximum draft. Water Company agrees that its maximum entitlement to water shall not exceed 3,000 gallons per minute or 348/1000ths of the available water in the subject Line at Water Company's point of take-off at any given time.

(b) Maintenance and Operation. City shall be responsible for the maintenance and operation of said water transmission line and shall conduct such maintenance and operation in accordance with the best water works practice. Water Company shall pay

and its facilities as its proportionate share of the costs of maintenance and operation of the Line. Such costs shall be reviewed prior to June 30, 1971, and each 5 years thereafter and Water Company shall pay such adjusted cost for maintenance and operation for the following 5-year period based on City's actual cost proportionate to City's and Water Company's interest in the Line.

(c) Water Company shall pay to City in addition to the foregoing proportionate share of costs of maintenance and operation of the Line, the cost of the quantity of water taken by Water Company from the Line. Such cost shall be equal to the charge being made by the Metropolitan Water District of Southern California for water sold to the City at the time of the taking of water by Water Company.

(d) Such amounts as may be payable to City pursuant to paragraphs 5(b) and 5(c) shall be paid quarterly within 30 days of receipt of City's invoice therefor.

Section 6. Franchise. The acquisition by Water Company of its interests in the Line hereunder shall not constitute the acquisition from City of a franchise to serve water within City as franchise is defined or described in the Constitution or laws of the State of California or in the charter of City.

Section 7. Notice to Parties. Notices and communications to be made in connection with this agreement shall be sent to City at the following address:

City Manager
City Hall
19400 Pioneer Boulevard
Dairy Valley, California

and to Water Company:

Southern California Water Company
11911 South Vermont Avenue
Los Angeles, California 90044

Section 8. Effective Date. This agreement shall be effective as of the date first hereinabove written.

CITY OF DAIRY VALLEY

By Fred Trost
Mayor

ATTEST:

Agnes Hickey
City Clerk

SOUTHERN CALIFORNIA WATER COMPANY

By Philip F. Walsh
President

By Merle F. Lindberg
Secretary

AMENDMENT TO AGREEMENT

The Agreement to Convey and Co-Tenants Agreement, ("said agreement"), entered into on the 3rd day of November, 1965, by and between THE CITY OF DAIRY VALLEY, a charter City in the County of ~~Los Angeles (now known as THE CITY OF CERRITOS) and SOUTHERN~~ CALIFORNIA WATER COMPANY, is amended in the following particulars only:

Section 5, paragraph (d) as found on page 5 of the said agreement, is amended to read as follows:

> "(d) Such amounts as may be payable to City pursuant to paragraphs 5 (b) and 5 (c) shall be paid monthly within 30 days of receipt of City's invoice therefor."

Except as herein amended, the said agreement remains unchanged and in full force and effect.

IN WITNESS WHEREOF, the parties have hereunto set their hand this 25th day of October, 1967.

SEAL

SOUTHERN CALIFORNIA WATER COMPANY

By W. Franklin
Vice President

By Merle F. Lundberg
Secretary

CITY OF CERRITOS

By Lewis Hawkins
Mayor of the City of Cerritos

ATTEST:

CITY OF CERRITOS

CIVIC CENTER • 18125 BLOOMFIELD AVENUE • P.O. BOX 3130
CERRITOS, CALIFORNIA 90703-3130 • FAX: (310) 865-1944
PHONE: (310) 860-0311 • (714) 523-3710

June 16, 1995

Mr. Ron Mullen
Central Area District Manager
SOUTHERN CALIFORNIA WATER COMPANY
12035 Burke Street, Suite 1
Santa Fe Springs, CA 90670

Dear Ron:

On June 14, 1993, I sent the attached letter to you, which established the annual maintenance cost for water that Southern California Water Company purchases from the City of Cerritos. As this charge was established in June, 1993, it would normally be revised in June, 1998. However, the City's cost to purchase the polyphosphate additive used for corrosion control and sequestering iron and manganese, has been reduced from $12.39 per gallon to $9.29 per gallon; thereby reducing the annual cost for polyphosphate from $64,714.83 to $48,523.06. This reduces the annual maintenance charge from $15.37 per acre foot to $12.02 per acre foot.

I anticipate the City's supply of the higher priced polyphosphate additive will be used by June 30, 1995. Therefore, beginning July 1, 1995, the annual maintenance charge will be $12.02 per acre foot.

In reviewing these charges, I found that the annual maintenance charge to Southern California Water Company was incorrectly billed at $16.84 per acre foot beginning July 1, 1994. It should have been billed at $15.37 per acre foot. I will calculate your company's use for the period July 1, 1994 through June 30, 1995 at the end of the month and credit the June bill with the $1.47 per acre foot overcharge.

GRACE HU SHERMAN KAPPE BRUCE W. BARROWS PAUL BOWLEN JOHN P. CRAWLEY

Attached is a copy of the letter to Michael Gutierrez advising of the annual water charge for the period July 1, 1995 to June 30, 1996.

Please call if you have any questions.

Very truly yours,

Ron Babel

Ron Babel
Water Superintendent

br
cc Vince Brar, Director of Public Works

CITY OF CERRITOS

CIVIC CENTER • 18125 BLOOMFIELD AVENUE • P.O. BOX 3130
CERRITOS, CALIFORNIA 90703-3130 • FAX: (310) 865-1944
PHONE: (310) 860-0311 • (714) 523-3710

June 14, 1993

Mr. Ron Mullen
Division Director
SOUTHERN CALIFORNIA WATER COMPANY
17140 South Avalon Boulevard, #100
Carson, CA 90746

Dear Mr. Mullen:

After our telephone conversation on June 14, 1993, I reviewed my letter sent to you on June 2, 1993. I agree that adjustments to Item Nos. 2, 6, and 8 are in order.

Attached is a revised Annual Maintenance Cost breakdown that reduces the total charge for water purchased from the City of Cerritos from $418.84 to $417.37.

Please let me know if you have any questions.

ANNUAL MAINTENANCE COST

1.	Maintenance of Distribution Mains and Valves: 2 people, 4 hrs. each, twice per year = 16 hours/year x $28.12/hour	=	$ 449.92
2.	Maintenance of Pressure Regulating Station and Meter Reads: 1 person, 1/2 hour/day, 365 days/year = 182.5 hours x $28.12/hr.	=	5,131.90
3.	Preventive Maintenance Pressure Regulating Valves: 2 people, 3 hours each, twice per year = 12 hours x $28.12	=	337.44
4.	Materials for Maintenance of Pressure Regulating Valves:	=	500.00
5.	Electric Power and P.L. Lines	=	860.00
6.	Truck Expense: 1/2 hour/day, 365 days/year = 182.5 hours x $10.00/hr.	=	1,825.00

JOHN F. CRAWLEY MAYOR ANN JOYNT PAUL W. BOWLEN GRACE HU SHERMAN R. KAPPE

7. Billing Costs:

Labor	=	$11.74		
Postage	=	.25		
Envelope, Paper, Handling	=	.30		
$12.29/month x 12 months			=	147.48

8. Bacteriological Samples:
4 samples/month x 12 mos. =
48 x $7.00 each x 50° So.Calif.
Water Co. Costs = 168.00

9. Chemical Analysis
2 samples/year @ $90 each = 180.00

10. Polyphosphate
1.08 gals. per acre foot x 4836.25 A/F =
5223.15 gals. x $12.39/gal. = 64,714.83

Total: $74,314.57 ÷ 4836.25 = $15.37/A.F.

*Note: 4836.25 A/F is used as Southern California Water Company's annual entitlement based on 3000 GPM.

The City currently adds polyphosphate to the water purchased from MWD to assure that polyphosphate is distributed throughout the water system. If the City adjusts the dosage or if the use of polyphosphate is discontinued, the City will adjust the charges made to Southern California Water Company.

Our annual charge for Fiscal Year 1993-94 for water used at each of the Southern California meters will be as follows:

MWD Water	$385.00
Central Basin Agreement	17.00
Maintenance Charge	15.37
Total Charge per Acre Foot	$417.37

Please review and if you have any questions, please contact me.

Very truly yours,

Ron Babel

Ron Babel
Water Superintendent

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cc Vince Brar, Director of Public Services
John Saunders, Director of Internal Affairs
Tom Bunosky, Vice-Pres, SCWC, San Dimas
Kyle Snay, Div. Engr, SCWC, Carson
James Zachary, Supt., SCWC, Norwalk
Michael A. Gutierrez, SCWC, San Dimas

CITY OF CERRITOS

CIVIC CENTER • 18125 BLOOMFIELD AVENUE • P.O. BOX 3130
CERRITOS, CALIFORNIA 90703-3130 • FAX: (310) 865-1944
PHONE: (310) 860-0311 • (714) 523-3710

June 16, 1995

Mr. Michael A. Gutierrez
Engineering and Planning Manager, Region II
SOUTHERN CALIFORNIA WATER COMPANY
595-C Tamarack Avenue
Brea, CA 92621

Dear Mr. Gutierrez:

The City of Cerritos has been advised by the Central Basin Municipal Water District that the rates for treated non-interruptible water from MWD has increased.

Therefore, effective July 1, 1995, the water costs for the Southern California Water Company will be as follows:

MWD Water	$ 426.00
Central Basin Assessment	30.00
Maintenance Charge	12.02
Total Charge per Acre Foot	$ 468.02

If you have any questions, please contact me.

Very truly yours,

Ron Babel
Water Superintendent

br
cc Ron Mullen, Central District Manager, SCWC, SFS
James Zachary, Superintendent, SCWC, Norwalk
Vince Brar, Director of Public Works
John Saunders, Director of Administrative Services