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*Final Report*

# 2005 Urban Water Management Plan – Southwest



**Golden State**  
Water Company

A Subsidiary of American States Water Company

## **Region II Headquarters**

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December 2005

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# Notice of Adoption

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A meeting to solicit public comments on the 2005 Urban Water Management Plan for the Golden State Water Company Southwest System was held on November 17, 2005 at 7:00 pm at the Nakaoka Community Center in Gardena, California. Notice of this meeting was published in accordance with Section 6066 of Government Code in the Daily Breeze 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 Southwest Customer Service Office in Carson, California and Torrance Customer Service Office in Torrance, 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 Southwest System.



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Patrick Scanlon  
Vice President, Customer Service  
Region II  
Golden State Water Company  
December 31, 2005



# Abbreviations

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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

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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

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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 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

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## Background

The Urban Water Management Plan (UWMP) for the Golden State Water Company (GSWC) Southwest 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 Southwest 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.*

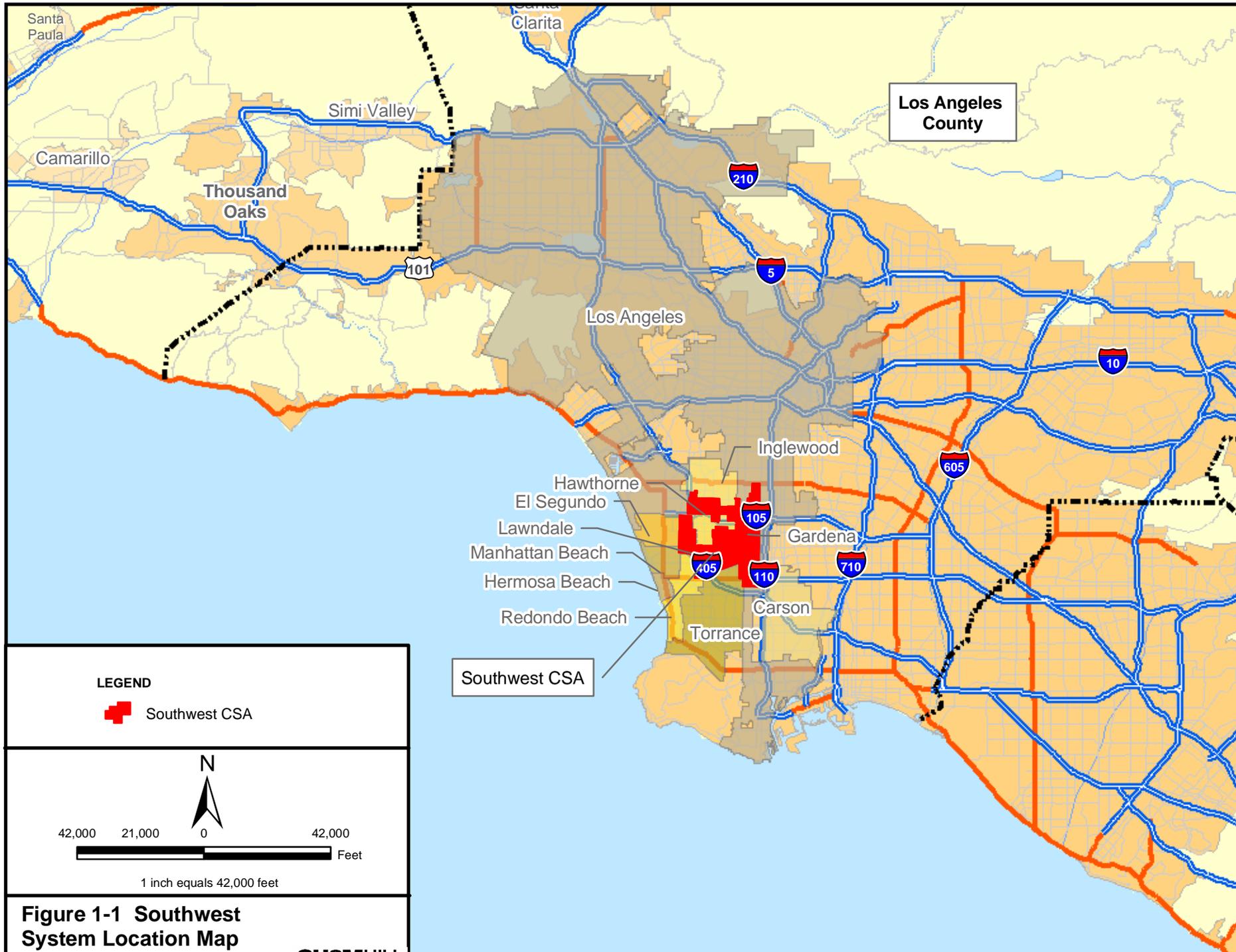
*Section 10610.4. The Legislature finds and declares that it is the policy of the state as follows:*

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

Located in Los Angeles County, the Southwest System serves the City of Gardena and Lawndale, part of the cities of Carson, Compton, El Segundo, Hawthorne and Inglewood, and unincorporated part of Los Angeles County, such as Lennox, Athens, and Del Aire. The service area is primarily characterized by residential land use, with some commercial and industrial land use. Figure 1-1 illustrates the location of the Southwest System.



## 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 California Public Utilities Commission (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 WAP 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 projections 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 Gardena						✓	
City of Lawndale						✓	
Metropolitan Water District of Southern California				✓	✓	✓	
Sanitation Districts of Los Angeles County				✓		✓	
Southern California Association of Governments (SCAG)				✓			
West Basin Municipal Water District				✓	✓	✓	
Notes							
1. This table is based on DWR's <i>Guidebook to Assist Water Suppliers in the Preparation of a 2005 Urban Water Management Plan</i> (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 Southwest System UWMP, a public hearing was held on November 17, 2005 at the Nakaoka Community Center in Gardena, California. This public session was held for review and comment on the draft plan before the 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 Southwest Customer Service Office in Carson, California and Torrance Customer Service Office in Torrance, 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 Southwest Customer Service Office and Torrance 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 Southwest Customer Service Office and Torrance 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 Section 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

<b>Chapter</b>	<b>Corresponding Provisions of the Water Code</b>	
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

<b>Chapter</b>	<b>Corresponding Provisions of the Water Code</b>	
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 Act asks 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 BMPs and DMMs, 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

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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 Southwest 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

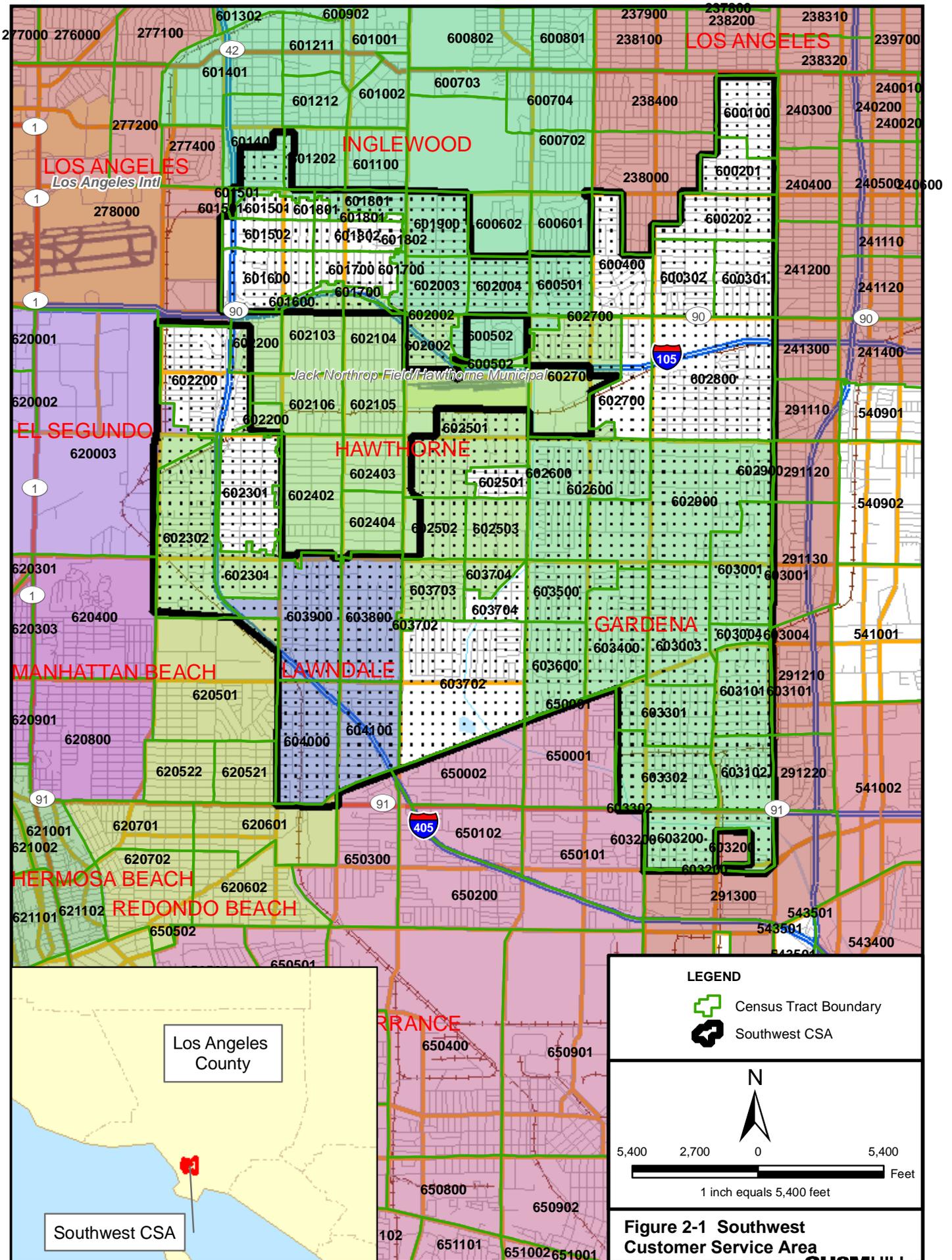
The Southwest CSA is located in Los Angeles County and serves the City of Gardena and Lawndale, part of the cities of Carson, Compton, El Segundo, Hawthorne and Inglewood, and unincorporated part of Los Angeles County, such as Lennox, Athens, and Del Aire. Figure 2-1 illustrates the customer service area of Southwest System. The service area is primarily characterized by residential land use, with some commercial and industrial land use.

## Demographics

The City of Gardena was chosen as demographically representative of the Southwest CSA. According to 2000 U.S. census data, the median age of the City of Gardena's residents is 34.5 years, the average household size of 2.79 and the median household income is approximately \$38,988.

The Southwest System serves connections in a number of Los Angeles area cities, including Inglewood, Hawthorne, Carson and Gardena. The planning department of all cities except the City of Gardena indicated that there are few undeveloped individual parcels in the system and any growth occurring will be a combination of urban expansion and in-fill. Based on the Southwest System map, most of these cities appear to be near "build-out", i.e. the planning area has reached its maximum population.

City of Gardena's General Plan is scheduled to be completed towards the end of 2005. The planning department of City of Gardena indicated that the city is 95 percent built-out. Redevelopment projects like conversion of nurseries and mobile home parks to residential development may contribute to population growth in the City. In a built-out or nearly built-out area, changes are minor and difficult to predict.



## Population, Housing and Employment

Population, housing, and employment projections were developed for the Southwest System 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 Southwest System. The current population projections differ from previous projections developed in 2000 primarily by the use of the 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 Southwest 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, 2004).

## Southwest System Population Projections

SCAG-derived census-tract projections were used to determine population from 2000 to 2030. The Southwest System service area 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 Southwest 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 Southwest 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 Southwest System.

As concluded from analysis of SCAG demographic data, the Southwest System has an estimated population of 256,159 people in 2005. This population is expected to reach 306,138 by 2030. A summary of historic and projected population, households, and employment within the Southwest System (based on SCAG data) is presented in Table 2-1 and illustrated in Figure 2-2.

In summary, from 2000 to 2005 the Southwest population increased 6 percent, which is a growth rate<sup>1</sup> of approximately 1.1 percent per year. By 2030, population is expected to increase by a total of 20 percent, from 256,159 in 2005 to 306,138 in 2030, which is a 0.7 percent growth rate per year. The number of households is expected to grow 19 percent during the same period, which equates to an annual household growth rate of 0.7 percent. Employment is expected to grow 22 percent during the same period, which equates to an annual employment growth rate of 0.8 percent. Areas with the highest projected growth increases are also the areas that will see the largest increase in water use. SCAG's demographic analysis does not project any planned residential developments for future years. As discussed in demographic section, the new development and redevelopment projects in the Southwest System may contribute to future growth.

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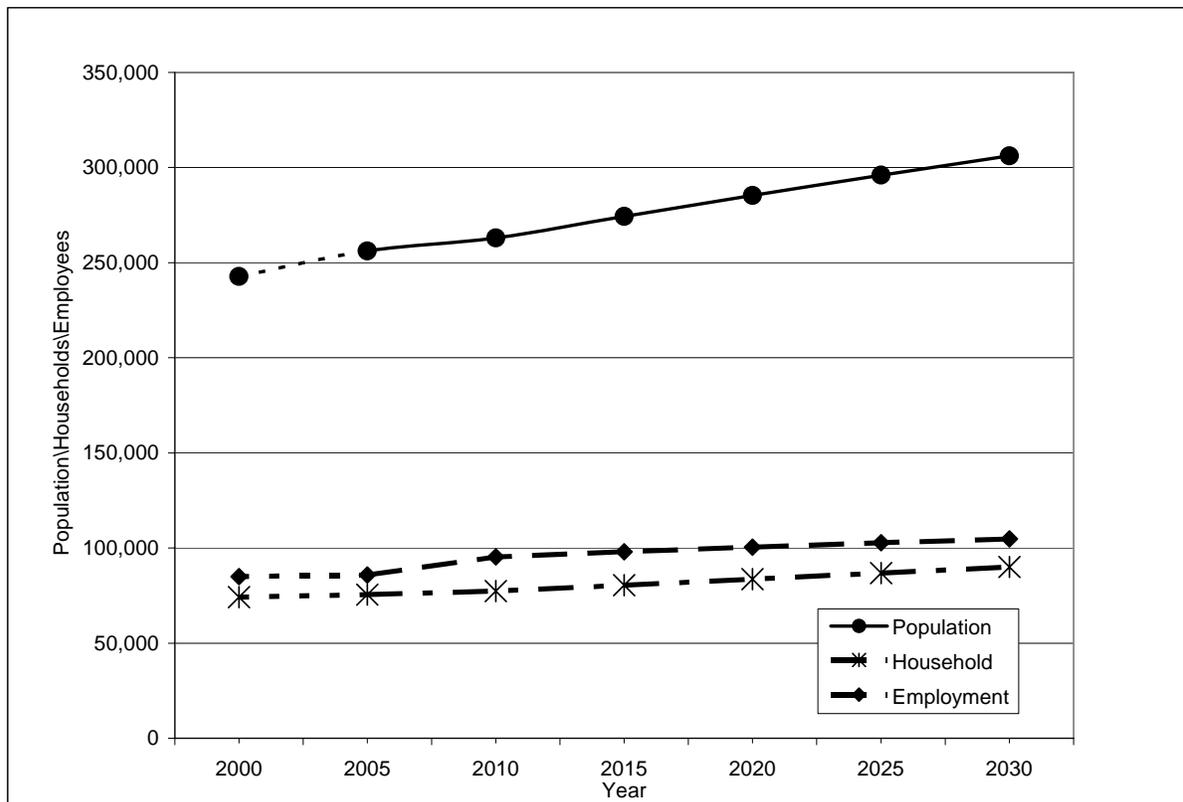
<sup>1</sup> Growth rate: The number of persons added to (or subtracted from) a population in a year due to natural increase or net migration; expressed as percentage of population at the beginning of the time period. (Source: <http://www.prb.org>)

**Table 2-1.**  
South West Customer Service Area Historical and Projected Population

Year	Service Area Population	Service Area Household	Service Area Employment
2000 <sup>2</sup>	242,702	74,163	84,954
2005	256,159	75,522	85,872
2010	263,009	77,330	95,317
2015	274,248	80,471	97,987
2020	285,336	83,675	100,501
2025	295,955	86,835	102,748
2030	306,138	89,996	104,767

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 Southwest CSA.

## Climate

Southwest System has cool, humid winters and warm, moderately humid summers. Western Regional Climate Center (WRCC) has maintained 30 years of historical climate records for some cities. WRCC does not have station within the Southwest System and therefore the Los Angeles WSO Airport station, 15 miles from the Southwest System, is utilized for the climate data analysis.

The Western Regional Climate Center web site ([www.wrcc.dri.edu](http://www.wrcc.dri.edu)) maintains historical climate records for the past 30 years for Los Angeles WSO Airport Station. Table 2-2 presents the average climate summary based on historical data for Southwest System.

In winter, the lowest average monthly temperature is approximately 48 degrees Fahrenheit while the highest average monthly temperature reaches approximately 78 degrees Fahrenheit in the summer. Table 2-2 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 1 to 3 inches. Low humidity occurs in the summer months from May to October. The moderately hot and dry weather during the summer months typically results in moderately high water demand.

Similar to the Western Regional Climate Center in the Southwest System, the California Irrigation Management Information System (CIMIS) web site (<http://www.cimis.water.ca.gov>) tracks and maintains records of evapotranspiration (ET<sub>o</sub>) for only a few cities. ET<sub>o</sub> statistics used for this system also come from Long Beach station, which is 16 miles of Southwest CSA. ET<sub>o</sub> is a standard measurement of environmental parameters that affect the water use of plants. ET<sub>o</sub> 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 ET<sub>o</sub> is presented in inches in Table 2-2. As the table indicates in correlation to high temperatures and low humidity, a greater quantity of water evaporated during July and August, which may result in high water demand.

Table 2-2  
Monthly Average Climate Data Summary for Southwest CSA

Month	Standard Monthly Average ETo(2) (inches)	Average Total Rainfall (inches)	Average Temperature (degrees Fahrenheit)	
			Max	Min
January	2.2	2.9	65.1	47.9
February	2.5	3.15	65.6	49.1
March	3.4	2.08	66.4	50.6
April	3.8	0.91	68.2	52.8
May	4.8	0.21	70.1	55.9
June	5.0	0.06	73.3	59.0
July	5.3	0.01	77.2	62.3
August	4.9	0.06	78.3	63.2
September	4.5	0.22	77.5	61.9
October	3.4	0.43	74.6	58.2
November	2.4	1.22	71.4	52.9
December	1.9	2.21	66.5	48.7

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>

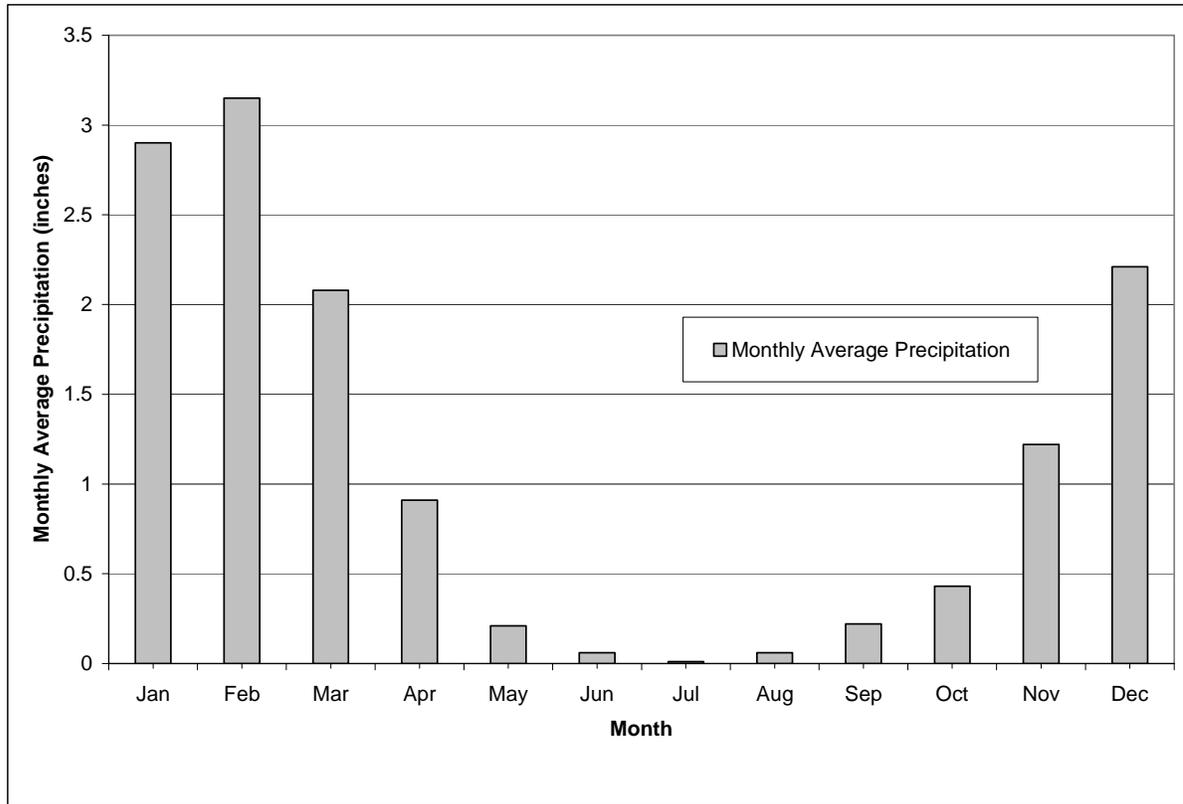


Figure 2-3. Monthly Average Precipitation in the Southwest CSA based on 30 Years Historical Data

# Chapter 3. Water Supply

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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 Southwest 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 Southwest System from three primary sources: imported water, recycled water and GSWC operated groundwater wells. Imported water is provided from the West Basin Municipal Water District (WBMWD) and the Central Basin Municipal Water District (CBMWD). WBMWD and CBMWD obtain their imported water supplies from the Metropolitan Water District of Southern California (Metropolitan). Recycled water is also supplied from WBMWD. GSWC operates several groundwater wells within the Southwest System, and has adjudicated allowed groundwater pumping allocations in both the West Basin and Central Basin.

Table 3-1, provided below, summarizes the approximate amount of water supplied by each source in acre feet per year. The availability of water from each source is estimated through the year 2030, in accordance with GSWC's long term water supply planning projections and those of its wholesale suppliers. GSWC's water supply is projected to increase by about 20 percent from 2005 to 2030 to meet the associated projected water demands, with most of this demand being met by the implementation of storage programs that are expected to be developed in the Central and West Basin or by imported water obtained from CBMWD. Water demand projections are documented in Chapter 4.

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

<b>Source</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>
Purchased water	28,933	30,628	32,013	33,446	34,826	36,174
Groundwater <sup>(2)</sup> Central Basin	900	900	900	900	900	900
Groundwater <sup>(2)</sup> West Basin	7,260	7,260	7,260	7,260	7,260	7,260
Total Groundwater <sup>(2)</sup>	8,160	8,160	8,160	8,160	8,160	8,160
Recycled water	490	750	800	800	800	800
<b>Total</b>	<b>37,583</b>	<b>39,538</b>	<b>40,973</b>	<b>42,406</b>	<b>43,786</b>	<b>45,134</b>

Notes

1. Based on GSWC's Central Basin Allowed Pumping Allocation and West Coast Basin adjudicated rights
2. Table format based on DWR Guidance Document Table 4

For 2005, purchased imported water and groundwater pumping leases make up approximately 77 percent of the available supply, whereas about 21 percent of the supply is from GSWC groundwater pumping and 2 percent is provided by recycled water sources. In future years, the purchased water could be as great as 80 percent or higher depending on water quality considerations. Therefore, GSWC is actively pursuing the availability of a reliable, cost effective supply of purchased water through the implementation of conjunctive use storage programs in the Central and West Coast basins, discussed in further detail below. Storage programs could utilize water purchased from WBMWD and CBMWD or water purchased from other suppliers. This water supply summary was developed based on information provided by Metropolitan, WBMWD, CBMWD and GSWC.

The sources and the reliability of each source are discussed in greater detail in the following sections. A brief description of the components of each source is provided below.

Purchased water includes both imported water sales from Metropolitan through WBMWD and CBMWD, leases and purchases of additional groundwater, and potential transfer water from other sources for conjunctive use in the Central and West Coast Basins. The quantity of water indicated for 2005 includes imported water sales and an average of past lease sales allowing GSWC to pump additional groundwater beyond the GSWC's current pumping allocation in the West Basin and Central Basin. GSWC may lease additional groundwater pumping rights in the Central and West Coast basins to meet projected demands.

The recycled water source is based on WBMWD plans for recycled water use within the Southwest System. The use of recycled water is discussed in more detail in Chapter 8.

The groundwater source consists of the amount of groundwater GSWC is currently entitled to pump based on an adjudicated allowable pumping allocation in the Central and West Coast Basins.

## Imported Water

CBMWD and WBMWD are large purveyors of water in southern California. The CBMWD and WBMWD provide water to several agencies including GSWC. GSWC obtains water from these districts for several systems including the Southwest System. Water purchased from the CBMWD and WBMWD is delivered to the Southwest System through the following connections:

- Metropolitan CB-4 connection with a design capacity of 4,488 gallons per minute (gpm)
- Metropolitan CB-55 connection with a design capacity of 6,727 gpm
- Metropolitan WB-1 connection with a design capacity of 4,488 gpm
- Metropolitan WB-10 connection with a design capacity of 8,977 gpm
- Metropolitan WB-11 connection with a design capacity of 2,244 gpm
- Metropolitan WB-12 connection with a design capacity of 2,244 gpm
- Metropolitan WB-13 connection with a design capacity of 2,244 gpm
- Metropolitan WB-15 connection with a design capacity of 11,212 gpm
- Metropolitan WB-25B connection with a design capacity of 4,486 gpm
- Metropolitan WB-30 connection with a design capacity of 3,366 gpm
- Metropolitan WB-31 connection with a design capacity of 5,610 gpm
- Metropolitan WB-33 connection with a design capacity of 4,488 gpm

The Southwest System has ten connections with WBMWD, rated at a total of 44,872 gpm (72,243 ac-ft/yr) and two with CBMWD, rated at 11,215 gpm (18,057 ac-ft/yr) for the system's water supply. Together, these connections have a total capacity of 51,620 gpm (83,304 ac-ft/yr). 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.

A five-year purchase agreement between WBMWD and GSWC became effective January 1, 2003. This agreement provides GSWC with a base allocation of 38,874 ac-ft/yr from WBMWD. GSWC annually may request a change in the base allocation which will be granted if WBMWD can accommodate such a request.

Under Section 135 of the Metropolitan Act, preferential rights to water are determined by each agency's total historic payments to Metropolitan from property taxes, stand-by charges, readiness-to-serve charges, and other revenue. Revenue resulting from the purchase of Metropolitan water is excluded, even though a portion of such revenues is used to pay for capital projects. At any time under preferential right rules, Metropolitan may allocate water without regard to historic water use or dependence on Metropolitan.

Metropolitan's preferential rights rules were the subject of litigation seeking clarification regarding the application and legality of Section 135; in July 2004 the State Supreme Court denied an appeal of an appellate court decision that Metropolitan might continue to exclude water purchases from the preferential rights calculation. The decision makes clear how much water any Metropolitan member agency can count on should a member agency invoke its preferential right to water.

Subsequent to the court decision, Metropolitan has stated, consistent with Section 4202 of its Administrative Code, that it is prepared to provide its member agencies with adequate

supplies of water to meet expanding and increasing needs in the years ahead. When and as additional water resources are required to meet increasing needs, Metropolitan stated that it will be prepared to deliver such supplies. In its draft 2005 Regional Urban Water Management Plan, Section II.4, Metropolitan also states that as a result of investments made in supply and storage that it has identified a resource management plan that should result in 100 percent reliability for non-discounted non-interruptible demands through 2025.

Finally, GSWC has six emergency connections with the City of Inglewood with design capacities of 9,200 gpm (14,847 ac-ft/yr). The Southwest System has four additional emergency connections that are normally closed. Three are with the City of Hawthorne and one with Park Water Company with design capacities of 3,500 gpm (5,635 ac-ft/yr) and 1,250 gpm (2,017 ac-ft/yr), respectively. Eleven storage tanks with a total volume of 13.4 million gallons serve as storage in the Southwest System.

## Recycled Water

The Southwest System currently receives approximately 490 ac-ft of recycled water from WBMWD. Treated water from the Hyperion Wastewater Treatment Plant owned by the City of Los Angeles is provided to the WBMWD. The 2000 WBMWD Water Recycling Program Master Plans identified potential recycled water customers within the service area of the Southwest 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.

## Groundwater

The Southwest System is supplied by two wells in the Central Basin and 14 wells in the West Coast Basin of the Coastal Plain of Los Angeles Groundwater Basin.

### Central Basin

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 to the north, the Elysian, Repetto, Merced and Puente Hills to the northeast and east, the Coyote Creek to 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. Aquifers in the Central Basin pressure area extend approximately 2,200 feet below the surface (DWR, 1961). The 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, such as irrigation; 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. Recharge in the pressure area is precluded by overlying, less permeable silt and clay units. 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" (APA), which is a fraction of each party's water rights and is monitored by a court-appointed Watermaster. The Watermaster administers and enforces the terms of the Judgment and report 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 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.

### West Coast Basin

The West Coast Basin has a surface area of approximately 91,300 acres (142 square miles). The West Coast Basin is bound by the Ballona Escarpment to the north, Newport-Inglewood

fault zone to the east, the Pacific Ocean and the Palos Verdes Hills to the west and south, respectively (DWR, 2003).

The main freshwater-bearing aquifers are contained within the Holocene alluvium and the Pleistocene Lakewood and San Pedro Formations. The most productive aquifers within the Basin are the Gardena and Gage aquifers in the Lakewood Formation and the Silverado, Lynwood, and the unnamed aquifers in the San Pedro Formation (DWR, 1961). The Gardena and Gage aquifers are comprised primarily of fine to coarse sand and gravel and have a total maximum thickness of 320 feet (DWR, 2003). Wells completed in the Gage aquifer typically produces water at rates ranging from 100 to 1300 gpm. The aquifers within the San Pedro Formation are comprised of coarse sand, gravel, and sandy gravel and have a combined maximum thickness of 1200 to 1400 feet (DWR, 2003). The Silverado aquifer, underlying most of the West Coast Basin, is the most productive aquifer in the Basin, yielding approximately 80 percent to 90 percent of the groundwater extracted annually (DWR, 1999).

Natural recharge to the West Basin's groundwater supply is largely limited to underflow from water spread in the Central Basin that flows through the Newport-Inglewood fault zone. Injection wells in the West Coast Basin Barrier and Dominguez Gap Barrier create mounds of freshwater that help protect the West Coast Basin from seawater intrusion. Other minor sources of recharge include percolation of precipitation, return irrigation from fields and lawns, and other applied surface waters (DWR, 2003). The storage capacity of the primary water producing aquifer, the Silverado aquifer, is estimated to be 6,500,000 ac-ft (DWR, 2003). Groundwater levels have risen about thirty feet since the Basin was adjudicated in 1961 (DWR, 2003). Injection along the West Coast Basin Barrier and Dominguez Gap Barrier causes groundwater to flow inland from the coast.

### West Coast Basin Adjudication

In 1961, the West Coast Basin was adjudicated in the case *California Water Service Company, et al vs. City of Compton, et al* (Superior Court, County of Los Angeles, Case no. 506806, Appendix H). The Southwest System has rights to 7,260 ac-ft/yr in the West Coast Basin as shown in Tables 3-2.

The West Coast Basin Judgment limits the amount of groundwater each party can extract annually from the Basin. Groundwater producers held by the Judgment have the right to annually pump the volume of water as decided in the adjudication. These limits are 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 West Coast Basin adjudication limit for groundwater extraction across the entire basin is 64,468 ac-ft/yr. GSWC maintains legal rights to 7,260 ac-ft/yr, as shown in Table 3-2. GSWC reports monthly groundwater extractions (on a per-well basis) to the Watermaster.

**Table 3-2**  
Groundwater Pumping Rights

<b>Basin Name</b>	<b>Pumping Rights (ac-ft/yr )</b>
Central <sup>(2)</sup>	16,439
West Coast	7,260

## Notes

1. Table format based on DWR Guidance Document Table 5
2. Values are the allowed pumping allocation (80% of GSWC's adjudicated water right) for all seven systems GSWC owns and operates in the Central Basin. These systems are Artesia, Florence-Graham, Hollydale, Willowbrook, Bell-Bell Gardens, Norwalk, and portions of the Southwest System.
3. Groundwater pumping rights in the Central Basin are referred to as "Allowed Pumping Allocation".

Table 3-3 shows the wells and well capacities for the Southwest System. GSWC's Southwest System has a total normal year active well capacity of 15,025 gpm (24,233 ac-ft/yr). The two Bellhaven wells are located in the Central Basin and all other wells are located in the West Coast Basin.

**Table 3-3**  
Wells and Well Capacity in the Southwest System

<b>Well Name</b>	<b>Design Well Capacity (gpm)</b>	<b>Design Well Capacity (ac-ft/yr)</b>	<b>Normal Year Well Capacity (gpm)</b>	<b>Normal Year Well Capacity (ac-ft/yr)</b>	<b>Status</b>
Ballona No. 5	800	1,290	800	1,290	Active
Ballona No. 4	1,000	1,613	1,000	1,613	Active
Belhaven No. 5	1,000	1,613	1,000	1,613	Active
Belhaven No. 3	950	1,532	950	1,532	Active
Chicago No. 1	500	806	500	806	Standby/Inactive
Compton Doty No. 1	675	1,089	675	1,089	Active
Dalton No. 1	600	968	600	968	Active
Doty No. 1	1,000	1,613	1,000	1,613	Active
Doty No. 2	1,100	1,774	1,100	1,774	Active
Goldmedal No. 1	1,600	2,580	1,600	2,580	Active
Southern No. 5	1,000	1,613	1,000	1,613	Active
Southern No. 6	1,000	1,613	1,000	1,613	Active
Truro No. 4	800	1,290	800	1,290	Active
Yukon No. 4	1,000	1,613	1,000	1,613	Active
Yukon No. 5	1,250	2,016	1,250	2,016	Active
129 <sup>th</sup> Street No. 2	1,250	2,016	1,250	2,016	Active

**Table 3-3**  
Wells and Well Capacity in the Southwest System

<b>Well Name</b>	<b>Design Well Capacity (gpm)</b>	<b>Design Well Capacity (ac-ft/yr)</b>	<b>Normal Year Well Capacity (gpm)</b>	<b>Normal Year Well Capacity (ac-ft/yr)</b>	<b>Status</b>
Total Capacity	15,525	25,039	15,525	25,039	
Active Capacity	15,025	24,233	15,025	24,233	

Notes

1. Active wells are part of the current water supply system.
2. Standby/Inactive wells are either not part of the regular water supply system or are used for emergencies.

Table 3-4 shows the pumping history for the Southwest System for 2000 through 2004 based on the calendar year. The total groundwater pumping for the Southwest System has ranged from 11,053 ac-ft/yr to 15,025 ac-ft/yr.

**Table 3-4**  
Groundwater Pumping History by Southwest System (2000 to 2004) in ac-ft

<b>Basin Name</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>
Central	1,505	1,681	1,415	1,383	896
West Coast	9,548	11,626	13,610	13,184	11,740
% of Total Water Supply	29	36	40	40	34

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 amounts of groundwater to be pumped to supply the Southwest System via the two wells located in the Central Basin and twelve wells located in the West Coast Basin through 2030. The amount projected will be pumped from the wells currently being pumped shown in Table 3-3. GSWC's water rights within the Central Basin are shared among all GSWC 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 systems. In addition to GSWC's APA in the Central Basin and adjudicated rights in the West Coast 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/yr to augment their Central Basin APA and up to 6,475 ac-ft/yr to augment their West Coast Basin water rights. As noted in other parts of this UWMP, it is possible that additional wells will be constructed and a greater volume of groundwater allowed in accordance with the terms of a groundwater basin management plan and amended Judgments to be filed upon the conclusion of discussions now underway with DWR.

**Table 3-5**  
Projected Groundwater Pumping Amounts by Southwest System to 2030 in ac-ft

<b>Basin Name</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>
Central	900	900	900	900	900	900
West Coast	7,260	7,260	7,260	7,260	7,260	7,260
% of Total Water Supply	22	21	20	19	19	18

Notes

1. Table format based on DWR Guidance Document Table 7
2. Projected values based on GSWC's allowed pumping allocation from adjudicated rights
3. Years are reported in fiscal years (July 1 – June 30)

## Reliability of Supply

The Southwest System currently gets the vast majority of its water supply from two sources, groundwater and imported Metropolitan water via WBMWD and 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. This reliability is a result of, 1) adjudicated groundwater rights in the Central and West Coast basins; 2) benefits of conjunctive use storage programs to be developed in accordance with amended court Judgments that are anticipated at some time in the future; 3) water supplies available from the supplemental supplier, Metropolitan, which it projects will be 100 percent reliable; and 4) the availability of recycled water.

### Metropolitan Water Supply Reliability

WBMWD and CBMWD, the local wholesalers, are largely pass through entities which obtain nearly all their 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, as well as 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 and WBMWD have 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 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 storage 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 and 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.

## WBMWD's and CBMWD's Water Supply Programs

WBMWD and CBMWD have proposed development of certain water supply projects to increase reliability within its service area (see WBMWD's and 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

### Central Basin

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 obtains leases for additional groundwater in the Central Basin annually, on an as-needed basis. Historically, GSWC has leased up to 7,500 ac-ft/yr in the Central Basin, averaging 3,550 ac-ft/yr from 1991 to 2005. If GSWC's actual demands exceed the adjudicated limits, GSWC can use leased rights to increase their allowed pumping.

Three agencies, Los Angeles County Department of Public Works (LACDPW), Water Replenishment District of Southern California (WRDSC), and CBMWD, work together with the groundwater producers such as GSWC to ensure that the APA is available to be pumped from wells in the Central Basin. 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.

These agencies have worked cooperatively to increase the reliability of the Central Basin groundwater supply. Recycled water is one of the cornerstones of the CBMWD's efforts to augment local supplies and reduce dependence on imported water. 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, DWR, 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.

### **West Coast Basin**

GSWC has a total APA of 7,260 ac-ft/yr in the West Coast Basin. GSWC maintains a legal right to pump their adjudicated rights each year. GSWC also obtains leases for additional groundwater in the West Coast Basin annually, on an as-needed basis. Historically, GSWC has leased up to 6,475 ac-ft/yr in the West Coast Basin, which includes a long term lease of 3,651 ac-ft/yr through 2013. If GSWC's actual demands exceed the adjudicated limits, GSWC can use leased rights to increase their allowed pumping.

Three agencies, LACDPW, WRDSC, and WBMWD, work together with the groundwater producers such as GSWC to ensure that APA is available to be pumped from wells in the West Coast Basin. LACDPW operates and maintains the West Coast Barrier Project and Dominguez Gap Barrier Projects, which maintain groundwater levels at the coast line to prevent seawater intrusion. LACDPW injects a approximately a 50/50 combination of highly treated wastewater from the West Basin Municipal Water District's water recycling plant located in El Segundo and imported water from Metropolitan (including both State Water Project water and Colorado River water). WBMWD is expanding the West Basin recycled water plant to allow up to 100 percent recycled water injection into the West Coast Basin Barrier Project. LACDPW injects imported water from Metropolitan (including both State Water Project water and Colorado River water) into the Dominguez Gap Barrier Project. WRDSC is working with the City of Los Angeles to replace up to 50 percent of the imported water injected into the Dominguez Gap Barrier Project with highly treated wastewater from the City's Terminal Island wastewater reclamation plant. WRDSC collects

a replenishment assessment from all groundwater producers in the Basin to pay for water supplies to replenish the Basin, which is through the injection barrier. Annually by statute, WRDSC is required to determine replenishment requirements. WRDSC pays WBMWD for imported and recycled water for recharge into the West Coasts Basin.

In addition, during years when surplus imported water is available from Metropolitan, the retail suppliers may use more imported water and pump less groundwater in order to take advantage of the storage capacity of the basin and increase the overall water supplies to the basin through this conjunctive use operation.

### Southwest System's Water Supply Reliability

Supply reliability for the Southwest system depends upon 1) adjudicated groundwater rights in the Central and West Coast basins; 2) benefits of conjunctive use storage programs to be developed in accordance with amended court Judgments that are anticipated at some time in the future; 3) water supplies available from the supplemental supplier, Metropolitan Water District, which it projects will be 100 percent reliable; and 4) the availability of recycled water.

Table 3-6 presents water supply projections for imported, recycled water, and groundwater sources during a normal year, single-dry year, and multiple-dry years for the Southwest System. 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 the 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 Southwest System for Year 2030 in ac-ft/yr

Source	Normal Water		Multiple-Dry Water Years		
	Year	Single-Dry Water Year	Year 1	Year 2	Year 3
Purchased water	36,174	43,434	43,434	43,434	43,434
Groundwater <sup>(1, 2)</sup> Central Basin	900	900	900	900	900
Groundwater <sup>(1, 2)</sup> West Basin	7,260	7,260	7,260	7,260	7,260
Recycled water	800	800	800	800	800
Total	45,134	45,134	45,134	45,134	45,134
Percent of Normal		100	100	100	100

## Notes

1. GSWC has rights to pump 7,260 ac-ft/yr in West Basin.
2. Based on GSWC's Allowed Pumping Allocation in the Central Basin.
3. Table format based on DWR Guidance Document Table 8

Table 3-7 lists single-dry year and multiple-dry year periods for both groundwater and imported water supplies. The single-dry year and multiple-dry year periods are based on WBMWD's and CBMWD's analysis on the lowest average precipitation for a single year and the lowest average precipitation for a consecutive multiple-year period, respectively. WBMWD's and CBMWD's estimates suggest that fiscal year (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. WBMWD and CBMWD have 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 Basins in accordance with amendments to the existing court Judgments 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 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 West Coast and Central Basin Judgments. The Basins have proven to be very reliable under extreme climate conditions for over 40 years and is expected to remain reliable through 2030.

**Table 3-7**  
Basis of Water Year Data

<b>Water Year Type</b>	<b>Base Year(s)</b>	<b>Historical Sequence</b>
	Imported water and Groundwater	
Normal Water Year	2000-01	1922-1991
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 and WBMWD
3. 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 Southwest 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 and West Coast basins, this legal uncertainty is ultimately expected to be resolved through amendments to the existing court judgments 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.

**Table 3-8**  
Factors Resulting in Inconsistency of Supply

<b>Name of Supply</b>	<b>Legal</b>	<b>Environmental</b>	<b>Water Quality</b>	<b>Climatic</b>
Imported water (WBMWD and CBMWD)	N/A	N/A	N/A	N/A
Groundwater (Central Basin)	Adjudicated APA of 16,439 ac-ft 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	GSWC does not project any groundwater supplies to be affected by changes in water quality. See Chapter 9 for detailed information.	N/A
Groundwater (West Coast Basin)	Adjudicated, 7,260 ac-ft for the Southwest System. GSWC also has the ability to increase water supply with lease agreements to supplement pumping above 7,260 ac-ft/yr	N/A	GSWC does not project any groundwater supplies to be affected by changes in water quality. See Chapter 9 for detailed information.	N/A

Notes

1. Table format based on DWR Guidance Document Table 10

## Transfers and Exchanges

### Central Basin

GSWC has historically obtained leases to augment its APA in the Central Basin, averaging 3,550 ac-ft/yr from 1991 to 2005. Leases for additional groundwater in the Central Basin are purchased annually, on an as-needed basis, and after an evaluation of the economic benefits to their rate payments. 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

<b>Fiscal Year</b>	<b>Unused APA (ac-ft/yr)</b>
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

No specific transfer or exchange opportunities have been identified in the Central Basin for the Southwest System at this time; therefore, Table 3-10 has been left blank.

**Table 3-10**  
Transfer and Exchange Opportunities in Central Basin

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

Notes

1. Table format based on DWR Guidance Document Table 11

## West Basin

GSWC has historically leased groundwater pumping rights in the West Coast Basin, averaging 2,528 ac-ft/yr from 1991 to 2005. Leases for additional groundwater in the West Coast Basin are purchased annually, on an as-needed basis, and after an evaluation of the economic benefits to their rate payers. Table 3-11 presents the unused water rights in the West Coast Basin, as reported by the West Coast Basin Watermaster, from 2000 to 2004. In each year, between 12,497 and 18,488 ac-ft/yr of available water rights has not been pumped. This unpumped water could be available for GSWC to purchase, on an annual basis, to augment their West Coast Basin water rights 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 3-11**  
Annual Unused Water Rights in West Coast Basin

<b>Fiscal Year</b>	<b>Unused APA (ac-ft/yr)</b>
1999 - 2000	12,497
2000 - 2001	14,989
2001 - 2002	16,506
2002 - 2003	17,518
2003 - 2004	18,448

Notes

1. Table format based on DWR Guidance Document Table 11
2. Total available rights for West Coast Basin for these years is 64,468 ac-ft/yr
3. Fiscal year is July 1 through June 30
4. Data reported in annual Watermaster reports

GSWC maintains one long term lease agreement with Chevron USA, Inc for 3,651 ac-ft/yr of water rights (Table 3-12). The lease expires at the end of Water Year 2013. No other specific transfer or exchange opportunities have been identified in the Southwest System at this time.

**Table 3-12**  
Transfer and Exchange Opportunities in West Coast Basin

<b>Source Transfer Agency</b>	<b>Transfer or Exchange</b>	<b>Short Term</b>	<b>Proposed Quantities</b>	<b>Long term</b>	<b>Proposed Quantities</b>
GSWC	Transfer (Lease)	N/A	N/A	Yes, through 2013	3,651.3

Notes

1. Table format based on DWR Guidance Document Table 11

## Planned Water Supply Projects and Programs

GSWC plans to purchase and store water in the Central and West Coast basins in accordance with amendments to the existing court Judgments, 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.

**Table 3-13**  
Future Water Supply Projects in ac-ft

Project Name	Normal Year	Single Dry Year	Multiple Dry Years		
			Year 1	Year 2	Year 3
N/A	N/A	N/A	N/A	N/A	N/A

Notes  
1. This table is based on the DWR Guidebook Table 17.

## Wholesale Agency Supply Data

Table 3-14 provides WBMWD's and CBMWD's existing and planned water sources including recycled water available to the Southwest System.

**Table 3-14**  
Existing and Planned Water Sources Available to the Southwest System as Identified by WBMWD and CBMWD in ac-ft/yr

Wholesaler Sources	2010		2015		2020		2025		2030	
	Existing	Planned								
Imported water (WBMWD and CBMWD)	30,628	N/A	32,013	N/A	33,446	N/A	34,826	N/A	36,174	N/A
Recycled Water (WBMWD)	750	N/A	800	N/A	800	N/A	800	N/A	800	N/A

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

Table 3-15 indicates the reliability of wholesale available water supply to meet annual water demand of the Southwest System. The table includes a single-dry year and multiple-dry year supplies for 2030. The available supply from Metropolitan through WBMWD and 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 3-15**  
Reliability of Wholesale Supply for Year 2030 in ac-ft/yr

Wholesaler	Single Dry	Multiple-Dry Water Years		
		Year 1	Year 2	Year 3
Imported water (WBMWD and CBMWD) and Recycled Water (WBMWD)	36,974	36,974	36,974	36,974
Percent Normal	100	100	100	100

Notes

1. Table format based on DWR Guidance Document Table 21

Table 3-16 lists factors affecting wholesale supply for the Southwest System. Metropolitan plans are intended to provide 100 percent supply reliability to WBMWD and CBMWD, which in turn provides 100 percent reliability of imported water supply to the Southwest System.

**Table 3-16**  
Factors Affecting Wholesale Supply

Name of Supply	Legal	Environmental	Water Quality	Climatic
Imported water <sup>(1)</sup> (WBMWD and CBMWD) and Recycled water (WBMWD)	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 RUWMP)
2. Table format based on DWR Guidance Document Table 22

# Chapter 4. Water Use

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Section 10631 (e) of the Act requires that an evaluation of water use be performed for the Southwest 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 Southwest 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 Southwest 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 Southwest 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 Southwest 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 Southwest System from 1980 through 2030. Figure 4-2 shows the historical and projected water use for the Southwest System from 1980 until 2030.

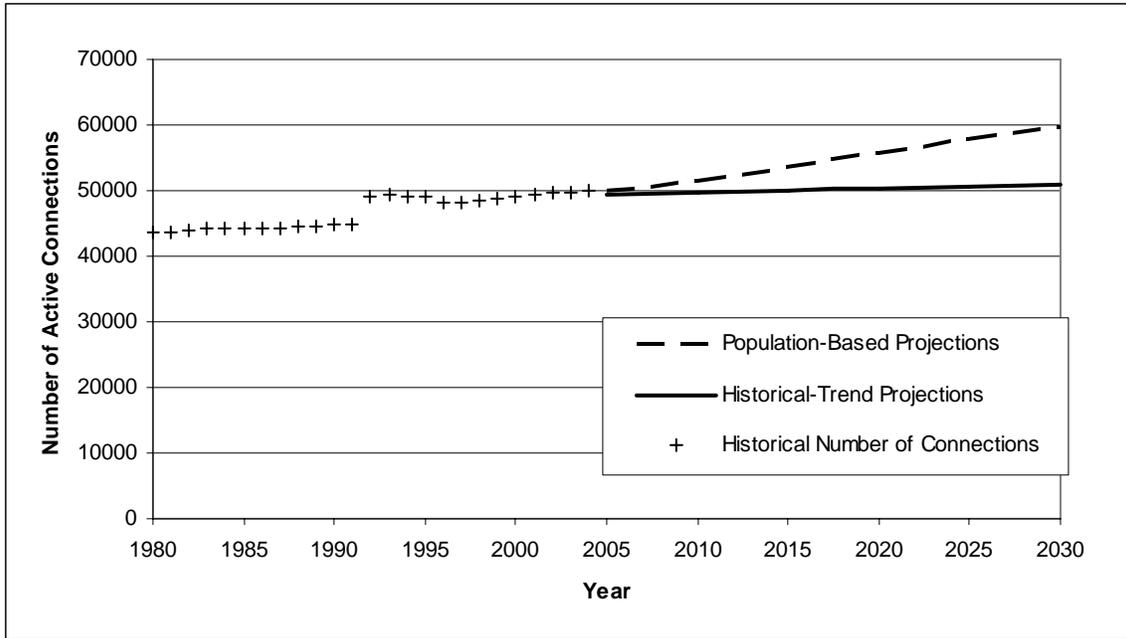


Figure 4-1. Historical and Projected Number of Metered Service Connections

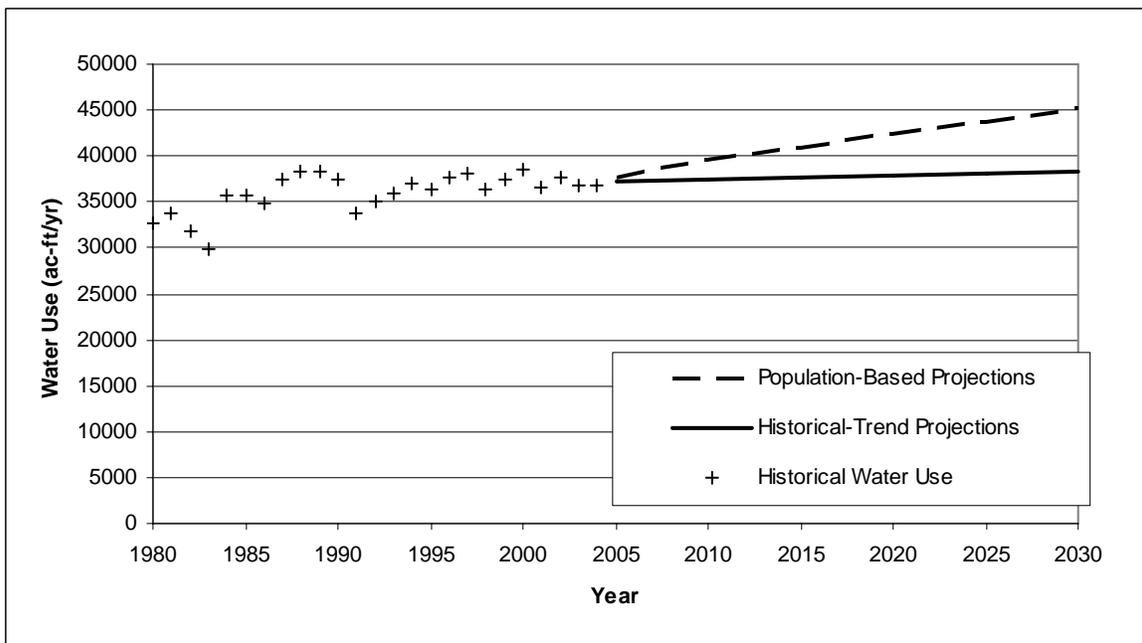


Figure 4-2. Historical Water Use and Future Water Use Projections

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 Southwest 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 Southwest 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 1992 through 2004 was used because the acquisition of a number of Los Angeles County systems caused an abrupt increase in the number of connections from 1991 to 1992 (refer to Figure 4-1). 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.

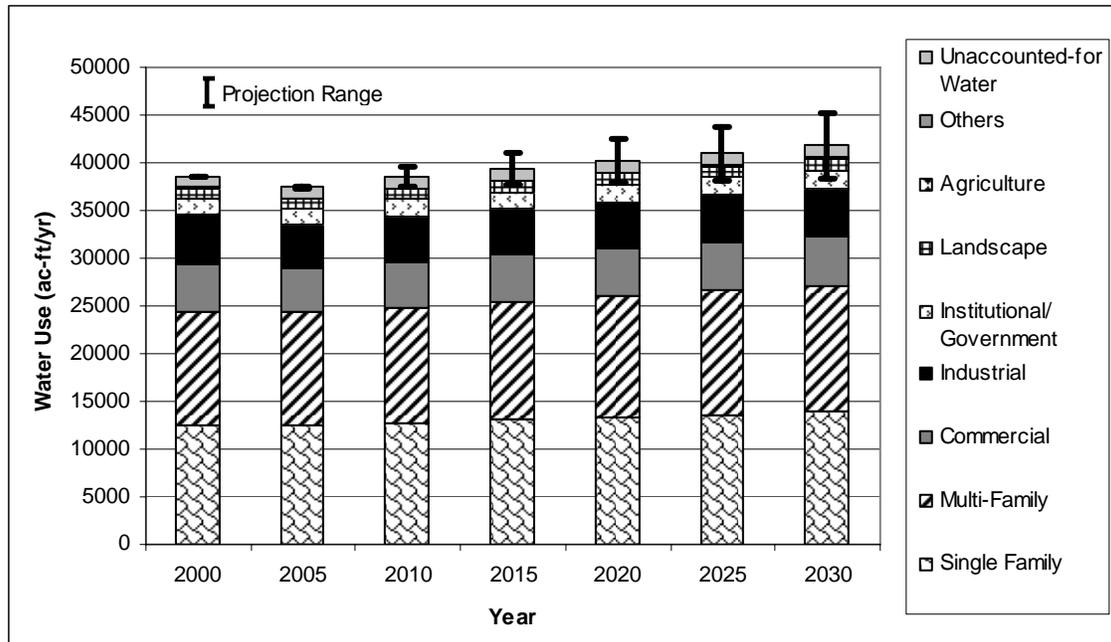


Figure 4-3. Water Use by Customer Type

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

Year	Projection Type	Accounts by Type								Total
		Single Family	Multifamily	Commercial	Industrial	Institutional/ Government	Landscape	Agriculture	Other <sup>(3)</sup>	
2000 <sup>(2)</sup>	N/A	34,496	9,798	2,979	1,079	594	121	23	59	49,149
2005	Population-Based	35,128	9,978	3,011	1,091	600	122	23	60	50,013
	Historical-Trend	34,755	9,872	3,001	1,087	598	122	23	59	49,518
2010	Population-Based	35,969	10,216	3,342	1,211	666	136	26	66	51,633
	Historical-Trend	34,968	9,932	3,020	1,094	602	123	23	60	49,821
2015	Population-Based	37,430	10,631	3,436	1,245	685	140	27	68	53,661
	Historical-Trend	35,180	9,992	3,038	1,100	606	123	23	60	50,124

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

Year	Projection Type	Accounts by Type								Total
		Single Family	Multifamily	Commercial	Industrial	Institutional/ Government	Landscape	Agriculture	Other <sup>(3)</sup>	
2020	<i>Population-Based</i>	38,920	11,055	3,524	1,276	703	143	27	70	55,718
	<i>Historical-Trend</i>	35,393	10,053	3,056	1,107	609	124	24	61	50,427
2025	<i>Population-Based</i>	40,390	11,472	3,603	1,305	718	146	28	71	57,734
	<i>Historical-Trend</i>	35,606	10,113	3,075	1,114	613	125	24	61	50,730
2030	<i>Population-Based</i>	41,861	11,890	3,674	1,331	733	149	28	73	59,738
	<i>Historical-Trend</i>	35,818	10,174	3,093	1,120	617	126	24	61	51,033

## 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 Southwest System in ac-ft/yr

Year	Projection Type	Accounts by Type								Total
		Single Family	Multifamily	Commercial	Industrial	Institutional/ Government	Landscape	Agriculture	Other <sup>(3)</sup>	
2000 <sup>(2)</sup>	N/A	12,479	11,804	5,044	5,157	1,717	1,164	82	29	37,476
2005	<i>Population-Based</i>	12,601	11,980	4,598	4,446	1,686	1,056	87	32	36,486
	<i>Historical-Trend</i>	12,468	11,853	4,583	4,431	1,680	1,053	86	32	36,186
2010	<i>Population-Based</i>	12,903	12,267	5,104	4,935	1,871	1,172	96	35	38,384
	<i>Historical-Trend</i>	12,544	11,926	4,611	4,458	1,691	1,059	87	32	36,408
2015	<i>Population-Based</i>	13,427	12,765	5,247	5,073	1,924	1,205	99	36	39,776
	<i>Historical-Trend</i>	12,620	11,998	4,639	4,485	1,701	1,066	87	32	36,629
2020	<i>Population-Based</i>	13,962	13,273	5,382	5,203	1,973	1,236	101	37	41,167
	<i>Historical-Trend</i>	12,696	12,071	4,667	4,512	1,711	1,072	88	32	36,850
2025	<i>Population-Based</i>	14,489	13,775	5,502	5,319	2,017	1,264	104	38	42,508
	<i>Historical-Trend</i>	12,773	12,143	4,696	4,540	1,721	1,079	89	33	37,072
2030	<i>Population-Based</i>	15,016	14,276	5,610	5,424	2,057	1,289	106	39	43,816
	<i>Historical-Trend</i>	12,849	12,216	4,724	4,567	1,732	1,085	89	33	37,293

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 Southwest System; therefore, Table 4-3 has intentionally been left blank.

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

<b>Water Distributed</b>	<b>2000<sup>(2)</sup></b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>
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 Southwest 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 Southwest System, from 1999 through 2004, unaccounted-for water has averaged 2.92 percent of the total production. Table 4-4 provides a summary of unaccounted-for water in the Southwest System.

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

<b>Water-Use Type</b>	<b>2000<sup>(2)</sup></b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>
Other Water Uses	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Unaccounted-for System Losses <sup>(3)</sup>	1,127	1,097	1,155	1,196	1,238	1,279	1,318
<b>Total</b>	1,127	1,097	1,155	1,196	1,238	1,279	1,318

**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 Southwest System. Although there are no other water uses contributing to the total water demand in the Southwest 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). For information regarding the status of demand reduction measures, see 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 <sup>(2)</sup>	37,476	1,127	38,603
2005	36,486	1,097	37,583
2010	38,384	1,155	39,538
2015	39,776	1,196	40,973
2020	41,167	1,238	42,406
2025	42,508	1,279	43,786
2030	43,816	1,318	45,134

### 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 the Central Basin Municipal Water District (CBMWD) and the Western Basin District Municipal Water District (WBMWD), its wholesale water suppliers for the Southwest System, as summarized in Table 4-6.

**Table 4-6**

Summary of Southwest System Data Provided to the City of Cerritos, CBMWD, and WBMWD in ac-ft/yr

<b>Wholesaler</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>
CBMWD/WBMWD	30,628	32,013	33,446	34,826	36,174

## Notes

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

# Chapter 5. Demand Management Measures

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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).*

*Section 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 GSWC past, current and future water conservation activities for the Southwest 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 <sup>(1)</sup>
8	School Education Programs <sup>(1)</sup>
9	Conservation Program for Commercial, Industrial, Institutional (CII) Accounts
10	Wholesale-Agency Assistance Programs <sup>(1)</sup>
11	Conservation Pricing <sup>(1)</sup>
12	Water Conservation Coordinator <sup>(1)</sup>
13	Water Waste Prohibition <sup>(1)</sup>
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 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 BMP 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 E. 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 Past Water Conservation Activities in the Region II CSAs

<b>Year</b>	<b>BMP 1: Residential Surveys</b>	<b>BMP 2: Residential Retrofits</b>	<b>BMP 3: Pre-Screening System Water Audit</b>	<b>BMP 5: Large Landscape Surveys</b>	<b>BMP 7: Public Information Programs</b>	<b>BMP 8: School Programs Students Reached</b>	<b>BMP 9: CII Surveys</b>	<b>BMP 14: Residential ULFT</b>
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

	<b>BMP</b>	<b>Summary of Activities</b>	<b>Coverage Implementation<sup>(2)</sup> Status</b>
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 Region II 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 <sup>(1)</sup>	Region II CSAs have 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 <sup>(1)</sup>	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 <sup>(1)</sup>	Not applicable.	Not applicable
11	Conservation Pricing <sup>(1)</sup>	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 <sup>(1)</sup>	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 <sup>(1)</sup>	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 ac-ft 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 the Basin Municipal Water District (WBMWD) and the 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 ac-ft of water saved, and the net present value (NPV) per ac-ft 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 <sup>(1)</sup>	Total Discounted Benefits <sup>(2)</sup>	Total Water Saved (ac-ft) <sup>(3)</sup>	Benefit/Cost Ratio <sup>(4)</sup>	Simple Payback Analysis (years) <sup>(5)</sup>	Discounted Cost / Water Saved (\$/ac-ft) <sup>(6)</sup>	Net Present Value / Water Saved (\$/ac-ft) <sup>(7)</sup>
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.

BMPs 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, GSWC 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 implementing water conservation measures. However, the marginal cost of water is based on purchased water from the WBMWD and 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 the 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 the opportunity for cost sharing and development of more effective conservation strategies.

GSWC obtains water from the Metropolitan Water District of Southern California (Metropolitan) through WBMWD and 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, composed of 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**

Year	BMP 1: Residential Water Surveys			BMP 3: System Audits and Repair			BMP 5: Large Landscape Conservation Programs		
	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
<b>Total</b>	<b>9,397</b>	<b>865</b>	<b>\$318,540</b>	<b>646</b>	<b>1,744</b>	<b>\$807,500</b>	<b>1,294</b>	<b>2,514</b>	<b>\$453,749</b>

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

Year	BMP 9: CII Conservation			BMP 14: Residential ULFT Replacement Program			Total		
	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

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

## *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 Southwest System. While the reliability of water supply for the Southwest 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 and West Coast basins, if implemented, will be sufficient to meet the long term needs of the Southwest 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 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 and delivered to the Metropolitan's distribution system for a period of up to 25 years. In addition, Metropolitan has 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.

The WBMWD is also involved in researching new water supplies, and sees ocean water desalination as an economically viable source of future water supply. For the past three years, WBMWD has been operating a 40,000 gallons per day (gpd) desalination pilot plant project for desalting of seawater with a goal of identifying optimal performance conditions and evaluating water quality. The data obtained from this pilot project indicate that the

treatment approach of utilizing microfiltration pretreatment and reverse osmosis provides a reliable water quality that meets all State and Federal drinking water standards.

WBMWD is planning on installing a full-scale seawater desalination plant with the capacity of 20,000 ac-ft/yr by 2011, and as a first step is currently addressing the development of a demonstration project with the Regional Water Quality Control Board and the California Coastal Commission. The demonstration project for desalting of 500,000 gpd of seawater would evaluate the water quality, performance and treatment stability, optimize operational performance utilizing full scale process equipment, and acquire the necessary data to achieve regulatory compliance and approval. In 2005, WBMWD received \$1,750,000 in-state grants administered under the Proposition 50 funds to assist in the research and construction of the demonstration project.

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

**Table 6-1**  
Summary of Opportunities for Water Desalination

<b>Source of Water</b>	<b>Yield (ac-ft/yr )</b>	<b>Start Date</b>	<b>Type of Use</b>	<b>Other</b>
Seawater (WBMWD)	20,000	2011	Potable water	N/A
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

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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 Southwest 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

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 from WBMWD and CBMWD 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 West and Central basins, 2) anticipated benefits of conjunctive use storage programs in accordance with the terms of amendments to the existing court Judgments to be developed, 3) the projected reliability of MWD water supplies purchased through WBMWD and 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

<b>Source</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2005 Average year</b>
Purchased water	36,584	36,975	37,366	36,193
Groundwater	900	900	900	900
Recycled water	490	490	490	490
<b>Total</b>	<b>37,974</b>	<b>38,365</b>	<b>38,756</b>	<b>37,583</b>

**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	<ul style="list-style-type: none"> <li>• Isolate areas that will take the longest to repair and/or present a public health threat. Arrange to provide emergency water.</li> <li>• Establish water distribution points and ration water if necessary.</li> <li>• If water service is restricted, attempt to provide potable water tankers or bottled water to the area.</li> <li>• Make arrangements to conduct bacteriological tests, in order to determine possible contamination.</li> <li>• Utilize backup power supply to operate pumps in conjunction with elevated storage.</li> </ul>
Earthquake	<ul style="list-style-type: none"> <li>• Assess the condition of the water supply system.</li> <li>• Complete the damage assessment checklist for reservoirs, water treatment plants, wells and boosters, system transmission and distribution.</li> <li>• Coordinate with OES utilities group or fire district to identify immediate fire fighting needs.</li> <li>• Isolate areas that will take the longest to repair and/or present a public health threat. Arrange to provide emergency water.</li> <li>• 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.</li> <li>• Take actions to preserve storage.</li> <li>• Determine any health hazard of the water supply and issue any “Boil Water Order” or “Unsafe Water Alert” notification to the customers, if necessary.</li> <li>• Cancel the order or alert information after completing comprehensive water quality testing.</li> <li>• Make arrangements to conduct bacteriological tests, in order to determine possible contamination.</li> </ul>
Malevolent acts	<ul style="list-style-type: none"> <li>• Assess threat or actual intentional contamination of the water system.</li> <li>• Notify local law enforcement to investigate the validity of the threat.</li> <li>• Get notification from public health officials if potential water contamination</li> <li>• Determine any health hazard of the water supply and issue any “Boil Water Order” or “Unsafe Water Alert” notification to the customers, if necessary.</li> <li>• Assess any structural damage from an intentional act.</li> <li>• Isolate areas that will take the longest to repair and or present a public health threat. Arrange to provide emergency water.</li> </ul>

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 cubic feet 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

<b>Consumption Reduction Method</b>	<b>Stage When Method Takes Effect</b>	<b>Projected Reduction Percentage</b>
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

<b>Type</b>	<b>Anticipated Revenue Reduction</b>
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

<b>Category</b>	<b>Anticipated Cost</b>
Increased staff cost	Salaries and benefits for new hires required to administer and implement water shortage program
Increased O&M <sup>(2)</sup> 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

<b>Names of Measures</b>	<b>Summary of Effects</b>
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

<b>Names of Measures</b>	<b>Summary of Effects</b>
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

<b>Mechanisms for Determining Actual Reductions</b>	<b>Type and Quality of Data Expected</b>
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

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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 Southwest System of the Golden State Water Company (GSWC).

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

<b>Participating Agencies</b>	<b>Role in Plan Development</b>
Water agencies	GSWC provides data to West Basin Municipal Water District for its use in planning a potential recycled water distribution system expansion and identifying additional recycled water customers. The West Basin Municipal Water District, 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 West Basin Municipal Water District provides a reliable supply of recycled water that meets California recycled water quality standards set forth in Title 22 of the California Code of Regulations. The wastewater originates at the City of Los Angeles' Hyperion Wastewater Treatment Plant.
Groundwater agencies	Not applicable for this CSA.
Planning agencies <sup>(2)</sup>	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 West Basin Municipal Water District, the owner and operator of the recycled water distribution network affecting the Southwest System.

## Wastewater Quantity, Quality, and Current Uses

Wastewater in the Southwest System is collected by gravity sewers and lift stations owned by the Cities of Inglewood, Hawthorne, Gardena, and Lawndale, as well as by the Sanitation Districts of Los Angeles County (LACSD). The wastewater is transported through trunk sewers to the LACSD's Joint Water Pollution Control Plant (JWPCP), in Carson, California.

The JWPCP is one of the largest wastewater treatment plants in the world and is the largest of LACSD's wastewater treatment plants. The facility provides both primary and secondary treatment for an average dry weather flow (DWF) of 320 million gallons of wastewater per day (mgd). The JWPCP has a design capacity of 385 mgd. The plant serves a population of approximately 3.5 million people throughout Los Angeles County. Prior to discharge, the treated wastewater is disinfected with hypochlorite and sent to the Pacific Ocean through a network of outfalls. These outfalls extend two miles off the coast of Southern California into the Palos Verdes Peninsula to a depth of 200 feet.

Because the JWPCP treats wastewater for a larger population than is accounted for in the Southwest System, an estimated per capita wastewater generation factor was used to calculate the volume of wastewater generated by the customers in the Southwest System. The wastewater generation factor is based on the population served and the average DWF for the JWPCP. The plant serves approximately 3.5 million residents and treats an average of 320 mgd, making the average per capita wastewater generation factor for JWPCP 91 gallons

per day (gpd). This per capita wastewater generation factor was used to estimate the wastewater generation in the Southwest System; Table 8-2 summarizes the estimates of existing and projected volumes of wastewater collected and treated in the Southwest System. In Table 8-2 the row that specifies what quantity of the effluent is treated to meet recycled water standards was left as zero because the JWPCP only provides secondary treatment.

Although LACSD promotes recycling at other plant locations, the JWPCP does not currently treat their effluent to meet recycled water standards. Therefore, 100 percent of the wastewater flow generated in the Southwest System is discharged into the Pacific Ocean through LACSD's network of outfalls (refer to Table 8-3).

Although the wastewater generated in the Southwest System is treated by LACSD and 100 percent of the wastewater flow is discharged, the Southwest System does receive recycled water that originates in the Hyperion Wastewater Treatment Plant (WWTP), owned by the City of Los Angeles, and that is provided by the West Basin Municipal Water District (WBMWD) (refer to the section on Potential and Projected Use for more information). Table 8-4 summarizes the sales of recycled water for the year 2004.

**Table 8-2**  
Existing and Projected Wastewater Collection and Treatment in Ac-ft Per (mgd)

	2000 <sup>(2,3)</sup>	2005 <sup>(3)</sup>	2010	2015	2020	2025	2030
Projected population in service area	242,702	256,159	263,009	274,248	285,336	295,955	306,138
Wastewater collected & treated in service area	24,798 (22.1)	26,173 (23.3)	26,873 (23.9)	28,021 (25.0)	29,154 (26.0)	30,239 (26.9)	31,280 (27.9)
Quantity that meets recycled water standard	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 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**  
Existing and Projected Disposal of Wastewater In ac-ft/yr (mgd)

Method of Disposal	Treatment Level	2000 <sup>(2)</sup>	2005	2010	2015	2020	2025	2030
Pacific Ocean Discharge	Secondary	24,798 (22.1)	26,173 (23.3)	26,873 (23.9)	28,021 (25.0)	29,154 (26.0)	30,239 (26.9)	31,280 (27.9)

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 Southwest System

Type of Use	Treatment Level	2004 Use (ac-ft/yr)
Landscape Irrigation	Tertiary	450

Notes  
1. This table is based on the DWR Guidebook Table 35a.

## Potential and Projected Use

The West Basin Municipal Water District (WBMWD) is the agency that acquires, controls, distributes, and sells recycled water to several cities, agencies, and customers in the greater Los Angeles area. WBMWD owns and operates the recycled water distribution infrastructure in its service area. The Southwest System currently receives recycled water from WBMWD as part of the district's West Basin Recycled Water Project (WBRWP). The WBRWP consists of collecting secondary effluent from the Hyperion Wastewater Treatment Plant and treating it to meet recycled water standards at WBMWD's West Basin Water Recycling Facility in El Segundo, California. WBMWD receives on average 24 mgd from the Hyperion WWTP for advanced treatment; however, the West Basin Water Recycling Facility has the capacity to provide even more recycled water to the region as WBMWD is contractually entitled to receive up to 70 mgd of secondary effluent from the Hyperion WWTP. The recycled water produced by WBMWD is used throughout the region for beneficial uses such as landscape irrigation, industrial applications (including cooling water and boiler feed water), and other purposes such as groundwater injections to control seawater intrusion.

WBMWD does not plan to expand its recycled water distribution networks within the boundaries of the Southwest System at this time. WBMWD owns all of the existing recycled water pipelines that fall within the boundaries of the Southwest System. The pipelines in the Southwest System are located in unincorporated areas of Los Angeles County, Inglewood, Lawndale, and Gardena. From 1999 through 2004, there were 32 existing recycled water connections located along these pipeline alignments. The average recycled water use for these 32 connections from 1999 through 2004 was 338 ac-ft/yr; during this time period, the maximum recycled water used was 450 ac-ft/yr in the year 2004. Because the recycled water use for the Southwest System has been increasing over the last five years, the maximum use (450 ac-ft/yr) is categorized as the current potential recycled water use for the Southwest System, given that this demand was met in 2004. The recycled water use for the Southwest System, from 1999 through 2004, is shown in Figure 8-1.

WBMWD has encouraged the use of recycled water wherever possible in the Southwest System in order to maximize the potential recycled water use in the system. In addition to the existing recycled water customers, WBMWD states that there is a potential to provide recycled water to the Alondra County Park and Golf Course, located on South Prairie Avenue at the intersection with Manhattan Beach Boulevard. Currently, the County of Los

Angeles Department of Parks and Recreation is a customer of GSWC and uses an average of 350 ac-ft/yr of potable water to irrigate the Alondra County Park and Golf Course. There is a potential, therefore, to convert this potable water use into an additional recycled water use for the Southwest System; thereby reducing the demand on potable water supplies.

Therefore, the total potential recycled water use for the Southwest System is the sum of the existing potential recycled water use (450 ac-ft/yr) and the additional potential recycled water use (350 ac-ft/yr), for a total use of 800 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, WBMWD reports that, although there is great potential to increase recycled water use in their service area, there are challenges and limitations in connecting customers. WBMWD 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 West Basin (WBMWD 2005). These limitations are reflected in the historical recycled water use for the Southwest System. For example, the potential recycled water use identified in the 2000 UWMP for the Southwest System in the year 2005 was 600 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 490 ac-ft/yr based on the projection of the historical trend. 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 connections for the Alondra Park and Golf Course are converted to recycled water connections, the projections of recycled water assume a continuation of the historical trend up until the 800 ac-ft/yr maximum is reached and then maintaining the 800 ac-ft/yr levels in the future (refer to Table 8-6). Finally, if and when additional customers are identified, GSWC will work with WBMWD to determine the feasibility of increasing the potential recycled water use for the Southwest System; additional potential recycled water demands will be updated in future UWMPs for the Southwest 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.

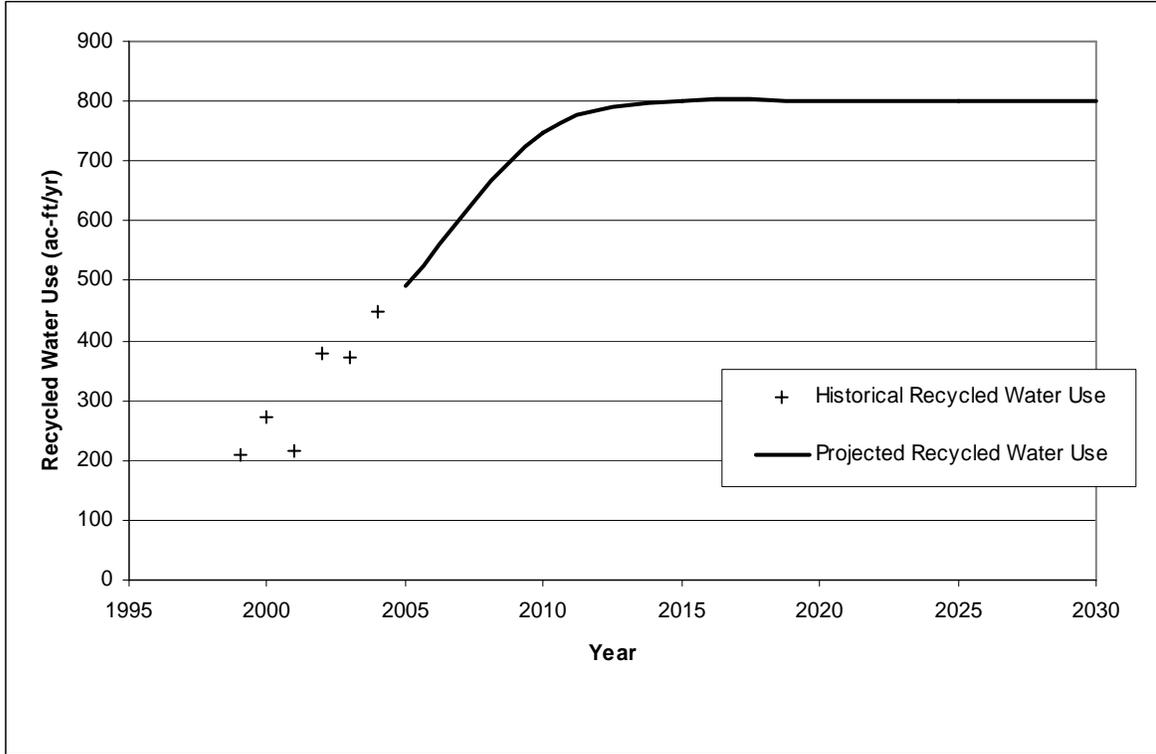


Figure 8-1. Historical and Projected Recycled Water Use in ac-ft/yr for the Southwest System

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

Type of Use	Treatment Level	2010 <sup>(2)</sup>	2015	2020	2025	2030
Landscape Irrigation	Tertiary	800	800	800	800	800

Notes

1. This table is based on the DWR Guidebook Table 35b.
2. Based on actual year.

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

Type of Use	2010 <sup>(2)</sup>	2015	2020	2025	2030
Landscape Irrigation	750	800	800	800	800

Notes

1. This table is based on the DWR Guidebook Table 36.
2. Based on actual year.

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

<b>Type of Use</b>	<b>2000 Projection for 2005</b>	<b>2005 Actual Use</b>
Landscape Irrigation (ac-ft/yr)	600	490
Notes		
1. This table is based on the DWR Guidebook Table 37.		

## Optimization and Incentives for Recycled Water Use

GSWC provides data to WBMWD 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 California Public Utilities Commission, distributes conservation materials and literature which includes a 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 Southwest System, the assumption is that the financial incentives of using recycled water account for 100 percent of the projected recycled water sales in the Southwest System.

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

<b>Actions</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>
Financial Incentives	750	800	800	800	800
Notes					
1. This table is based on the DWR Guidebook Table 38.					



# Chapter 9. Water Quality

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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
<b>Final Rules</b>		
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. ( <i>Giardia</i> and viruses)	Rule final 1989
TCR	Total coliforms, fecal coliforms, <i>E. coli</i>	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. ( <i>Cryptosporidium</i> )	Rule final 1998
Radionuclides	Radionuclides (other than Radon)	Rule final 2000
Arsenic <sup>1</sup>	Arsenic	Rule final 2001, new MCL of 10 µg/L effective January 23, 2006
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 <sup>1</sup>	No less than 5 Contaminants	Decision to regulate in 2001, revised DWCCCL in 2003 and every 5 years thereafter
<b>Proposed Rules</b>		
LT2ESWTR <sup>1</sup>	Revision of IESWTR to control <i>Cryptosporidium</i>	Proposed August 2003, missed May 2002 SDWA deadline. Final rule expected 2005
D/DBP Rule Stage 2 <sup>1</sup>	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 <sup>1</sup>	Virus, groundwater disinfection	Proposed May 2000, missed May 2002 SDWA deadline. Final rule expected 2005
<b>Future Rules</b>		
Radon <sup>1</sup>	Radon	Proposed November 1999, EPA has not indicated a final schedule for promulgation
TCR Revisions <sup>1</sup>	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

<b>Parameter</b>	<b>mg/L (except as noted)</b>
<b>Inorganic Contaminants</b>	
	<b>MCL</b>
Antimony	0.006
Arsenic <sup>1</sup>	0.05
Asbestos	7 x 10 <sup>6</sup> 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
Nitrate plus Nitrite (both as N)	10
Selenium	0.05
Thallium	0.002
<b>Inorganic Contaminants</b>	
	<b>Treatment Technique</b>
Copper	1.3 (Action Level)
Lead	0.015 (Action Level)
<b>Organic Contaminants</b>	
	<b>MCL</b>
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

Table 9-2  
Current Federal Drinking Water Standards

Parameter	mg/L (except as noted)
Dichloromethane	0.005
1,2-Dichloropropane	0.005
Dinoseb	0.007
Diquat	0.02
Endothall	0.1
Endrin <sup>h</sup>	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
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)	$5 \times 10^{-8}$
Tetrachloroethylene	0.005
Toluene	1
Toxaphene (revised) <sup>f</sup>	0.003
2,4,5-TP (silvex)	0.05
1,2,4-Trichlorobenzene	0.07
1,1,1-Trichloroethane	0.20
1,1,2-Trichloroethane	0.005
Trichloroethylene	0.005
Trihalomethanes (sum of 4 [TTHM])	0.080
Vinyl Chloride	0.002
Xylenes (total)	10
<b>Organic Contaminants</b>	<b>Treatment Technique</b>
Acrylamide	Restrictions in polymer use
Epichlorohydrin	Restrictions in material use
<b>Microorganisms</b>	<b>Standard</b>
<i>Cryptosporidium</i>	Treatment Tech (99% removal/inactivation)
<i>Escherichia coli</i>	Treatment Tech (0 cfu/100 mL)

Table 9-2  
Current Federal Drinking Water Standards

<b>Parameter</b>	<b>mg/L (except as noted)</b>
Fecal Coliforms	Treatment Technique (0 cfu/100 mL)
<i>Giardia lamblia</i>	Treatment Tech (99.9% removal/inactivation)
Heterotrophic Bacteria	Treatment Tech (500 cfu/mL at end of distribution system or measurable chlorine residual)
<i>Legionella</i>	Treatment Tech
Total Coliforms	5% (presence/absence)
Turbidity	Performance Std (0.3 NTU, 95%)
Viruses	Treatment Tech (99.99% removal/inactivation)
<b>Radionuclides</b>	<b>MCL</b>
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

<b>Parameter</b>	<b>mg/L (except as noted)</b>		
<b>Contaminants</b>	<b>SMCL or SMCL Ranges</b>		
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		
	<b>Recommended</b>	<b>Upper</b>	<b>Short Term</b>
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 *Escherichia 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 (°C). The total coliform group includes several genera of bacteria belonging to the family Enterobacteriaceae. 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<sub>10</sub>). T<sub>10</sub> 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 <i>Cryptosporidium</i> Concentration	Additional treatment requirements for systems with conventional treatment that are in full compliance with the IESWTR
1	<i>Cryptosporidium</i> <0.075/L	No Action
2	$0.075/L \leq \textit{Cryptosporidium} < 1.0/L$	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	$1.0/L \leq \textit{Cryptosporidium} < 3.0/L$	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	<i>Cryptosporidium</i> $\geq 3.0/L$	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)

APPROACH	Potential Log Credit			
	0.5	1	2	>2.5
<b>Watershed Control</b>				
Watershed Control Program (1)	X			
Reduction in oocyst concentration (3)		As Measured		
Reduction in viable oocyst concentration (3)		As Measured		
<b>Alternative Source</b>				
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		
<b>Pretreatment</b>				
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	-----▶	
<b>Improved Treatment</b>				
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	

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

APPROACH	Potential Log Credit			
	0.5	1	2	>2.5
<b>Improved Disinfection</b>				
Chlorine Dioxide (2)	X	X		
Ozone (2)	X	X	X	
UV (2)				X
<b>Peer Review/Other Demo./Validation or System Performance</b>				
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 <i>Cryptosporidium</i> 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:

1. Source water TOC is less than 2.0 mg/L.
2. Treated water TOC is less than 2.0 mg/L.
3. Source water TOC < 4.0 mg/L, raw water alkalinity > 60 mg/L as CaCO<sub>3</sub>, distribution system TTHM and HAA5 concentrations are less than or equal to 40 mg/L and 30 mg/L, respectively.
4. 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.
5. Source-water-specific ultraviolet absorbance (SUVA) is less than 2.0 L/mg-m. SUVA is calculated by dividing UV absorbance (m<sup>-1</sup>) at 254 nm by the concentration (mg/L) of dissolved organic carbon (DOC).
6. 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 TOC mg/L	Source Water Alkalinity , mg/L as CaCO <sub>3</sub>		
	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 <sub>3</sub>	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.

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:

1. Return of all recycle flows prior to the point of the primary coagulant addition.
2. Direct filtration plants to provide information to the state on their current recycle practice.
3. 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 90<sup>th</sup> percentile of all samples.
- Copper concentration of 1.3 mg/L detected in the 90<sup>th</sup> 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 micrograms per liter (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.



- 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)

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### Microbiological Contaminants

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Adenoviruses

Aeromonas hydrophila

Caliciviruses

Coxsackieviruses

Cyanobacteria (blue-green algae), other freshwater algae, and their toxins

Echoviruses

Helicobacter pylori

**Table 9-11**  
Contaminant Candidate List (CCL)

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Microsporidia (Enterocytozoon & Septata)

Mycobacterium avium intracellulare (MAC)

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**Chemical Contaminants**

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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

DCPA mono-acid degradate

DCPA di-acid degradate

DDE

Diazinon

Disulfoton

Diuron

EPTC (s-ethyl-dipropylthiocarbamate)

Fonofos

p-Isopropyltoluene (p-cymene)

Linuron

Methyl bromide

**Table 9-11**  
Contaminant Candidate List (CCL)

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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

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## Water Quality Issues

The Southwest System is located in the southwest portion of Los Angeles County, serving the Cities of Lawndale and Gardena, portions of the Cities of Hawthorne, Inglewood, Compton, Carson, and the following unincorporated areas of Los Angeles County: Lennox, Athens, and Del Aire.

The Southwest System currently serves an estimated population of 167,485 people through 50,753 service connections. The Southwest System currently meets the demand of the entire system with their existing sources and purchased treated water from the Metropolitan Water District of Southern California (Metropolitan) through the West and Central Basins.

Approximately 66 percent of the 41.5 million gallon per day (mgd) water supply is purchased from Metropolitan. The remaining 34 percent of the water is obtained from 13 local groundwater wells.

### Surface Water Quality

Surface water served in the Southwest System is Metropolitan treated water received through 12 active interconnections. Water has to meet all drinking water standards as it leaves the treatment plant, but may not at the inter-connection. While it is assumed that Metropolitan will be responsible for any required water treatment, this may not be the case for parameters monitored within the distribution system, such as disinfectant by products or alternative disinfectants from future D/DBP Regulations.

### Groundwater Quality

Six wells within the Southwest District are affected by Manganese (Mn) which originates from leaching of natural deposits. In order to address the Mn issue, two out of the six wells

affected have existing treatment processes and it is planned to install new treatment processes for the remaining four wells. The average level of Mn in the Southwest District is 22 µg/L with a range of detection of <1 - 58 µg/L.

Hydrogen Sulfide (H<sub>2</sub>S) is another contaminant of concern within the Southwest District. Five wells in the water system are affected by naturally occurring H<sub>2</sub>S. This contaminant is addressed by aeration processes or free chlorination.

Iron (Fe) levels are very closely monitored in the Southwest District; the average level of Fe is <40 µg/L with a range of detection of <40 - 190 µg/L. If not treated properly, Iron in combination with Manganese can cause such problems as “red water” or increase the proliferation of iron-bacteria.

Boron and Vanadium are two contaminants listed on the CCL Table 9-11 and were found to exist in 12 wells within the Southwest District. Boron and Vanadium are unregulated contaminants that require monitoring for development of analytical methods for detection, determination of whether they occur in drinking water and evaluation of 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 typical source of Boron can be runoff or leaching from natural deposits or it is a byproduct of industrial wastes. The average level of Boron in the Southwest District is 149 µg/L with a range of detection of 100-320 µg/L. Moreover, Vanadium is naturally occurring in the environment and is also found to be a byproduct of industrial wastes. The average level of Vanadium found in the Southwest district is <1 µg/L with a range of detection of <1 - 2.3 µg/L.

Radon is also a contaminant of concern in the Southwest District. Radon can be found in groundwater and soil in a gaseous form that originates from the natural decay of radioactive material. It has been established that Radon is a carcinogen and breathing air containing Radon can lead to lung cancer. Furthermore, drinking water that contains Radon may increase the risk of stomach cancer. The average level of Radon in the water system is 125 pCi/L with a range of detection of <1 - 326 pCi/L.

Table 9-12 summarizes water quality issues and recommendations for wells within the Southwest System.

Table 9-12  
Summary of Assessment

Well	Capacity (gpm)	Status	Water Quality Issue/Concern	Existing Treatment	Recommendations
129 <sup>th</sup> St. Well 02	1,100	Active	None	None	
Ballona Well 04	1,000	Active	None	None	
Ballona Well 05	1,000	Pending	None	None	
Belhaven Well 03	800	Active	None	None	
Belhaven Well 04	1,000	Pending	None	None	

Table 9-12  
Summary of Assessment

Well	Capacity (gpm)	Status	Water Quality Issue/Concern	Existing Treatment	Recommendations
129 <sup>th</sup> St. Well 02	1,100	Active	None	None	
Ballona Well 04	1,000	Active	None	None	
Compton-Doty Well	400	Active	None	None	
Dalton Well 01	400	Active	None	None	
Doty Well 01	1,000	Active	H <sub>2</sub> S, Mn	Aeration for H <sub>2</sub> S removal	Plans to install Mn treatment system in the future
Doty Well 02	700	Active	H <sub>2</sub> S, Mn	Aeration	Plans to install Mn treatment system in the future
Goldmedal Well 01	1,200	Active	Mn	Dual media filter for Mn removal	
Southern Well 05	900	Active	Mn	None	Plans to install Mn treatment system in 2006
Southern Well 06	800	Active	Mn	None	Continue monitoring and possibly install Mn treatment system in the future
Truro Well 04	700	Active	H <sub>2</sub> S, Mn	Aeration for H <sub>2</sub> S removal and dual media filter for Mn removal	
Yukon Well 04	1,200	Active	H <sub>2</sub> S	Free chlorination for H <sub>2</sub> S removal	
Yukon Well 05	1,100	Active	H <sub>2</sub> S	Free chlorination for H <sub>2</sub> S removal	

## Projected Impact of Water Quality

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

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

Water Source	Projected Change (percent)					
	2005	2010	2015	2020	2025	2030
129 <sup>th</sup> St. Well 02	0	0	0	0	0	0
Ballona Well 04	0	0	0	0	0	0
Ballona Well 05	0	0	0	0	0	0
Belhaven Well 03	0	0	0	0	0	0
Belhaven Well 04	0	0	0	0	0	0
Compton-Doty Well	0	0	0	0	0	0
Dalton Well 01	0	0	0	0	0	0
Doty Well 01	0	0	0	0	0	0
Doty Well 02	0	0	0	0	0	0
Goldmedal Well 01	0	0	0	0	0	0
Southern Well 05	0	0	0	0	0	0
Southern Well 06	0	0	0	0	0	0
Truro Well 04	0	0	0	0	0	0
Yukon Well 04	0	0	0	0	0	0
Yukon Well 05	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 Southwest 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 will 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 Southwest System utilizes an approved Sample Siting Plan for the collection, recording, and reporting of all bacteriological analyses.

The Southwest System has also established a cross-connection control program to reduce the hazard associated with backflow and back-siphonage. These programs are required to comply with DOHS regulations on Waterworks Standards and Cross Connection Control.

Southwest System's distribution system consists of approximately 410 miles of water distribution pipelines. There are 10 active storage reservoirs with a total storage capacity of approximately 11.2 MG and 24 booster stations delivering water between three pressure gradients with hydraulic grade lines of 250' (Gardena/Lawndale gradient), 310' (Dominguez Hills gradient), and 350' (Normandie gradient).

Due to a large amount of unlined cast iron and steel pipe (approximately 53 percent) of the entire 410 miles of pipes distribution system (which were installed during 1930's to 50's), there is a substantial chlorine demand and many customer complaints of taste and odor, color, and particles. As a result, the Southwest System has implemented a comprehensive flushing program to improve the water quality in these problematic areas due to the pipe corrosion. However, in search of a less labor intensive and costly solution other than solely relying on flushing, the Southwest System decided to use polyphosphate based corrosion inhibitors on improving chlorine residuals, and water quality in the distribution system. The purpose of SeaQuest addition is to control corrosion in distribution pipelines.

### Nitrification in the Distribution System

Sodium hypochlorite and ammonia are currently added at a 5:1 ratio at the well's discharge for chloramination to form total chlorine residual to enter the distribution system. The purpose of this is to create the desired monochloramine residual consistent with the imported Metropolitan water and matching the residual of the distribution system.

Currently, the District is (still) experiencing some water quality degradation problems, which are related to the nitrification process that is taking place in isolated parts of the distribution system. The nitrification process in the distribution system is identified by loss of disinfection residuals, low ammonia levels, increased nitrite levels, and customer complaints due to taste, color, odor and particles in the water.

Nitrification is a process by which ammonia is oxidized to nitrite and then to nitrate. The oxidation process is accomplished by ammonia-oxidizing bacteria (AOB) and nitrite-oxidizing bacteria (NOB). The main AOB organisms are *Nitrosomonas*, *Nitrosolobus*, *Nitrosococcus* and *Nitrospira* and the NOB organism is *Nitrobacter*.

Nitrification in the District occurs due to the following factors:

**Distribution System Pipes.** The majority of the distribution system pipes are old cast-iron pipes that were installed in the 1930's, 40's and 50's. Over the years these pipes have corroded and accumulated sediments and biofilm. The environment in the pipelines provides ideal conditions for nitrification and nitrifying bacteria regrowth.

**Distribution System Hydraulics.** The distribution system is divided into three pressure gradients with hydraulic grade lines of 250', 310', and 350'. Most of the nitrification areas are located in the Lawndale-Gardena zone, which is the largest zone. Due to the size of the hydraulic zones, the detention time in the system can be up to three days and even longer during the winter period. The long detention time allows for the nitrifying bacteria to grow (takes about two days) and multiply.

**Total Chlorine Residual.** Total chlorine residuals at the Metropolitan connections usually varies from 2.0 to 2.5 mg/L. However, chlorine demand from corroded pipes lined with

biofilm and sediments will contribute to the reduction in residual. Nitrification and other bacterial activity also contribute to the decline in chlorine residual levels and, as the levels drop, the bacterial activity increases.

**Chlorine to Ammonia Ratio.** The optimal Cl:N ratio to control nitrification is 5:1. In the distribution system this ratio varied from 1:1 to 4:1. The ratio is low due to chlorine degradation in the distribution system and the long detention time. That degradation also results in high levels of available ammonia which is used by the AOB organisms as a food source.

**Temperature.** The temperature in the distribution system varies from about 50°F to 80°F based on the season. The ideal temperature range for nitrification is 77°F to 86°F; however, nitrification can occur with a temperatures as low as 50°F. Temperatures in some parts of the distribution system are ideal for nitrification especially when combined with long detention times.

## Emerging Water Quality Issues

There are a few emerging water quality issues that may have some impacts to the system.

**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 of 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 have been collected to test for perchlorate and the results are ND 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 a 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. Neither total chromium nor chromium-6 was detected at the groundwater source. Total chromium and chromium 6 were non-detectable in the surface water source.

**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 upon taste and odor concerns.

All source samples 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 negligible.

MTBE has not been detected in the sources serving the water system to date. However, this could change in time as known leaking storage tanks and other MTBE plumes 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 (ng/L) 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.

**1,4-Dioxane.** 1,4-Dioxane is a manmade compound primarily used as an industrial solvent or solvent stabilizer that prevents the breakdown of chlorinated solvents during manufacturing processes. Industrial solvents are used in degreasing, electronics, metal finishing, fabric cleaning, pharmaceuticals, herbicides and pesticides, antifreeze, paper manufacturing and many other applications.

All source samples have been collected to test for 1,4-Dioxane and the results are ND for all the wells. Since there are no known sources of the contaminant in the area, the impact of 1,4-Dioxane 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: automobile-gas stations, metal plating/finishing/fabricating, dry cleaners, plastics/synthetics producers, underground storage tanks-confirmed leaking tanks, automobile-body shops, photo processing/printing, sewer collection systems, chemical/petroleum processing/storage, automobile-repair shops, electrical electronic manufacturing, furniture repair/manufacturing, machine shops, other animal operations, landfills/dumps, historic gas stations, septic systems-high density.

**Other Contaminants.** Mn, H<sub>2</sub>S and Fe are the primary concerns of the groundwater quality in the Southwest District. Any proposed treatments have to address all the related water quality issues.

**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

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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 Southwest System for a normal water year, a single-dry year, and multiple-dry years. The water supply sources and the reliability of supplies are discussed in Chapter 3. Water demand projections are documented in Chapter 4. Following is a summary of the water supply sources and reliability of those sources for the Southwest System.

The Southwest System currently gets its water supply from local groundwater wells and imported and recycled water from WBMWD and CBMWD. Groundwater provides about 21 percent of the available supply, whereas imported surface water and recycled water makes up about 77 and 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 West and Central basins, 2) anticipated benefits of conjunctive use storage programs in accordance with the terms of amendments to the existing court Judgments to be developed, 3) the projected reliability of MWD water supplies purchased through WBMWD and CBMWD, which expects 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 West and Central basins have 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 WBMWD’s and CBMWD’s 2005 UWMP for details of their proposed water supply development projects. Groundwater from the West and 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 West and 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

	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>
Total Water Supply (ac-ft/yr )	39,538	40,973	42,406	43,786	45,134
Percent of Year 2005	105	109	113	117	120
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

	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>
Total Water Demand (ac-ft/yr )	39,538	40,973	42,406	43,786	45,134
Percent of Year 2005	105	109	113	117	120
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, groundwater,

imported water, and recycled water 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

	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>
Water Supply Total (ac-ft/yr )	39,538	40,973	42,406	43,786	45,134
Water Demand Total (ac-ft/yr )	39,538	40,973	42,406	43,786	45,134
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, WBMWD, 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 Southwest 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, local groundwater, and recycled water from WBMWD 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

	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>
Water Supply(ac-ft/yr )	39,538	40,973	42,406	43,786	45,134
Percent of Year 2005	105	109	113	117	120

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

	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>
Water Demand(ac-ft/yr )	39,538	40,973	42,406	43,786	45,134
Percent of Year 2005	105	109	113	117	120
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 Southwest System in a single dry-year. WBMWD and CBMWD have 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 capacities to deliver imported water from WBMWD and CBMWD are 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

	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>
Supply Total (ac-ft/yr )	39,538	40,973	42,406	43,786	45,134
Demand Total (ac-ft/yr )	39,538	40,973	42,406	43,786	45,134
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 will 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. WBMWD and CBMWD have 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 1) WBMWD and CBMWD have determined that they can meet their projected water demands for the multiple dry-year periods (discussed in Chapter 3); 2) Groundwater from the West and Central Basin is expected to be 100 percent reliable in multiple dry-years; and 3) 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 capacities to deliver imported water from WBMWD and CBMWD 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, WBMWD, and CBMWD have implemented and will implement projects to ensure the imported water demands can be met under normal, single dry-year, and multiple dry-years.

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

<b>Year</b>	<b>Supply (ac-ft/yr )</b>	<b>Demand (ac-ft/yr )</b>	<b>Difference</b>	<b>Difference as Percent of Supply</b>	<b>Difference as Percent of Demand</b>
2006					
2007					
2008	39,538	39,538	0	0	0
2009	39,538	39,538	0	0	0
2010	39,538	39,538	0	0	0
2011					
2012					
2013	40,973	40,973	0	0	0
2014	40,973	40,973	0	0	0
2015	40,973	40,973	0	0	0
2016					
2017					
2018	42,406	42,406	0	0	0
2019	42,406	42,406	0	0	0
2020	42,406	42,406	0	0	0
2021					

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

<b>Year</b>	<b>Supply (ac-ft/yr )</b>	<b>Demand (ac-ft/yr )</b>	<b>Difference</b>	<b>Difference as Percent of Supply</b>	<b>Difference as Percent of Demand</b>
2022					
2023	43,786	43,786	0	0	0
2024	43,786	43,786	0	0	0
2025	43,786	43,786	0	0	0
2026					
2027					
2028	45,134	45,134	0	0	0
2029	45,134	45,134	0	0	0
2030	45,134	45,134	0	0	0

Notes

1. This assessment is based on the 3-year multiple-dry year period ending in 2010, 2015, 2020, 2025, and 2030
2. Table format based on DWR Guidance Document Tables 47 through 57

# Chapter 11. References

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California Department of Water Resources (DWR). 2005. *Guidebook to Assist Water Suppliers in the Preparation of a 2005 Urban Water Management Plan*. January 18.

\_\_\_\_\_. *California's Groundwater: Bulletin 118-2003*.

\_\_\_\_\_. 1961. *Planned Utilization of the Ground Water Basins of the Coastal Plain of Los Angeles County*. Bulletin No. 104.

California Urban Water Management Council (Council). 2004. *Memorandum of Understanding Regarding Urban Water Conservation in California*. As Amended March 10.

Southern California Association of Governments (SCAG) Projections. 2004. *Growth Forecast*. [http://www.scag.ca.gov/rtp2004/2004draft/techappendix/Appendix\\_A\\_final.pdf](http://www.scag.ca.gov/rtp2004/2004draft/techappendix/Appendix_A_final.pdf)



**Appendix A**  
**Urban Water Management Planning Act**

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**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**

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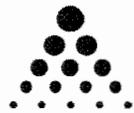


## Notice of Public Hearing

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 Thursday, November 17, at 7:00 p.m. at the Nakaoka Community Center, 1670 W. 162nd Street, Gardena, to solicit comments on the Urban Water Management Plan (UWMP) for the Southwest Water System. The UWMP is available for public review prior to the public hearing and can be reviewed during normal business hours at the Customer Service Offices located at the following locations:

Southwest Customer Service Office  
Golden State Water Company  
17140 So. Avalon Blvd. #100  
Carson, CA 90746

Torrance Customer Service Office  
Golden State Water Company  
18236 So. Prairie  
Torrance, CA 90504



**Golden State**  
**Water Company**

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# Daily Breeze

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## PROOF OF PUBLICATION (201 5.5 C.C.P.)

STATE OF CALIFORNIA

County of Los Angeles.

I am a citizen of the United States and a resident of the County aforesaid. I am over the age of eighteen years, and not a party to or interested in the above-entitled matter. I am the principal clerk of the printer of the THE DAILY BREEZE

a newspaper of general circulation, printed and published

in the City of Torrance County of Los Angeles, and which newspaper has been adjudged a newspaper of general circulation by the Superior Court of County of Los Angeles, State of California, under the date of \_\_\_\_\_

Case Number June 10, 1974  
SWC7145

that the notice, of which the annexed is a printed copy (set in type not smaller than nonpareil), has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates: to-wit

Oct. 27, Nov. 3

all in the year 2005  
I certify (or declare) under penalty of perjury that the foregoing is true and correct.  
Dated at Torrance

California, this 3 Day of Nov. 2005

Signature

Batch	
Voucher	
Vendor	
Account	
Subledger	
Accv/Exv/Appt	
Verified	

This space is for the County Clerk's Filing Stamp

*Handwritten initials*

Proof of Publication of

DB

DB 10-181

### NOTICE OF PUBLIC HEARING

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Golden State Water Company	Golden State Water Company
17140 So. Avalon Blvd., #100	18236 So. Prairie
Carson, CA 90746	Torrance, CA 90504



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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

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**Question from Department of Water Resources, December 15, 2005:**

**Southwest System**

- Comment regarding tables on pages 17-18, on projected supply during multiple dry year periods ending in 2010, 2015, 2020, 2025, 2030

*DWR recommendation: Add a footnote to these tables stating that the projected water supply during multiple dry year periods has been based on a 3-year multiple dry year period.*

**Golden State Water Company Response:**

Footnote was added to tables, indicating that the projected water supply during multiple dry year periods has been based on a 3-year multiple dry year period.



**Appendix D**  
**Economic Analysis of Selected**  
**Demand Management Measures**

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**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**

<b>BMP 2 – Residential Plumbing Retrofit</b>
<p><b>Assumptions:</b></p> <p>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).</p> <p>MOU, page 19.</p> <p>2. 27% of single-family and 27% of multi-family residences have low-water-use fixtures.</p> <p>Based on GSWC data</p> <p>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).</p> <p>4. Water savings from one low-flow showerhead = 5.5 gpd  A &amp; N Technical Services report (2003, page 2-38).</p> <p>5. Water savings from one faucet aerator = 1.5 gpd  A &amp; N Technical Services report (2003, page 2-38).</p> <p>6. Water savings from one toilet flapper = 8 gpd; assume 20 percent of toilets leak.  A &amp; N Technical Services report (2003, page 2-38).</p> <p>7. Water savings from kitchen “flip” faucet aerator = 3.0 gpd.  Based on GSWC data.</p> <p>8. Indoor water savings = 17.8 gpd/unit  We used the following equation to calculate indoor water savings, based on assumptions 4 through 8:  <math>(1.4*5.5) + (1.0*3.0) + (2.6*1.5) + (2.0*8*0.20)</math>.</p> <p>9. The BMP will cost an average of \$48 per residence.  Based on information provided by GSWC.</p> <p>10. The life span of the retrofit devices is four years.  A &amp; 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.</p> <p>11. Base year dwelling units include 73,225 single-family and 56,616 multi-family units</p>

**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 to 15 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 (ET<sub>o</sub>), 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 to 10% 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

Calendar Year	Water Saving Calculations							Benefits (\$)					Costs (\$)				New present Value		
	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 Indoor 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
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																			
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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	Benefit cost ratio =	1.4
Discount rate (real) =	6.71%	Simple pay-back period (years) =	4
Indoor water savings (gpd/unit) =	4.1	Discounted cost/water saved (\$acre-feet) =	368
Outdoor water savings =	15%	NPV/ water saved (acre-feet) =	132
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		

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

Calendar Year	Water Saving Calculations						Benefits (\$)					Costs (\$)					New present Value
	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	
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			Value of conserved water (\$/ac-ft) = 546				Benefit cost ratio = 0.9			
Year	Single-Family	Multi-Family	Discount rate (real) = 6.71%				Simple pay-back period (years) = 15			
Year	Single-Family	Multi-Family	Water savings (gpd/unit) = 17.8				Discounted cost/water saved (\$acre-feet) = 462			
Pre-2005	27%	27%	Conservation measure unit cost (\$) = 48				NPV/ water saved (acre-feet) = -66			
Annual Replacement			Percent units receiving retrofits = 5%							
2006	5%	5%	1991 Single family units = 73,225							
2007	5%	5%	1991 Multi-family units = 56,616							
2008	5%	5%	Life span of retrofit devices (years) = 4							
2009	5%	5%	Energy savings (\$/ac-ft) = 22							
2010	5%	5%								
2011	5%	5%								
2012	5%	5%								
2013	5%	5%								
2014	5%	5%								
2015	3%	3%								
2016	0%	0%								

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

Calendar Year	Water Savings		Benefits (\$)					Costs (\$)					New present Value
	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	
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
<p>Value of conserved water (\$/ac-ft) = 546            Discount rate (real) = 6.71%            Annual water savings (ac-ft/mile) = 0.6            Conservation measure 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</p> <p style="text-align: right;">Benefit cost ratio = 1.6            Simple pay-back period (years) = 8            Discounted cost/water saved (\$acre-feet) = 185            NPV/ water saved (acre-feet) = 113</p>													

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

Calendar Year	Water Saving Calculations						Benefits					Costs					Net Present Value
	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	
2005	0	0	0.00%	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	
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	
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	
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	
2010		662	0.75%	50	4	324	\$0	\$7,123	\$176,768	\$183,891	\$132,903	\$0	\$0	\$7,449	\$7,449	\$5,383	
2011		662	0.75%	50	4	26	\$0	\$578	\$14,348	\$14,926	\$10,109	\$0	\$0	\$7,449	\$7,449	\$5,045	
2012		662	0.00%	0	0	17	\$0	\$369	\$9,167	\$9,536	\$6,053	\$0	\$0	\$0	\$0	\$0	
2013		662	0.00%	0	0	7	\$0	\$161	\$3,986	\$4,146	\$2,466	\$0	\$0	\$0	\$0	\$0	
2014		662	0.00%	0	0	4	\$0	\$80	\$1,993	\$2,073	\$1,156	\$0	\$0	\$0	\$0	\$0	
2015																	
2016																	
2017																	
2018																	
2019																	
2020																	
2021																	
2022																	
2023																	
2024																	
2025																	
2026																	
2027																	
2028																	
2029																	
2030																	
<b>Totals:</b>	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

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
<b>TOTAL</b>			<b>153</b>

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

Calendar Year	Percent Surveyed	Commercial Interventions	Industrial Interventions	Institutional Interventions	Incremental Savings (Surveys) (ac-ft/yr)	Annual Savings Total (ac-ft/yr)	Benefits (\$)					Costs (\$)					Net Present Value		
							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			
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	\$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	\$277,298	\$161,441	
2008						824.3	\$0	\$18,134	\$450,045	\$468,179	\$411,151	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$411,151
2009						824.3	\$0	\$18,134	\$450,045	\$468,179	\$385,297	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$385,297
2010						412.1	\$0	\$9,067	\$225,022	\$234,089	\$180,535	\$0	\$0	\$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	\$573,203	\$1,076,608	

Credit for Previously Completed Surveys			
	Commercial	Industrial	Institutional
Total	4	3	4

Value of conserved water (\$/ac-ft) =	546	Benefit cost ratio =	2.88
Discount rate (real) =	6.71%	Simple pay-back period (years) =	2
Annual survey - Annual water savings (ac-ft/unit) =	0.83	Discounted cost/water saved (\$/acre-foot) =	174
Annual survey - Conservation measure unit cost (\$) =	600	NPV/ water saved (acre-foot) =	327
Consultant survey - Annual water savings (ac-ft/unit) =	2.1		
Consultant survey - Conservation measure unit cost (\$) =	1,500		
Number of commercial 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		

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 Retrofitted	SF Toilets Naturally Retrofitted	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
<b>Totals</b>		<b>38,898</b>	<b>73,907</b>	<b>1,777</b>		<b>26,874</b>		<b>57,108</b>	<b>108,505</b>	<b>2,610</b>	<b>861</b>
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							
<b>Total</b>	<b>18636</b>	<b>9800</b>	<b>846</b>	<b>6378</b>							

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

Calendar Year	Determination of Water Conservation Goal: Multi-Family Units											Conservation Goal - Combined	
	Multi-Family Units	MF Units Naturally Retrofitted	MF Toilets Naturally Retrofitted	Water Savings from Natural Replacement MF (ac-ft/yr)	Multi-Family Units	MF Units Naturally Retrofitted	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 from Turnover (ac-ft/yr)	Cummulative Water Savings from Turnover (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)

Calendar Year	Water Savings							Benefits (\$)					Costs (\$)					Net Present Value
	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	
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	0	42,873	1,064,032	1,106,905	749,686	0	0	0	0	0	749,686
2012						1949	20866	0	42,873	1,064,032	1,106,905	702,545	0	0	0	0	0	702,545
2013						1949	22814	0	42,873	1,064,032	1,106,905	658,369	0	0	0	0	0	658,369
2014						1949	24763	0	42,873	1,064,032	1,106,905	616,970	0	0	0	0	0	616,970
2015						1949	26712	0	42,873	1,064,032	1,106,905	578,175	0	0	0	0	0	578,175
2016						1949	28661	0	42,873	1,064,032	1,106,905	541,819	0	0	0	0	0	541,819
2017						1949	30609	0	42,873	1,064,032	1,106,905	507,749	0	0	0	0	0	507,749
2018						1949	32558	0	42,873	1,064,032	1,106,905	475,821	0	0	0	0	0	475,821
2019						1949	34507	0	42,873	1,064,032	1,106,905	445,901	0	0	0	0	0	445,901
2020						1949	36456	0	42,873	1,064,032	1,106,905	417,862	0	0	0	0	0	417,862
2021						1949	38404	0	42,873	1,064,032	1,106,905	391,587	0	0	0	0	0	391,587
2022						1949	40353	0	42,873	1,064,032	1,106,905	366,964	0	0	0	0	0	366,964
2023						1949	42302	0	42,873	1,064,032	1,106,905	343,889	0	0	0	0	0	343,889
2024						1949	44251	0	42,873	1,064,032	1,106,905	322,265	0	0	0	0	0	322,265
2025						1949	46200	0	42,873	1,064,032	1,106,905	302,001	0	0	0	0	0	302,001
2026						1949	48148	0	42,873	1,064,032	1,106,905	283,011	0	0	0	0	0	283,011
2027						1949	50097	0	42,873	1,064,032	1,106,905	265,215	0	0	0	0	0	265,215
2028						1949	52046	0	42,873	1,064,032	1,106,905	248,538	0	0	0	0	0	248,538
2029						1949	53995	0	42,873	1,064,032	1,106,905	232,910	0	0	0	0	0	232,910
2030						1949	55943	0	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
<p>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</p> <p style="text-align: right;">Benefit cost ratio = 3.5                  Simple pay-back period (years) = 9                  Discounted cost/water saved (\$/acre-foot) = 99                  NPV/ water saved (acre-foot) = 245</p>																		

**Table D-3 Definitions of Terms Used in the Economic Analysis**

<b>Term</b>	<b>Definition</b>	<b>Comments</b>
<b>Benefits:</b>		
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.
<b>Costs:</b>		
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.
<b>Results:</b>		
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**

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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 03/01/2005 2004**  
**- Metro District**

**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
<b>Total</b>	<b>100005</b>	<b>71096</b>	<b>0</b>	<b>0</b>
	Metered		Unmetered	

Reported as of 4/1

**BMP 01: Water Survey Programs for Single-Family and Multi-Family Residential Customers**

Reporting Unit: **So. California Water Company - Metro District**      BMP Form Status: **100% Complete**      Year: **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 necessary; 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 MWDC 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**

	<b>This Year</b>	<b>Next Year</b>
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: **So. California Water Company - Metro District**      BMP Form Status: **100% Complete**      Year: **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 fliers 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**

	<b>This Year</b>	<b>Next Year</b>
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**

### BMP 03: System Water Audits, Leak Detection and Repair

Reporting Unit: **So. California Water Company - Metro District**      BMP Form Status: **100% Complete**      Year: **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

Reported as of 4/1

**BMP 04: Metering with Commodity Rates for all New Connections and Retrofit of Existing**

Reporting Unit: **So. California Water Company - Metro District**      BMP Form Status: **100% Complete**      Year: **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:

**So. California Water  
Company - Metro  
District**

**BMP Form Status:  
100% Complete**

**Year:  
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 efficiency 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: **So. California Water Company - Metro District**      BMP Form Status: **100% Complete**      Year: **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.

Reported as of 4/1

### BMP 07: Public Information Programs

Reporting Unit:

**So. California Water Company -  
Metro District**

BMP Form Status:  
**100% Complete**

Year:  
**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**

Reported as of 4/1

**BMP 09: Conservation Programs for CII Accounts**

Reporting Unit:

**So. California Water  
Company - Metro  
District**

BMP Form Status:  
**100% Complete**

Year:  
**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

**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 CBMWD/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.

**So. California Water Company  
- Metro District**

BMP Form Status:  
**100% Complete**

Year:  
**2004**

1. Did your agency implement a CII ULFT replacement program in the reporting year? No  
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? Consumption ranking  
Check all that apply.

a. Describe which method you found to be the most effective overall, and which was the most effective per dollar expended

Consumptive ranking was only method 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			
	Standard Gravity Tank	Air Assisted	Valve Floor Mount	Valve Wall Mount
4				
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.
- 7 Participant tracking and follow-up. Consultant
- 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 issues 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

Reported as of 4/1

**BMP 11: Conservation Pricing**

Reporting Unit:

**So. California Water Company -  
Metro District**

BMP Form Status:  
**100% Complete**

Year:  
**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	\$310572

**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 \$32927
- Sources

**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:

**So. California  
Water Company -  
Metro District**

BMP Form Status:  
**100% Complete**

Year:  
**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**



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
<b>Number of Toilets Replaced by Agency Program During Report Year</b>		
<b>Replacement Method</b>	<b>SF Accounts</b>	<b>MF Units</b>
2 Rebate	0	0
3 Direct Install	0	0
4 CBO Distribution	0	0
5. Other	0	0
<b>Total</b>	<b>0</b>	<b>0</b>

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

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**

Reported as of 4/1

**Water Supply & Reuse**

Reporting Unit:

**So. California Water Company - Metro District**

Year:

**2003****Water Supply Source Information**

<b>Supply Source Name</b>	<b>Quantity (AF) Supplied</b>	<b>Supply Type</b>
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**

Reported as of 4/1

**Accounts & Water Use**

Reporting Unit Name: **So. California Water Company - Metro District** Submitted to CUWCC **03/01/2005** Year: **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
<b>Total</b>	<b>99567</b>	<b>69568</b>	<b>0</b>	<b>0</b>
	Metered		Unmetered	

Reported as of 4/1

### BMP 01: Water Survey Programs for Single-Family and Multi-Family Residential Customers

Reporting Unit: **So. California Water Company - Metro District**      BMP Form Status: **100% Complete**      Year: **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 necessary, 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 MWDC 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**

Reported as of 4/1

**BMP 02: Residential Plumbing Retrofit**

Reporting Unit: **So. California Water Company - Metro District**      BMP Form Status: **100% Complete**      Year: **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**

	<b>This Year</b>	<b>Next Year</b>
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**

Reported as of 4/1

**BMP 03: System Water Audits, Leak Detection and Repair**

Reporting Unit:

**So. California Water Company -  
Metro District**

BMP Form Status:  
**100% Complete**

Year:  
**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) 66927
  - 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**

Reported as of 4/1

**BMP 04: Metering with Commodity Rates for all New Connections and Retrofit of Existing**

Reporting Unit: **So. California Water Company - Metro District**      BMP Form Status: **100% Complete**      Year: **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:

**So. California Water  
Company - Metro  
District**

**BMP Form Status:  
100% Complete**

**Year:  
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 MWDC'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 efficiency 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: **So. California Water Company - Metro District**      BMP Form Status: **100% Complete**      Year: **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, GBMWD 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 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:

**So. California Water  
Company - Metro  
District**

**BMP Form Status:  
100% Complete**

**Year:  
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

<b>CII Surveys</b>	<b>Commercial Accounts</b>	<b>Industrial Accounts</b>	<b>Institutional Accounts</b>
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

<b>CII Survey Components</b>	<b>Commercial Accounts</b>	<b>Industrial Accounts</b>	<b>Institutional Accounts</b>
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

<b>Agency CII Customer Incentives</b>	<b>Budget (\$/Year)</b>	<b>No. Awarded to Customers</b>	<b>Total \$ Amount Awarded</b>
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: **So. California Water Company - Metro District**      BMP Form Status: **100% Complete**      Year: **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? Consumption ranking  
 Check all that apply.

a. Describe which method you found to be the most effective overall, and which was the most effective per dollar expended.

Consumptive ranking was only method 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

4. CII Subsector	Number of Toilets Replaced			
	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 issues 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 MWDC's member agencies, CBMWD and WBMWD to conduct CII account conservation programs. SCWC used CBMWD/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:

**So. California Water Company -  
Metro District**

BMP Form Status:  
**100% Complete**

Year:  
**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 \$38822
- Sources

**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:

**So. California  
Water Company -  
Metro District**

BMP Form Status:  
**100% Complete**

Year:  
**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 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. 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**

Reported as of 4/1

**BMP 13: Water Waste Prohibition**

Reporting Unit:

**So. California Water Company -  
Metro District**

BMP Form Status:  
**100% Complete**

Year:  
**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**

**BMP 14: Residential ULFT Replacement Programs**

Reporting Unit: **So. California Water Company - Metro District**      BMP Form Status: **100% Complete**      Year: **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
<b>Number of Toilets Replaced by Agency Program During Report Year</b>		
<b>Replacement Method</b>	<b>SF Accounts</b>	<b>MF Units</b>
2. Rebate	0	0
3. Direct Install	0	0
4. CBO Distribution	0	0
5. Other	0	0
<b>Total</b>	<b>0</b>	<b>0</b>

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 or 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**

Reported as of 4/1

## BMP 01 Coverage: Water Survey Programs for Single-Family and Multi-Family Residential Customers

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

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 - Metro District  
Implement Targeting/Marketing

Year So. California Water Company  
Reported Implementing Targeting/Marketing Coverage

*Coverage report 2003-04*

City

### 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	
<b>Total + Credit</b>	<b>10,960</b>	

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

Report Year	Report Period	Single-Family		Multi-Family	
		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		Single-Family Coverage Ratio	SF Coverage Ratio > 10%
1992 SF Accounts	Num. Showerheads Distributed to SF Accounts	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**  
**MOU Exhibit 1 Coverage Requirement**

Reporting Period:  
**03-04**

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  
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 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**  
**MOU Exhibit 1 Coverage Requirement**

Reporting Period:  
**03-04**

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 filled 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 07 Coverage: Public Information Programs**

Reporting Unit  
**So. California Water Company - Metro District**  
**MOU Exhibit 1 Coverage Requirement**

Reporting Period  
**03-04**

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**

<u>Year</u>	<u>Report Period</u>	<u>BMP 7 Implementation Year</u>	<u>RJ Has Public Information Program?</u>
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.**

Reported as of 4/1

**BMP 08 Coverage: School Education Programs**

Reporting Unit:  
**So. California Water Company - Metro District**  
**MOU Exhibit 1 Coverage Requirement**

Reporting Period:  
**03-04**

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.**

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

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**  
**MOU Exhibit 1 Coverage Requirement**

Reporting Period  
**03-04**

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**  
**MOU Exhibit 1 Coverage Requirement**

Reporting Period:  
**03-04**

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.**

**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	RJ 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't (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.**

### 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
<b>1992 Housing Stock</b>		
Average rate of natural replacement (% of remaining stock)	04	04
Average rate of housing demolition (% of remaining 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	2054.89	571.17	1752.95	1413.06	1024.44	388.62
2002	38799.49	2622.98	55665.57	1894.04	728.94	1807.83	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	32841.43	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	2558.06	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	986.21	744.61	241.60
1999	35318.41	4117.53	41632.76	3817.76	499.76	1463.18	1295.21	852.01	443.19
2000	30876.48	4096.94	41424.60	3162.76	934.18	1279.16	1585.34	955.14	610.20
2001	28993.21	4076.45	41217.48	2764.99	1311.46	1118.28	1801.50	1054.16	747.34
2002	23598.33	4058.07	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	15787.44	3995.53	40399.29	1615.10	2380.43	653.22	2484.19	1412.37	1071.83
2006	13784.40	3975.56	40197.28	1411.97	2563.58	571.07	2604.79	1493.19	1111.60

2007	12050.77	3955.68	39996.31	1234.39	2721.29	499.24	2710.22	1570.79	1139.43
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## Total Water Savings (AF) Report

Reporting Unit:

So. California Water Company - Metro District

Estimated Water Savings from BMP Annual Report Data

<b>BMP01:</b> Water Survey Programs for Single-Family and Multi-Family Residential Customers	<b>1,135</b>
<b>BMP02:</b> Residential Plumbing Retrofit	<b>374</b>
<b>BMP04:</b> Metering with Commodity Rates for all New Connections and Retrofit of Existing	<b>0</b>
<b>BMP05:</b> Large Landscape Conservation Programs and Incentives	<b>499</b>
<b>BMP06:</b> High-Efficiency Washing Machine Rebate Programs	<b>0</b>
<b>BMP09:</b> Conservation Programs for CII Accounts	<b>82</b>
<b>BMP09a:</b> CII ULFT Water Savings	<b>143</b>
<b>BMP14:</b> Residential ULFT Replacement Programs	<b>8,314</b>
<b>Total:</b>	<b>10,547</b>

## 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
<b>TOTAL:</b>	<b>1,135</b>

### 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
<b>TOTALS:</b>	<b>374</b>	<b>203</b>

**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
<b>TOTAL:</b>	<b>0</b>

## 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
<b>TOTAL:</b>	<b>499</b>

## 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
<b>TOTAL:</b>	<b>0</b>	<b>0</b>



### 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
<b>TOTALS:</b>	<b>0</b>	<b>0</b>	<b>0</b>





**Appendix F**  
**Rule No. 14.1: Mandatory Water Conservation,  
Restrictions, and Rationing Program**

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Rule No. 14.1

MANDATORY WATER CONSERVATION, RESTRICTIONS AND RATIONING PROGRAM (N)

Page 1

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)

ISSUED BY

Date Filed August 4, 2004

Advice Letter No. 1169-WA

**F. E. WICKS**

Effective Date September 28, 2004

Decision No. \_\_\_\_\_

President

Resolution No. W-4496

Rule No. 14.1

(N)

MANDATORY WATER CONSERVATION, RESTRICTIONS AND RATIONING PROGRAM  
(Continued)

Page 2

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)

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Decision No. \_\_\_\_\_

President

Resolution No. W-4496

Rule No. 14.1

(N)

MANDATORY WATER CONSERVATION, RESTRICTIONS AND RATIONING PROGRAM  
(Continued)

Page 3

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)

ISSUED BY

Date Filed August 4, 2004

Advice Letter No. 1169-WA

**F. E. WICKS**

Effective Date September 28, 2004

Decision No. \_\_\_\_\_

President

Resolution No. W-4496

Rule No. 14.1

MANDATORY WATER CONSERVATION, RESTRICTIONS AND RATIONING PROGRAM  
(Continued)

(N)

Page 4

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)

ISSUED BY

Date Filed August 4, 2004

Advice Letter No. 1169-WA

**F. E. WICKS**

Effective Date September 28, 2004

Decision No. \_\_\_\_\_

President

Resolution No. W-4496

**Appendix G**  
**Rate Schedule**

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**SOUTHERN CALIFORNIA WATER COMPANY**

630 E. FOOTHILL BLVD. P. O. BOX 9016

SAN DIMAS, CALIFORNIA 91773-9016

Revised Cal. P.U.C. Sheet No. 4879-W\*

Canceling Revised Cal. P.U.C. Sheet No. 4858-W

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:

	<u>Per Month</u>	<u>Surcredit</u>
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 January 1, 2005, to recover the difference between the interim rates and actual rates for the period of February 14, 2004 through September 2, 2004. (T)  
(T)
3. Due to the overcollection in the Balancing-Type Memorandum Account for the period of January 1, 2004 through December 31, 2004, a surcredit will be applied to the service charges for a 36-month period, beginning on the effective date of Advice Letter 1188-WA. (N)  
(N)  
(N)

ISSUED BY

Date Filed April 14, 2005

Advice Letter No. 1188-WA

**F. E. WICKS**

Effective Date August 11, 2005

Decision No. 03-06-072

President

Resolution No. \_\_\_\_\_

**SOUTHERN CALIFORNIA WATER COMPANY**

630 E. FOOTHILL BLVD. P. O. BOX 9016  
SAN DIMAS, CALIFORNIA 91773-9016

Revised Cal. P.U.C. Sheet No. 4880-W\*

Canceling Revised Cal. P.U.C. Sheet No. 4859-W

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

Service Charge:

	<u>Per Month</u>	<u>Surcredit</u>
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 January 1, 2005, to recover the difference between the interim rates and actual rates for the period of February 14, 2004 through September 2, 2004. (T)
3. Due to the overcollection in the Balancing-Type Memorandum Account for the period of December 1, 2004 through December 31, 2004, a surcredit will be applied to the service charges for a 36-month period, beginning on the effective date of Advice Letter 1188-WA. (N)

ISSUED BY

Date Filed April 14, 2005

Advice Letter No. 1188-WA

**F. E. WICKS**

Effective Date August 11, 2005

Decision No. 03-06-072

President

Resolution No. \_\_\_\_\_

**Appendix H**  
**Responses to Public Comments**

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**Question from Department of Water Resources, December 15, 2005:**

**Southwest System**

- Comment regarding tables on pages 17-18, on projected supply during multiple dry year periods ending in 2010, 2015, 2020, 2025, 2030

*DWR recommendation: Add a footnote to these tables stating that the projected water supply during multiple dry year periods has been based on a 3-year multiple dry year period.*

**Golden State Water Company Response:**

Footnote was added to tables, indicating that the projected water supply during multiple dry year periods has been based on a 3-year multiple dry year period.



**Appendix I**  
**Groundwater Basin Water Rights**  
**Stipulation/Judgment**

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## Appendix I

# Groundwater Basin Water Rights Stipulation/Judgment For Southwest System

A copy of the complete document is available for public review during normal business hours at the following locations:

Southwest Customer Service Office  
Golden State Water Company  
17140 South Avalon Boulevard, #100  
Carson, CA 90746

Torrance Customer Service Office  
Golden State Water Company  
18236 South Prairie  
Torrance, CA 90504



**Appendix J**  
**Summary of Population Based on Census Data**



**Appendix J: Demographic Information for South West System CSA**

**Table J-1: Census Tracts within the South West System CSA**

<b>County</b>	<b>Subregion</b>	<b>City Code</b>	<b>City</b>	<b>Census Tract Number</b>	<b>Percentage of Census Tract</b>
Los Angeles	South Bay Cities COG	28168	Gardena city	602600	100%
Los Angeles	South Bay Cities COG	28168	Gardena city	602900	100%
Los Angeles	South Bay Cities COG	28168	Gardena city	603001	100%
Los Angeles	South Bay Cities COG	28168	Gardena city	603003	100%
Los Angeles	South Bay Cities COG	28168	Gardena city	603004	100%
Los Angeles	South Bay Cities COG	28168	Gardena city	603101	100%
Los Angeles	South Bay Cities COG	28168	Gardena city	603102	100%
Los Angeles	South Bay Cities COG	28168	Gardena city	603200	100%
Los Angeles	South Bay Cities COG	28168	Gardena city	603301	100%
Los Angeles	South Bay Cities COG	28168	Gardena city	603302	100%
Los Angeles	South Bay Cities COG	28168	Gardena city	603400	100%
Los Angeles	South Bay Cities COG	28168	Gardena city	603500	100%
Los Angeles	South Bay Cities COG	28168	Gardena city	603600	100%
Los Angeles	South Bay Cities COG	32548	Hawthorne city	601600	100%
Los Angeles	South Bay Cities COG	32548	Hawthorne city	601700	100%
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602002	100%
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602103	20%
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602104	15%
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602200	20%
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602301	100%
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602302	100%
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602501	100%
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602502	95%
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602503	100%
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602700	70%
Los Angeles	South Bay Cities COG	32548	Hawthorne city	603703	100%
Los Angeles	South Bay Cities COG	32548	Hawthorne city	603704	100%
Los Angeles	South Bay Cities COG	36546	Inglewood city	600502	20%
Los Angeles	South Bay Cities COG	36546	Inglewood city	601402	40%
Los Angeles	South Bay Cities COG	36546	Inglewood city	601501	100%
Los Angeles	South Bay Cities COG	36546	Inglewood city	601700	100%
Los Angeles	South Bay Cities COG	36546	Inglewood city	601801	100%
Los Angeles	South Bay Cities COG	36546	Inglewood city	601802	100%
Los Angeles	South Bay Cities COG	36546	Inglewood city	601900	100%
Los Angeles	South Bay Cities COG	36546	Inglewood city	602003	100%
Los Angeles	South Bay Cities COG	36546	Inglewood city	602004	100%
Los Angeles	South Bay Cities COG	36546	Inglewood city	602700	100%

**Table J-1: Census Tracts within the South West System CSA (Continued)**

<b>County</b>	<b>Subregion</b>	<b>City Code</b>	<b>City</b>	<b>Census Tract Number</b>	<b>Percentage of Census Tract</b>
Los Angeles	South Bay Cities COG	40886	Lawndale city	603900	100%
Los Angeles	South Bay Cities COG	40886	Lawndale city	603800	100%
Los Angeles	South Bay Cities COG	40886	Lawndale city	604000	100%
Los Angeles	South Bay Cities COG	40886	Lawndale city	604100	100%
Los Angeles	South Bay Cities COG	99999	Unincorporated	600301	100%
Los Angeles	South Bay Cities COG	99999	Unincorporated	601501	100%
Los Angeles	South Bay Cities COG	99999	Unincorporated	601502	100%
Los Angeles	South Bay Cities COG	99999	Unincorporated	601600	100%
Los Angeles	South Bay Cities COG	99999	Unincorporated	601700	100%
Los Angeles	South Bay Cities COG	99999	Unincorporated	601801	100%
Los Angeles	South Bay Cities COG	99999	Unincorporated	601802	100%
Los Angeles	South Bay Cities COG	99999	Unincorporated	602200	100%
Los Angeles	South Bay Cities COG	99999	Unincorporated	602301	100%
Los Angeles	South Bay Cities COG	99999	Unincorporated	602501	100%
Los Angeles	South Bay Cities COG	99999	Unincorporated	602600	100%
Los Angeles	South Bay Cities COG	99999	Unincorporated	602700	100%
Los Angeles	South Bay Cities COG	99999	Unincorporated	602800	100%
Los Angeles	South Bay Cities COG	99999	Unincorporated	603704	100%
Los Angeles	South Bay Cities COG	22412	El Segundo city	620003	1%
Los Angeles	South Bay Cities COG	32548	Hawthorne city	603702	100%
Los Angeles	South Bay Cities COG	36546	Inglewood city	600501	100%
Los Angeles	South Bay Cities COG	36546	Inglewood city	602002	100%
Los Angeles	South Bay Cities COG	99999	Unincorporated	600100	100%
Los Angeles	South Bay Cities COG	99999	Unincorporated	600201	100%
Los Angeles	South Bay Cities COG	99999	Unincorporated	600202	100%
Los Angeles	South Bay Cities COG	99999	Unincorporated	600302	100%
Los Angeles	South Bay Cities COG	99999	Unincorporated	600400	100%
Los Angeles	South Bay Cities COG	99999	Unincorporated	603702	100%
Los Angeles	South Bay Cities COG	36546	Inglewood city	601202	15%
Los Angeles	South Bay Cities COG	60018	Redondo Beach city	620501	0%

**Table J-2: Population, Household and Employment Projections for Year 2000, 2005, 2010, 2015, 2020, 2025 and 2030 for South West System CSA**

**South West System CSA Population, Household and Employment Estimates for 2000**

County	Subregion	City Code	City	Census Tract Number	Total Population	Number of Households	Total Employees
Los Angeles	South Bay Cities COG	28168	Gardena city	602600	8,231	2,738	1,565
Los Angeles	South Bay Cities COG	28168	Gardena city	602900	4,200	1,251	13,656
Los Angeles	South Bay Cities COG	28168	Gardena city	603001	6,776	2,210	1,641
Los Angeles	South Bay Cities COG	28168	Gardena city	603003	8,211	2,851	2,488
Los Angeles	South Bay Cities COG	28168	Gardena city	603004	1,643	655	982
Los Angeles	South Bay Cities COG	28168	Gardena city	603101	4,140	1,551	1,915
Los Angeles	South Bay Cities COG	28168	Gardena city	603102	3,970	1,419	767
Los Angeles	South Bay Cities COG	28168	Gardena city	603200	2,204	917	1,447
Los Angeles	South Bay Cities COG	28168	Gardena city	603301	4,027	1,637	2,282
Los Angeles	South Bay Cities COG	28168	Gardena city	603302	3,632	1,411	2,652
Los Angeles	South Bay Cities COG	28168	Gardena city	603400	4,408	1,493	1,611
Los Angeles	South Bay Cities COG	28168	Gardena city	603500	2,972	920	1,032
Los Angeles	South Bay Cities COG	28168	Gardena city	603600	3,671	1,303	2,273
Los Angeles	South Bay Cities COG	32548	Hawthorne city	601600	0	0	97
Los Angeles	South Bay Cities COG	32548	Hawthorne city	601700	124	32	3
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602002	3,166	815	150
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602103	1,420	427	355
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602104	859	255	112
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602200	618	196	97
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602301	454	166	2,261
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602302	2,934	1,107	1,107
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602501	8,477	2,890	15,867
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602502	8,517	3,279	1,007
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602503	8,812	3,312	1,005
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602700	1,803	601	1,227
Los Angeles	South Bay Cities COG	32548	Hawthorne city	603703	2,638	831	195
Los Angeles	South Bay Cities COG	32548	Hawthorne city	603704	2,486	856	351
Los Angeles	South Bay Cities COG	36546	Inglewood city	600502	460	136	90
Los Angeles	South Bay Cities COG	36546	Inglewood city	601402	2,153	549	725
Los Angeles	South Bay Cities COG	36546	Inglewood city	601501	394	108	296
Los Angeles	South Bay Cities COG	36546	Inglewood city	601700	740	185	218
Los Angeles	South Bay Cities COG	36546	Inglewood city	601801	2,512	532	943
Los Angeles	South Bay Cities COG	36546	Inglewood city	601802	162	30	64
Los Angeles	South Bay Cities COG	36546	Inglewood city	601900	6,348	1,409	952
Los Angeles	South Bay Cities COG	36546	Inglewood city	602003	5,018	1,215	853
Los Angeles	South Bay Cities COG	36546	Inglewood city	602004	3,976	1,028	944

**South West System CSA Population, Household and Employment Estimates for 2000**

<b>County</b>	<b>Subregion</b>	<b>City Code</b>	<b>City</b>	<b>Census Tract Number</b>	<b>Total Population</b>	<b>Number of Households</b>	<b>Total Employees</b>
Los Angeles	South Bay Cities COG	36546	Inglewood city	602700	1	1	16
Los Angeles	South Bay Cities COG	40886	Lawndale city	603900	7,176	2,339	3,003
Los Angeles	South Bay Cities COG	40886	Lawndale city	603800	8,389	2,456	2,006
Los Angeles	South Bay Cities COG	40886	Lawndale city	604000	9,526	2,801	1,441
Los Angeles	South Bay Cities COG	40886	Lawndale city	604100	6,743	1,955	980
Los Angeles	South Bay Cities COG	99999	Unincorporated	600301	7,554	2,002	262
Los Angeles	South Bay Cities COG	99999	Unincorporated	601501	3,853	929	527
Los Angeles	South Bay Cities COG	99999	Unincorporated	601502	3,979	821	343
Los Angeles	South Bay Cities COG	99999	Unincorporated	601600	4,735	1,071	841
Los Angeles	South Bay Cities COG	99999	Unincorporated	601700	4,934	1,050	764
Los Angeles	South Bay Cities COG	99999	Unincorporated	601801	1,357	263	26
Los Angeles	South Bay Cities COG	99999	Unincorporated	601802	4,561	928	1,097
Los Angeles	South Bay Cities COG	99999	Unincorporated	602200	3,253	1,114	1,438
Los Angeles	South Bay Cities COG	99999	Unincorporated	602301	5,944	1,764	309
Los Angeles	South Bay Cities COG	99999	Unincorporated	602501	2,378	571	669
Los Angeles	South Bay Cities COG	99999	Unincorporated	602600	0	0	6
Los Angeles	South Bay Cities COG	99999	Unincorporated	602700	696	227	606
Los Angeles	South Bay Cities COG	99999	Unincorporated	602800	8,591	2,353	2,301
Los Angeles	South Bay Cities COG	99999	Unincorporated	603704	3,877	1,189	281
Los Angeles	South Bay Cities COG	22412	El Segundo city	620003	0	0	528
Los Angeles	South Bay Cities COG	32548	Hawthorne city	603702	64	5	267
Los Angeles	South Bay Cities COG	36546	Inglewood city	600501	2,645	925	1,359
Los Angeles	South Bay Cities COG	36546	Inglewood city	602002	8	1	8
Los Angeles	South Bay Cities COG	99999	Unincorporated	600100	6,298	1,818	255
Los Angeles	South Bay Cities COG	99999	Unincorporated	600201	4,294	1,137	314
Los Angeles	South Bay Cities COG	99999	Unincorporated	600202	6,442	1,855	221
Los Angeles	South Bay Cities COG	99999	Unincorporated	600302	3,447	1,042	564
Los Angeles	South Bay Cities COG	99999	Unincorporated	600400	4,238	1,425	186
Los Angeles	South Bay Cities COG	99999	Unincorporated	603702	4,922	1,648	955
Los Angeles	South Bay Cities COG	36546	Inglewood city	601202	642	158	151
Los Angeles	South Bay Cities COG	60018	Redondo Beach city	620501	0	0	0

**South West System CSA Population, Household and Employment Estimates for 2005**

County	Subregion	City Code	City	Census Tract Number	Total Population	Number of Households	Total Employees
Los Angeles	South Bay Cities COG	28168	Gardena city	602600	8,482	2,750	1,597
Los Angeles	South Bay Cities COG	28168	Gardena city	602900	4,509	1,280	13,660
Los Angeles	South Bay Cities COG	28168	Gardena city	603001	7,232	2,259	1,666
Los Angeles	South Bay Cities COG	28168	Gardena city	603003	8,344	2,866	2,553
Los Angeles	South Bay Cities COG	28168	Gardena city	603004	1,695	660	985
Los Angeles	South Bay Cities COG	28168	Gardena city	603101	4,498	1,600	1,944
Los Angeles	South Bay Cities COG	28168	Gardena city	603102	4,298	1,451	819
Los Angeles	South Bay Cities COG	28168	Gardena city	603200	2,378	975	1,491
Los Angeles	South Bay Cities COG	28168	Gardena city	603301	4,109	1,644	2,301
Los Angeles	South Bay Cities COG	28168	Gardena city	603302	3,843	1,435	2,677
Los Angeles	South Bay Cities COG	28168	Gardena city	603400	4,565	1,512	1,633
Los Angeles	South Bay Cities COG	28168	Gardena city	603500	3,244	941	1,049
Los Angeles	South Bay Cities COG	28168	Gardena city	603600	3,790	1,314	2,294
Los Angeles	South Bay Cities COG	32548	Hawthorne city	601600	1	1	101
Los Angeles	South Bay Cities COG	32548	Hawthorne city	601700	128	32	6
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602002	3,333	836	158
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602103	1,571	428	360
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602104	878	257	120
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602200	780	196	102
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602301	523	166	2,286
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602302	3,042	1,118	1,125
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602501	10,336	2,890	15,892
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602502	8,696	3,289	1,019
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602503	8,995	3,336	1,075
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602700	1,870	608	1,245
Los Angeles	South Bay Cities COG	32548	Hawthorne city	603703	2,695	929	202
Los Angeles	South Bay Cities COG	32548	Hawthorne city	603704	3,274	856	355
Los Angeles	South Bay Cities COG	36546	Inglewood city	600502	498	139	92
Los Angeles	South Bay Cities COG	36546	Inglewood city	601402	2,261	560	732
Los Angeles	South Bay Cities COG	36546	Inglewood city	601501	415	111	323
Los Angeles	South Bay Cities COG	36546	Inglewood city	601700	788	190	229
Los Angeles	South Bay Cities COG	36546	Inglewood city	601801	2,636	541	950
Los Angeles	South Bay Cities COG	36546	Inglewood city	601802	175	31	76
Los Angeles	South Bay Cities COG	36546	Inglewood city	601900	6,706	1,442	963
Los Angeles	South Bay Cities COG	36546	Inglewood city	602003	5,264	1,239	870
Los Angeles	South Bay Cities COG	36546	Inglewood city	602004	4,177	1,051	963
Los Angeles	South Bay Cities COG	36546	Inglewood city	602700	3	1	19
Los Angeles	South Bay Cities COG	40886	Lawndale city	603900	7,483	2,364	3,006
Los Angeles	South Bay Cities COG	40886	Lawndale city	603800	8,760	2,482	2,015

**South West System CSA Population, Household and Employment Estimates for 2005 (Continued)**

County	Subregion	City Code	City	Census Tract Number	Total Population	Number of Households	Total Employees
Los Angeles	South Bay Cities COG	40886	Lawndale city	604000	9,964	2,831	1,446
Los Angeles	South Bay Cities COG	40886	Lawndale city	604100	7,043	1,974	983
Los Angeles	South Bay Cities COG	99999	Unincorporated	600301	7,684	2,038	272
Los Angeles	South Bay Cities COG	99999	Unincorporated	601501	4,059	983	535
Los Angeles	South Bay Cities COG	99999	Unincorporated	601502	4,191	840	348
Los Angeles	South Bay Cities COG	99999	Unincorporated	601600	4,887	1,090	855
Los Angeles	South Bay Cities COG	99999	Unincorporated	601700	5,024	1,050	767
Los Angeles	South Bay Cities COG	99999	Unincorporated	601801	1,396	264	27
Los Angeles	South Bay Cities COG	99999	Unincorporated	601802	4,705	944	1,108
Los Angeles	South Bay Cities COG	99999	Unincorporated	602200	3,922	1,136	1,474
Los Angeles	South Bay Cities COG	99999	Unincorporated	602301	6,119	1,775	313
Los Angeles	South Bay Cities COG	99999	Unincorporated	602501	2,923	586	669
Los Angeles	South Bay Cities COG	99999	Unincorporated	602600	0	0	10
Los Angeles	South Bay Cities COG	99999	Unincorporated	602700	807	240	606
Los Angeles	South Bay Cities COG	99999	Unincorporated	602800	8,770	2,381	2,314
Los Angeles	South Bay Cities COG	99999	Unincorporated	603704	4,671	1,477	294
Los Angeles	South Bay Cities COG	22412	El Segundo city	620003	3	0	532
Los Angeles	South Bay Cities COG	32548	Hawthorne city	603702	65	5	274
Los Angeles	South Bay Cities COG	36546	Inglewood city	600501	2,790	945	1,380
Los Angeles	South Bay Cities COG	36546	Inglewood city	602002	20	1	11
Los Angeles	South Bay Cities COG	99999	Unincorporated	600100	6,401	1,840	263
Los Angeles	South Bay Cities COG	99999	Unincorporated	600201	4,348	1,144	323
Los Angeles	South Bay Cities COG	99999	Unincorporated	600202	6,542	1,874	226
Los Angeles	South Bay Cities COG	99999	Unincorporated	600302	3,516	1,059	572
Los Angeles	South Bay Cities COG	99999	Unincorporated	600400	4,333	1,443	191
Los Angeles	South Bay Cities COG	99999	Unincorporated	603702	5,021	1,660	971
Los Angeles	South Bay Cities COG	36546	Inglewood city	601202	679	162	155
Los Angeles	South Bay Cities COG	60018	Redondo Beach city	620501	0	0	0

**South West System CSA Population, Household and Employment Estimates for 2010**

County	Subregion	City Code	City	Census Tract Number	Total Population	Number of Households	Total Employees
Los Angeles	South Bay Cities COG	28168	Gardena city	602600	8,805	2,877	1,919
Los Angeles	South Bay Cities COG	28168	Gardena city	602900	4,537	1,316	13,713
Los Angeles	South Bay Cities COG	28168	Gardena city	603001	7,307	2,320	1,932
Los Angeles	South Bay Cities COG	28168	Gardena city	603003	8,754	2,979	3,229
Los Angeles	South Bay Cities COG	28168	Gardena city	603004	1,763	684	1,010
Los Angeles	South Bay Cities COG	28168	Gardena city	603101	4,498	1,631	2,233
Los Angeles	South Bay Cities COG	28168	Gardena city	603102	4,298	1,489	1,345
Los Angeles	South Bay Cities COG	28168	Gardena city	603200	2,378	975	1,970
Los Angeles	South Bay Cities COG	28168	Gardena city	603301	4,232	1,711	2,495
Los Angeles	South Bay Cities COG	28168	Gardena city	603302	3,903	1,482	2,928
Los Angeles	South Bay Cities COG	28168	Gardena city	603400	4,742	1,575	1,846
Los Angeles	South Bay Cities COG	28168	Gardena city	603500	3,244	972	1,226
Los Angeles	South Bay Cities COG	28168	Gardena city	603600	3,933	1,373	2,497
Los Angeles	South Bay Cities COG	32548	Hawthorne city	601600	3	2	154
Los Angeles	South Bay Cities COG	32548	Hawthorne city	601700	185	47	33
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602002	3,429	892	245
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602103	1,757	435	412
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602104	916	271	200
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602200	862	196	155
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602301	899	166	2,542
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602302	3,046	1,132	1,318
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602501	11,797	2,895	16,116
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602502	8,857	3,308	1,140
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602503	9,160	3,382	1,795
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602700	1,945	624	1,429
Los Angeles	South Bay Cities COG	32548	Hawthorne city	603703	2,722	975	270
Los Angeles	South Bay Cities COG	32548	Hawthorne city	603704	3,645	856	394
Los Angeles	South Bay Cities COG	36546	Inglewood city	600502	500	139	116
Los Angeles	South Bay Cities COG	36546	Inglewood city	601402	2,321	578	808
Los Angeles	South Bay Cities COG	36546	Inglewood city	601501	415	145	617
Los Angeles	South Bay Cities COG	36546	Inglewood city	601700	796	192	341
Los Angeles	South Bay Cities COG	36546	Inglewood city	601801	2,841	602	1,018
Los Angeles	South Bay Cities COG	36546	Inglewood city	601802	175	32	204
Los Angeles	South Bay Cities COG	36546	Inglewood city	601900	6,903	1,504	1,075
Los Angeles	South Bay Cities COG	36546	Inglewood city	602003	5,450	1,288	1,038
Los Angeles	South Bay Cities COG	36546	Inglewood city	602004	4,322	1,091	1,155
Los Angeles	South Bay Cities COG	36546	Inglewood city	602700	3	1	47
Los Angeles	South Bay Cities COG	40886	Lawndale city	603900	7,643	2,426	3,036
Los Angeles	South Bay Cities COG	40886	Lawndale city	603800	8,931	2,574	2,104

**South West System CSA Population, Household and Employment Estimates for 2010 (Continued)**

<b>County</b>	<b>Subregion</b>	<b>City Code</b>	<b>City</b>	<b>Census Tract Number</b>	<b>Total Population</b>	<b>Number of Households</b>	<b>Total Employees</b>
Los Angeles	South Bay Cities COG	40886	Lawndale city	604000	10,144	2,908	1,506
Los Angeles	South Bay Cities COG	40886	Lawndale city	604100	7,181	2,013	1,012
Los Angeles	South Bay Cities COG	99999	Unincorporated	600301	7,803	2,107	363
Los Angeles	South Bay Cities COG	99999	Unincorporated	601501	4,059	984	607
Los Angeles	South Bay Cities COG	99999	Unincorporated	601502	4,191	840	397
Los Angeles	South Bay Cities COG	99999	Unincorporated	601600	4,904	1,090	982
Los Angeles	South Bay Cities COG	99999	Unincorporated	601700	5,028	1,050	799
Los Angeles	South Bay Cities COG	99999	Unincorporated	601801	1,402	264	38
Los Angeles	South Bay Cities COG	99999	Unincorporated	601802	4,719	945	1,213
Los Angeles	South Bay Cities COG	99999	Unincorporated	602200	3,922	1,136	1,898
Los Angeles	South Bay Cities COG	99999	Unincorporated	602301	6,147	1,775	358
Los Angeles	South Bay Cities COG	99999	Unincorporated	602501	2,923	586	669
Los Angeles	South Bay Cities COG	99999	Unincorporated	602600	0	0	49
Los Angeles	South Bay Cities COG	99999	Unincorporated	602700	807	240	606
Los Angeles	South Bay Cities COG	99999	Unincorporated	602800	8,893	2,424	2,469
Los Angeles	South Bay Cities COG	99999	Unincorporated	603704	4,671	1,477	415
Los Angeles	South Bay Cities COG	22412	El Segundo city	620003	5	1	572
Los Angeles	South Bay Cities COG	32548	Hawthorne city	603702	135	5	348
Los Angeles	South Bay Cities COG	36546	Inglewood city	600501	2,876	975	1,604
Los Angeles	South Bay Cities COG	36546	Inglewood city	602002	20	1	48
Los Angeles	South Bay Cities COG	99999	Unincorporated	600100	6,504	1,902	350
Los Angeles	South Bay Cities COG	99999	Unincorporated	600201	4,424	1,182	426
Los Angeles	South Bay Cities COG	99999	Unincorporated	600202	6,648	1,928	278
Los Angeles	South Bay Cities COG	99999	Unincorporated	600302	3,566	1,062	642
Los Angeles	South Bay Cities COG	99999	Unincorporated	600400	4,393	1,472	242
Los Angeles	South Bay Cities COG	99999	Unincorporated	603702	5,028	1,660	1,130
Los Angeles	South Bay Cities COG	36546	Inglewood city	601202	699	167	191
Los Angeles	South Bay Cities COG	60018	Redondo Beach city	620501	0	0	0

**South West System CSA Population, Household and Employment Estimates for 2015**

County	Subregion	City Code	City	Census Tract Number	Total Population	Number of Households	Total Employees
Los Angeles	South Bay Cities COG	28168	Gardena city	602600	9,407	3,063	1,977
Los Angeles	South Bay Cities COG	28168	Gardena city	602900	4,845	1,401	14,143
Los Angeles	South Bay Cities COG	28168	Gardena city	603001	7,763	2,461	1,989
Los Angeles	South Bay Cities COG	28168	Gardena city	603003	9,311	3,162	3,317
Los Angeles	South Bay Cities COG	28168	Gardena city	603004	1,875	729	1,018
Los Angeles	South Bay Cities COG	28168	Gardena city	603101	4,794	1,735	2,263
Los Angeles	South Bay Cities COG	28168	Gardena city	603102	4,570	1,584	1,412
Los Angeles	South Bay Cities COG	28168	Gardena city	603200	2,547	1,037	2,028
Los Angeles	South Bay Cities COG	28168	Gardena city	603301	4,489	1,817	2,547
Los Angeles	South Bay Cities COG	28168	Gardena city	603302	4,162	1,570	2,994
Los Angeles	South Bay Cities COG	28168	Gardena city	603400	5,063	1,679	1,902
Los Angeles	South Bay Cities COG	28168	Gardena city	603500	3,449	1,026	1,262
Los Angeles	South Bay Cities COG	28168	Gardena city	603600	4,204	1,461	2,559
Los Angeles	South Bay Cities COG	32548	Hawthorne city	601600	4	2	162
Los Angeles	South Bay Cities COG	32548	Hawthorne city	601700	200	48	39
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602002	3,630	914	260
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602103	1,911	446	424
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602104	940	281	212
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602200	925	197	160
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602301	970	170	2,623
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602302	3,227	1,161	1,362
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602501	12,474	2,964	16,469
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602502	9,321	3,387	1,176
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602503	9,640	3,462	1,911
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602700	2,066	639	1,475
Los Angeles	South Bay Cities COG	32548	Hawthorne city	603703	2,752	1,022	275
Los Angeles	South Bay Cities COG	32548	Hawthorne city	603704	4,050	856	401
Los Angeles	South Bay Cities COG	36546	Inglewood city	600502	511	145	121
Los Angeles	South Bay Cities COG	36546	Inglewood city	601402	2,374	598	834
Los Angeles	South Bay Cities COG	36546	Inglewood city	601501	424	149	693
Los Angeles	South Bay Cities COG	36546	Inglewood city	601700	814	200	380
Los Angeles	South Bay Cities COG	36546	Inglewood city	601801	2,900	623	1,028
Los Angeles	South Bay Cities COG	36546	Inglewood city	601802	179	33	211
Los Angeles	South Bay Cities COG	36546	Inglewood city	601900	7,064	1,557	1,113
Los Angeles	South Bay Cities COG	36546	Inglewood city	602003	5,576	1,333	1,056
Los Angeles	South Bay Cities COG	36546	Inglewood city	602004	4,422	1,129	1,178
Los Angeles	South Bay Cities COG	36546	Inglewood city	602700	3	1	70
Los Angeles	South Bay Cities COG	40886	Lawndale city	603900	7,978	2,517	3,068
Los Angeles	South Bay Cities COG	40886	Lawndale city	603800	9,324	2,673	2,167

**South West System CSA Population, Household and Employment Estimates for 2015 (Continued)**

<b>County</b>	<b>Subregion</b>	<b>City Code</b>	<b>City</b>	<b>Census Tract Number</b>	<b>Total Population</b>	<b>Number of Households</b>	<b>Total Employees</b>
Los Angeles	South Bay Cities COG	40886	Lawndale city	604000	10,638	3,029	1,533
Los Angeles	South Bay Cities COG	40886	Lawndale city	604100	7,506	2,091	1,066
Los Angeles	South Bay Cities COG	99999	Unincorporated	600301	7,981	2,175	373
Los Angeles	South Bay Cities COG	99999	Unincorporated	601501	4,154	1,022	620
Los Angeles	South Bay Cities COG	99999	Unincorporated	601502	4,289	864	405
Los Angeles	South Bay Cities COG	99999	Unincorporated	601600	5,016	1,127	1,000
Los Angeles	South Bay Cities COG	99999	Unincorporated	601700	5,159	1,092	806
Los Angeles	South Bay Cities COG	99999	Unincorporated	601801	1,437	273	41
Los Angeles	South Bay Cities COG	99999	Unincorporated	601802	4,837	977	1,233
Los Angeles	South Bay Cities COG	99999	Unincorporated	602200	4,010	1,173	1,995
Los Angeles	South Bay Cities COG	99999	Unincorporated	602301	6,285	1,832	382
Los Angeles	South Bay Cities COG	99999	Unincorporated	602501	2,958	604	669
Los Angeles	South Bay Cities COG	99999	Unincorporated	602600	0	0	61
Los Angeles	South Bay Cities COG	99999	Unincorporated	602700	821	247	606
Los Angeles	South Bay Cities COG	99999	Unincorporated	602800	9,141	2,518	2,524
Los Angeles	South Bay Cities COG	99999	Unincorporated	603704	4,739	1,517	443
Los Angeles	South Bay Cities COG	22412	El Segundo city	620003	7	1	576
Los Angeles	South Bay Cities COG	32548	Hawthorne city	603702	141	5	359
Los Angeles	South Bay Cities COG	36546	Inglewood city	600501	2,940	1,008	1,631
Los Angeles	South Bay Cities COG	36546	Inglewood city	602002	21	1	66
Los Angeles	South Bay Cities COG	99999	Unincorporated	600100	6,668	1,969	358
Los Angeles	South Bay Cities COG	99999	Unincorporated	600201	4,537	1,224	438
Los Angeles	South Bay Cities COG	99999	Unincorporated	600202	6,804	1,991	284
Los Angeles	South Bay Cities COG	99999	Unincorporated	600302	3,647	1,095	649
Los Angeles	South Bay Cities COG	99999	Unincorporated	600400	4,496	1,520	246
Los Angeles	South Bay Cities COG	99999	Unincorporated	603702	5,144	1,712	1,150
Los Angeles	South Bay Cities COG	36546	Inglewood city	601202	714	173	195
Los Angeles	South Bay Cities COG	60018	Redondo Beach city	620501	0	0	0

**South West System CSA Population, Household and Employment Estimates for 2020**

County	Subregion	City Code	City	Census Tract Number	Total Population	Number of Households	Total Employees
Los Angeles	South Bay Cities COG	28168	Gardena city	602600	10,001	3,251	2,031
Los Angeles	South Bay Cities COG	28168	Gardena city	602900	5,149	1,487	14,548
Los Angeles	South Bay Cities COG	28168	Gardena city	603001	8,213	2,604	2,043
Los Angeles	South Bay Cities COG	28168	Gardena city	603003	9,861	3,348	3,399
Los Angeles	South Bay Cities COG	28168	Gardena city	603004	1,985	775	1,026
Los Angeles	South Bay Cities COG	28168	Gardena city	603101	5,086	1,840	2,291
Los Angeles	South Bay Cities COG	28168	Gardena city	603102	4,838	1,680	1,475
Los Angeles	South Bay Cities COG	28168	Gardena city	603200	2,714	1,100	2,083
Los Angeles	South Bay Cities COG	28168	Gardena city	603301	4,743	1,925	2,596
Los Angeles	South Bay Cities COG	28168	Gardena city	603302	4,418	1,660	3,056
Los Angeles	South Bay Cities COG	28168	Gardena city	603400	5,378	1,784	1,954
Los Angeles	South Bay Cities COG	28168	Gardena city	603500	3,651	1,082	1,296
Los Angeles	South Bay Cities COG	28168	Gardena city	603600	4,471	1,551	2,617
Los Angeles	South Bay Cities COG	32548	Hawthorne city	601600	4	3	169
Los Angeles	South Bay Cities COG	32548	Hawthorne city	601700	215	49	45
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602002	3,827	937	273
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602103	2,063	456	435
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602104	963	292	223
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602200	988	198	164
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602301	1,041	175	2,699
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602302	3,405	1,191	1,404
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602501	13,142	3,034	16,803
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602502	9,779	3,467	1,210
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602503	10,114	3,544	2,020
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602700	2,184	656	1,519
Los Angeles	South Bay Cities COG	32548	Hawthorne city	603703	2,781	1,071	280
Los Angeles	South Bay Cities COG	32548	Hawthorne city	603704	4,451	857	407
Los Angeles	South Bay Cities COG	36546	Inglewood city	600502	523	150	126
Los Angeles	South Bay Cities COG	36546	Inglewood city	601402	2,426	618	858
Los Angeles	South Bay Cities COG	36546	Inglewood city	601501	433	154	764
Los Angeles	South Bay Cities COG	36546	Inglewood city	601700	832	208	417
Los Angeles	South Bay Cities COG	36546	Inglewood city	601801	2,957	644	1,037
Los Angeles	South Bay Cities COG	36546	Inglewood city	601802	184	35	218
Los Angeles	South Bay Cities COG	36546	Inglewood city	601900	7,223	1,612	1,148
Los Angeles	South Bay Cities COG	36546	Inglewood city	602003	5,701	1,379	1,073
Los Angeles	South Bay Cities COG	36546	Inglewood city	602004	4,522	1,169	1,199
Los Angeles	South Bay Cities COG	36546	Inglewood city	602700	3	1	92
Los Angeles	South Bay Cities COG	40886	Lawndale city	603900	8,308	2,610	3,097
Los Angeles	South Bay Cities COG	40886	Lawndale city	603800	9,713	2,773	2,225

**South West System CSA Population, Household and Employment Estimates for 2020**

County	Subregion	City Code	City	Census Tract Number	Total Population	Number of Households	Total Employees
Los Angeles	South Bay Cities COG	40886	Lawndale city	604000	11,124	3,153	1,559
Los Angeles	South Bay Cities COG	40886	Lawndale city	604100	7,825	2,170	1,115
Los Angeles	South Bay Cities COG	99999	Unincorporated	600301	8,156	2,243	384
Los Angeles	South Bay Cities COG	99999	Unincorporated	601501	4,248	1,061	632
Los Angeles	South Bay Cities COG	99999	Unincorporated	601502	4,385	888	413
Los Angeles	South Bay Cities COG	99999	Unincorporated	601600	5,127	1,165	1,018
Los Angeles	South Bay Cities COG	99999	Unincorporated	601700	5,289	1,134	813
Los Angeles	South Bay Cities COG	99999	Unincorporated	601801	1,472	282	43
Los Angeles	South Bay Cities COG	99999	Unincorporated	601802	4,953	1,011	1,253
Los Angeles	South Bay Cities COG	99999	Unincorporated	602200	4,096	1,210	2,087
Los Angeles	South Bay Cities COG	99999	Unincorporated	602301	6,421	1,891	404
Los Angeles	South Bay Cities COG	99999	Unincorporated	602501	2,993	623	669
Los Angeles	South Bay Cities COG	99999	Unincorporated	602600	0	0	73
Los Angeles	South Bay Cities COG	99999	Unincorporated	602700	836	255	606
Los Angeles	South Bay Cities COG	99999	Unincorporated	602800	9,387	2,612	2,575
Los Angeles	South Bay Cities COG	99999	Unincorporated	603704	4,806	1,558	469
Los Angeles	South Bay Cities COG	22412	El Segundo city	620003	8	1	579
Los Angeles	South Bay Cities COG	32548	Hawthorne city	603702	146	5	369
Los Angeles	South Bay Cities COG	36546	Inglewood city	600501	3,004	1,041	1,658
Los Angeles	South Bay Cities COG	36546	Inglewood city	602002	21	1	83
Los Angeles	South Bay Cities COG	99999	Unincorporated	600100	6,829	2,038	366
Los Angeles	South Bay Cities COG	99999	Unincorporated	600201	4,648	1,267	449
Los Angeles	South Bay Cities COG	99999	Unincorporated	600202	6,957	2,055	289
Los Angeles	South Bay Cities COG	99999	Unincorporated	600302	3,727	1,129	656
Los Angeles	South Bay Cities COG	99999	Unincorporated	600400	4,599	1,569	250
Los Angeles	South Bay Cities COG	99999	Unincorporated	603702	5,259	1,765	1,169
Los Angeles	South Bay Cities COG	36546	Inglewood city	601202	730	179	199
Los Angeles	South Bay Cities COG	60018	Redondo Beach city	620501	0	0	0

**South West System CSA Population, Household and Employment Estimates for 2025**

County	Subregion	City Code	City	Census Tract Number	Total Population	Number of Households	Total Employees
Los Angeles	South Bay Cities COG	28168	Gardena city	602600	10,589	3,441	2,080
Los Angeles	South Bay Cities COG	28168	Gardena city	602900	5,451	1,573	14,910
Los Angeles	South Bay Cities COG	28168	Gardena city	603001	8,632	2,741	2,091
Los Angeles	South Bay Cities COG	28168	Gardena city	603003	10,374	3,529	3,473
Los Angeles	South Bay Cities COG	28168	Gardena city	603004	2,088	820	1,033
Los Angeles	South Bay Cities COG	28168	Gardena city	603101	5,364	1,945	2,316
Los Angeles	South Bay Cities COG	28168	Gardena city	603102	5,094	1,775	1,532
Los Angeles	South Bay Cities COG	28168	Gardena city	603200	2,878	1,162	2,132
Los Angeles	South Bay Cities COG	28168	Gardena city	603301	4,978	2,028	2,639
Los Angeles	South Bay Cities COG	28168	Gardena city	603302	4,655	1,745	3,112
Los Angeles	South Bay Cities COG	28168	Gardena city	603400	5,680	1,887	2,001
Los Angeles	South Bay Cities COG	28168	Gardena city	603500	3,853	1,139	1,326
Los Angeles	South Bay Cities COG	28168	Gardena city	603600	4,738	1,641	2,669
Los Angeles	South Bay Cities COG	32548	Hawthorne city	601600	5	3	176
Los Angeles	South Bay Cities COG	32548	Hawthorne city	601700	236	51	50
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602002	4,020	960	286
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602103	2,221	467	446
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602104	988	303	233
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602200	1,049	199	168
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602301	1,131	179	2,767
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602302	3,583	1,221	1,440
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602501	13,751	3,101	17,101
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602502	10,180	3,543	1,241
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602503	10,528	3,622	2,118
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602700	2,305	672	1,558
Los Angeles	South Bay Cities COG	32548	Hawthorne city	603703	2,811	1,117	284
Los Angeles	South Bay Cities COG	32548	Hawthorne city	603704	4,849	857	413
Los Angeles	South Bay Cities COG	36546	Inglewood city	600502	533	155	130
Los Angeles	South Bay Cities COG	36546	Inglewood city	601402	2,477	638	879
Los Angeles	South Bay Cities COG	36546	Inglewood city	601501	442	158	828
Los Angeles	South Bay Cities COG	36546	Inglewood city	601700	849	217	450
Los Angeles	South Bay Cities COG	36546	Inglewood city	601801	3,015	667	1,045
Los Angeles	South Bay Cities COG	36546	Inglewood city	601802	188	36	224
Los Angeles	South Bay Cities COG	36546	Inglewood city	601900	7,380	1,667	1,180
Los Angeles	South Bay Cities COG	36546	Inglewood city	602003	5,822	1,426	1,088
Los Angeles	South Bay Cities COG	36546	Inglewood city	602004	4,618	1,208	1,218
Los Angeles	South Bay Cities COG	36546	Inglewood city	602700	3	1	111
Los Angeles	South Bay Cities COG	40886	Lawndale city	603900	8,613	2,699	3,124

**South West System CSA Population, Household and Employment Estimates for 2025 (Continued)**

<b>County</b>	<b>Subregion</b>	<b>City Code</b>	<b>City</b>	<b>Census Tract Number</b>	<b>Total Population</b>	<b>Number of Households</b>	<b>Total Employees</b>
Los Angeles	South Bay Cities COG	40886	Lawndale city	603800	10,074	2,870	2,277
Los Angeles	South Bay Cities COG	40886	Lawndale city	604000	11,615	3,283	1,581
Los Angeles	South Bay Cities COG	40886	Lawndale city	604100	8,130	2,246	1,160
Los Angeles	South Bay Cities COG	99999	Unincorporated	600301	8,317	2,309	393
Los Angeles	South Bay Cities COG	99999	Unincorporated	601501	4,339	1,100	642
Los Angeles	South Bay Cities COG	99999	Unincorporated	601502	4,477	912	420
Los Angeles	South Bay Cities COG	99999	Unincorporated	601600	5,228	1,203	1,033
Los Angeles	South Bay Cities COG	99999	Unincorporated	601700	5,414	1,181	819
Los Angeles	South Bay Cities COG	99999	Unincorporated	601801	1,505	290	45
Los Angeles	South Bay Cities COG	99999	Unincorporated	601802	5,067	1,045	1,270
Los Angeles	South Bay Cities COG	99999	Unincorporated	602200	4,198	1,248	2,170
Los Angeles	South Bay Cities COG	99999	Unincorporated	602301	6,544	1,947	424
Los Angeles	South Bay Cities COG	99999	Unincorporated	602501	3,015	639	669
Los Angeles	South Bay Cities COG	99999	Unincorporated	602600	0	0	84
Los Angeles	South Bay Cities COG	99999	Unincorporated	602700	846	261	606
Los Angeles	South Bay Cities COG	99999	Unincorporated	602800	9,655	2,717	2,621
Los Angeles	South Bay Cities COG	99999	Unincorporated	603704	4,852	1,596	493
Los Angeles	South Bay Cities COG	22412	El Segundo city	620003	10	2	582
Los Angeles	South Bay Cities COG	32548	Hawthorne city	603702	153	5	378
Los Angeles	South Bay Cities COG	36546	Inglewood city	600501	3,063	1,074	1,681
Los Angeles	South Bay Cities COG	36546	Inglewood city	602002	21	1	98
Los Angeles	South Bay Cities COG	99999	Unincorporated	600100	6,992	2,109	373
Los Angeles	South Bay Cities COG	99999	Unincorporated	600201	4,761	1,311	459
Los Angeles	South Bay Cities COG	99999	Unincorporated	600202	7,102	2,118	294
Los Angeles	South Bay Cities COG	99999	Unincorporated	600302	3,801	1,161	662
Los Angeles	South Bay Cities COG	99999	Unincorporated	600400	4,696	1,617	254
Los Angeles	South Bay Cities COG	99999	Unincorporated	603702	5,364	1,814	1,186
Los Angeles	South Bay Cities COG	36546	Inglewood city	601202	745	185	203
Los Angeles	South Bay Cities COG	60018	Redondo Beach city	620501	0	0	0

**South West System CSA Population, Household and Employment Estimates for 2030**

County	Subregion	City Code	City	Census Tract Number	Total Population	Number of Households	Total Employees
Los Angeles	South Bay Cities COG	28168	Gardena city	602600	11,154	3,630	2,124
Los Angeles	South Bay Cities COG	28168	Gardena city	602900	5,741	1,659	15,236
Los Angeles	South Bay Cities COG	28168	Gardena city	603001	9,033	2,878	2,134
Los Angeles	South Bay Cities COG	28168	Gardena city	603003	10,866	3,709	3,539
Los Angeles	South Bay Cities COG	28168	Gardena city	603004	2,187	864	1,040
Los Angeles	South Bay Cities COG	28168	Gardena city	603101	5,631	2,050	2,338
Los Angeles	South Bay Cities COG	28168	Gardena city	603102	5,339	1,870	1,583
Los Angeles	South Bay Cities COG	28168	Gardena city	603200	3,035	1,225	2,176
Los Angeles	South Bay Cities COG	28168	Gardena city	603301	5,203	2,131	2,679
Los Angeles	South Bay Cities COG	28168	Gardena city	603302	4,882	1,831	3,162
Los Angeles	South Bay Cities COG	28168	Gardena city	603400	5,970	1,989	2,043
Los Angeles	South Bay Cities COG	28168	Gardena city	603500	4,045	1,194	1,354
Los Angeles	South Bay Cities COG	28168	Gardena city	603600	4,994	1,731	2,716
Los Angeles	South Bay Cities COG	32548	Hawthorne city	601600	5	4	182
Los Angeles	South Bay Cities COG	32548	Hawthorne city	601700	255	52	55
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602002	4,202	984	297
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602103	2,372	478	455
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602104	1,012	314	242
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602200	1,109	200	171
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602301	1,217	184	2,828
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602302	3,753	1,253	1,473
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602501	14,336	3,168	17,370
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602502	10,563	3,620	1,268
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602503	10,925	3,700	2,206
Los Angeles	South Bay Cities COG	32548	Hawthorne city	602700	2,420	688	1,593
Los Angeles	South Bay Cities COG	32548	Hawthorne city	603703	2,839	1,164	288
Los Angeles	South Bay Cities COG	32548	Hawthorne city	603704	5,231	857	418
Los Angeles	South Bay Cities COG	36546	Inglewood city	600502	543	160	134
Los Angeles	South Bay Cities COG	36546	Inglewood city	601402	2,524	658	899
Los Angeles	South Bay Cities COG	36546	Inglewood city	601501	451	163	885
Los Angeles	South Bay Cities COG	36546	Inglewood city	601700	866	226	479
Los Angeles	South Bay Cities COG	36546	Inglewood city	601801	3,070	689	1,053
Los Angeles	South Bay Cities COG	36546	Inglewood city	601802	192	37	229
Los Angeles	South Bay Cities COG	36546	Inglewood city	601900	7,530	1,722	1,209
Los Angeles	South Bay Cities COG	36546	Inglewood city	602003	5,939	1,472	1,102
Los Angeles	South Bay Cities COG	36546	Inglewood city	602004	4,711	1,247	1,235
Los Angeles	South Bay Cities COG	36546	Inglewood city	602700	3	1	128
Los Angeles	South Bay Cities COG	40886	Lawndale city	603900	8,906	2,787	3,148
Los Angeles	South Bay Cities COG	40886	Lawndale city	603800	10,420	2,967	2,324

**South West System CSA Population, Household and Employment Estimates for 2030 (Continued)**

<b>County</b>	<b>Subregion</b>	<b>City Code</b>	<b>City</b>	<b>Census Tract Number</b>	<b>Total Population</b>	<b>Number of Households</b>	<b>Total Employees</b>
Los Angeles	South Bay Cities COG	40886	Lawndale city	604000	12,087	3,411	1,601
Los Angeles	South Bay Cities COG	40886	Lawndale city	604100	8,422	2,323	1,201
Los Angeles	South Bay Cities COG	99999	Unincorporated	600301	8,472	2,375	401
Los Angeles	South Bay Cities COG	99999	Unincorporated	601501	4,425	1,138	650
Los Angeles	South Bay Cities COG	99999	Unincorporated	601502	4,565	935	427
Los Angeles	South Bay Cities COG	99999	Unincorporated	601600	5,326	1,240	1,046
Los Angeles	South Bay Cities COG	99999	Unincorporated	601700	5,535	1,228	824
Los Angeles	South Bay Cities COG	99999	Unincorporated	601801	1,538	299	47
Los Angeles	South Bay Cities COG	99999	Unincorporated	601802	5,176	1,079	1,285
Los Angeles	South Bay Cities COG	99999	Unincorporated	602200	4,295	1,287	2,243
Los Angeles	South Bay Cities COG	99999	Unincorporated	602301	6,663	2,001	442
Los Angeles	South Bay Cities COG	99999	Unincorporated	602501	3,036	656	669
Los Angeles	South Bay Cities COG	99999	Unincorporated	602600	0	0	93
Los Angeles	South Bay Cities COG	99999	Unincorporated	602700	856	268	606
Los Angeles	South Bay Cities COG	99999	Unincorporated	602800	9,912	2,823	2,662
Los Angeles	South Bay Cities COG	99999	Unincorporated	603704	4,897	1,633	514
Los Angeles	South Bay Cities COG	22412	El Segundo city	620003	12	2	585
Los Angeles	South Bay Cities COG	32548	Hawthorne city	603702	160	6	386
Los Angeles	South Bay Cities COG	36546	Inglewood city	600501	3,120	1,107	1,702
Los Angeles	South Bay Cities COG	36546	Inglewood city	602002	22	1	112
Los Angeles	South Bay Cities COG	99999	Unincorporated	600100	7,149	2,180	379
Los Angeles	South Bay Cities COG	99999	Unincorporated	600201	4,869	1,356	468
Los Angeles	South Bay Cities COG	99999	Unincorporated	600202	7,242	2,181	298
Los Angeles	South Bay Cities COG	99999	Unincorporated	600302	3,871	1,192	667
Los Angeles	South Bay Cities COG	99999	Unincorporated	600400	4,790	1,666	257
Los Angeles	South Bay Cities COG	99999	Unincorporated	603702	5,465	1,864	1,201
Los Angeles	South Bay Cities COG	36546	Inglewood city	601202	759	190	206
Los Angeles	South Bay Cities COG	60018	Redondo Beach city	620501	0	0	0