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Environmental Utilities

2005 Urban Water Management Plan

March 2006

CITY OF ROSEVILLE

2005 URBAN WATER MANAGEMENT PLAN

March 2006

Prepared by:

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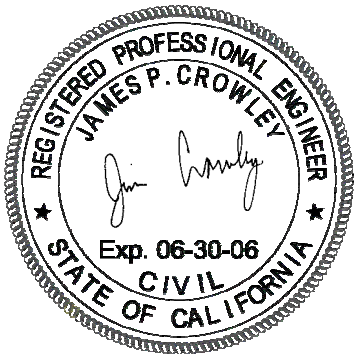

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BROWN AND CALDWELL

March 16, 2006

Ms. Lisa Amaral
Water Conservation Coordinator
City of Roseville
2005 Hilltop Circle
Roseville, California 95747 017-129154-500

Subject: Submittal of 2005 Urban Water Management Plan

Dear Ms. Amaral:

I am pleased to submit to you this 2005 Urban Water Management Plan (Plan). This Plan is written according to the requirements of the Urban Water Management Planning Act and the guidelines as provided by the California Department of Water Resources.

If you have any questions, please do not hesitate to contact me at (916) 853-5332.

Sincerely,

BROWN AND CALDWELL

Jim Crowley, P.E.
Project Manager

Enclosures
JC:mp

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SECTION 1
INTRODUCTION

This Urban Water Management Plan (Plan) addresses the City of Roseville (City). The Plan is required by the Urban Water Management Planning Act (Act) (California Water Code Division 6, Part 2.6, Sections 10610 through 10657). This chapter provides an overview of the plan, public participation, and agency coordination.

1.1. Urban Water Management Planning Act

One of the purposes of this Plan is to ensure the efficient use of available water supplies, as required by the Act. The Act became part of the California Water Code with the passage of Assembly Bill 797 during the 1983–1984 regular session of the California legislature. Subsequently, assembly bills between 1990 and 2003 amended the Act. Most recently the Act was amended on January 1, 2003 by Assembly Bill 105.

The Act requires every urban water supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually to adopt and submit an urban water management plan every five years to the California Department of Water Resources (DWR). According to DWR, the Act states that these urban water suppliers should make every effort to assure 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 years. The Act describes the contents of the Plan as well as how urban water suppliers should adopt and implement the Plan. 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.

The Plan describes the availability of water and discusses water use, reclamation, and water conservation activities. The Plan concludes that the water supplies available to the City's customers are adequate over the next 25-year planning period.

1.2. Public Participation

The Act requires the encouragement of public participation and a public hearing as part of the Urban Water Management Plan approval process. As required by the Act, prior to adopting this Plan, the City made the Plan available for public inspection and held a public hearing. This hearing provided an opportunity for City's customers and all residents and employees in the service area to learn about the water supply situation and the plans for providing a reliable, safe, high-quality water supply for the future. The hearing was an opportunity for people to ask questions regarding the current situation and the viability of future plans.

A Notice of Public Hearing was published twice in the Sacramento Bee and copies of the draft Plan were made available for public inspection at the Environmental Utilities Department and at local public

libraries. A copy of the published Notice of Public Hearing is included in Appendix A. The Plan was presented to the Roseville Public Utilities commission and the City Council. The Plan was adopted by the City Council on February 1, 2006. A copy of the adopted resolution is provided in Appendix B. The Plan is available for public review at the City's utility complex 2005 Hilltop Circle, Roseville, California, 95747.

1.3. Agency Coordination

The Act requires the City to 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. The City coordinated the preparation of its plan with Placer County, Placer County Water Agency, San Juan Water District, and Citrus Heights Water District, as well as its own planning and wastewater departments. A copy of this plan was provided to the DWR, Placer County, and Placer County Water Agency. Table 1-1 provides a summary of the plan coordination with the appropriate agencies.

Table 1-1. Coordination with Appropriate Agencies

	Placer County	Placer County Water Agency	San Juan Water District	Citrus Heights Water District	City of Roseville Planning Department
Participated in developing the plan					
Commented on the draft					
Attended public meetings					
Was contacted for assistance					X
Was sent a copy of the draft plan	X	X	X	X	X
Was sent a notice of intention to adopt	X	X	X	X	X
Not Involved / No Information					

SECTION 2
DESCRIPTION OF EXISTING WATER SYSTEM

This chapter describes the City's existing water system. It contains a description of the service area and its climate, and the water supply facilities, including the groundwater wells, surface water supply facilities, booster pumping stations, reservoirs, and the piping system.

2.1. Description of Service Area

The City serves water to most of its residents. There are a few small areas that border with Placer County Water Agency, San Juan Water District, and Citrus Heights Water District that are served by each respective water agency. Roseville's city boundaries are set in the east area as it is adjacent to City of Rocklin and Granite Bay, and in the south area by Citrus Heights, the Dry Creek West Placer Community Plan boundary, and the Sacramento County line. The north and west city boundaries are bordered by mostly undeveloped land that is slated for eventual development. The City's service area and boundary are shown in Figure 2-1.

2.2. Climate

The service area experiences cool and humid winters and hot and dry summers. The City's weather is similar to the City of Sacramento because of the proximity of the City to the City of Sacramento. Based on the historical data obtained from the Western Regional Climate Center, Sacramento's average monthly temperature ranges from 38 to 93 degrees Fahrenheit; but, the extreme low and high daily temperatures have been 16 and 115 degrees Fahrenheit, respectively. Data is shown in Table 2-1. The historical annual average precipitation is approximately 18 inches. The rainy season begins in November and ends in March. Average monthly precipitation during the winter months is about 2 to 3 inches. Relative humidity in the region ranges from 29 percent to 90 percent. Low humidity usually occurs in the summer months, from May through September. The combination of hot and dry weather results in high water demands during the summer.

2.3. Water Supply Facilities

Water supply for the City is surface water from Folsom Lake, groundwater, and recycled water. The following describes the facilities for each supply. Planned facilities to increase supply or improve reliability are discussed later in Chapter 4.

CITY OF ROSEVILLE
URBAN WATER MANAGEMENT PLAN
2005 UPDATE
SERVICE AREA

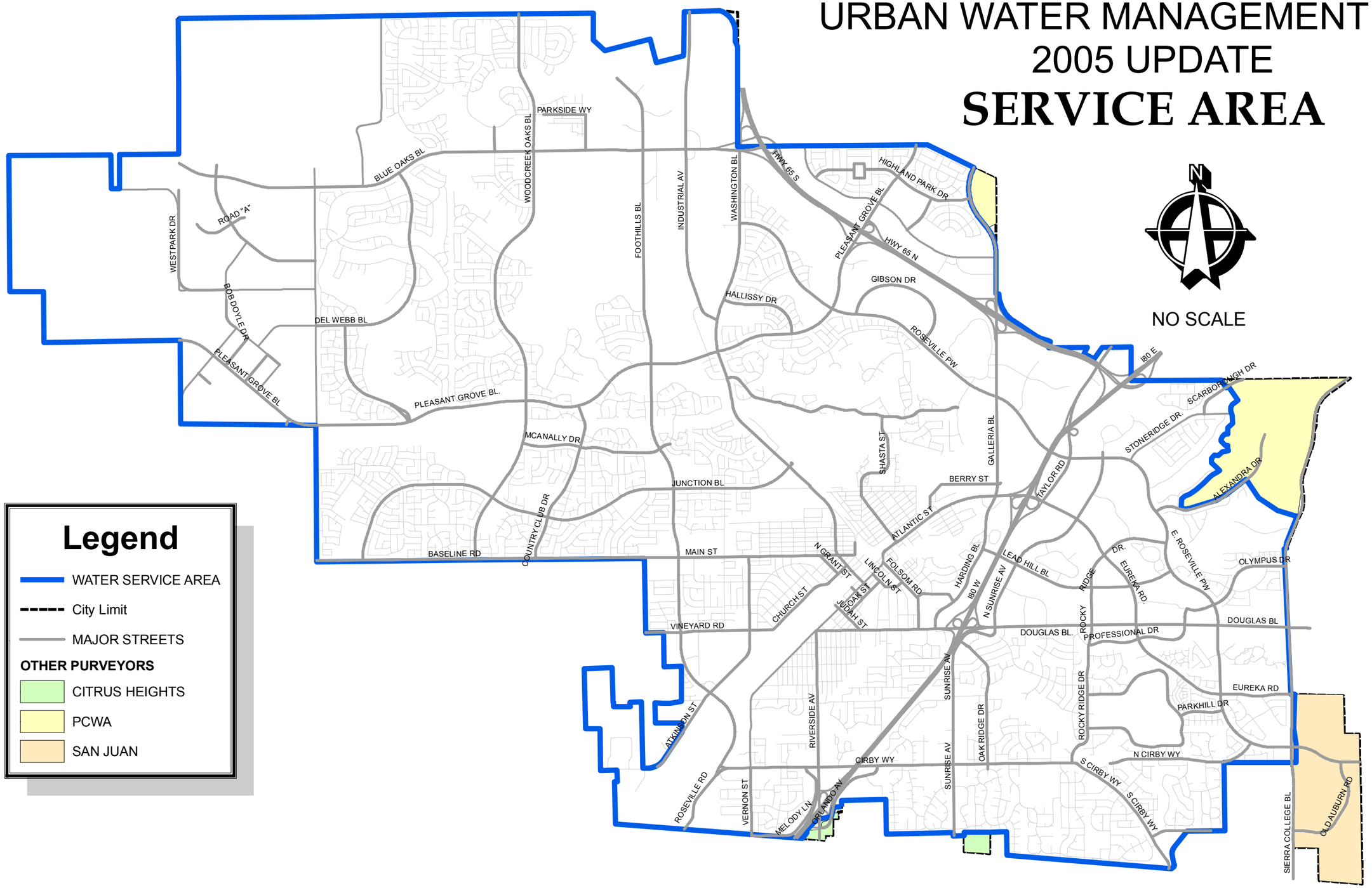

FIGURE 2-1

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Table 2-1. Climate Data

Month	Average precipitation (in.)	Average monthly ETo	Average temperature (ºF)	Maximum temperature (ºF)	Minimum temperature (ºF)
January	3.69	1.59	46	73	17
February	3.2	2.20	51	78	19
March	2.64	3.66	54	86	26
April	1.39	5.08	59	94	30
May	0.62	6.83	65	106	35
June	0.16	7.80	72	112	43
July	0.01	8.67	77	115	50
August	0.03	7.81	77	114	45
September	0.31	5.67	73	108	46
October	0.93	4.03	66	102	32
November	2.02	2.13	54	86	26
December	3.14	1.59	47	74	16
Annual	18.15	57.01	62	115	16

Note:
*Above data obtained from the Western Region Climate Center, Sacramento 5 ESE (043113) Year 1890 to Year 2005. ETo was obtained from the CIMIS website: http://www.cimis.water.ca.gov/cimis/welcome.jsp. ETo averages were based on the Fair Oaks site.

Surface water is delivered from Folsom Lake United States Bureau Reclamation (USBR) facilities through parallel 48-inch and 60-inch transmission mains to the water treatment plant on Barton Road. The treatment plant capacity is currently 60 million gallons per day (mgd), although it is planned for expansion that will begin in 2006 for a maximum capacity of 100 mgd. Water is treated through conventional treatment processes of flocculation/sedimentation, filtration, and disinfection. Treated water is also fluoridated for consumer health and pH adjusted for corrosion protection of the distribution system. After treatment, water is conveyed into the service area through parallel 42-inch and 66-inch transmission mains.

Groundwater is only served as s backup supply or during drought years when the surface water supply is impacted. Eventually, the City plans to use all its wells for aquifer storage and recovery (ASR) in conjunctive use management strategy as discussed in Chapter 4. There are four wells currently in place and operational. The Diamond Creek Well is currently undergoing testing as an ASR facility and is not expected to be operational as a water supply source until 2008. The existing operational well locations are shown on Figure 2-2 and summarized in Table 2-2.

Table 2-2. Roseville Well Facilities

Facility	Install/Rehab Date	Well Depth, feet	Rated Capacity, gpm	Service Zone
Darling Way (Well No. 4)	1958/1999	303	1,000	1
Oakmont (Well No. 5)	1978/1999	360	1,950	1
Diamond Creek	2002	323	2,700	4
Atlantic Street	Pre 1958	330	800	1

Note:
gpm = gallons per minute

CITY OF ROSEVILLE
URBAN WATER MANAGEMENT PLAN
2005 UPDATE
WATER SYSTEM

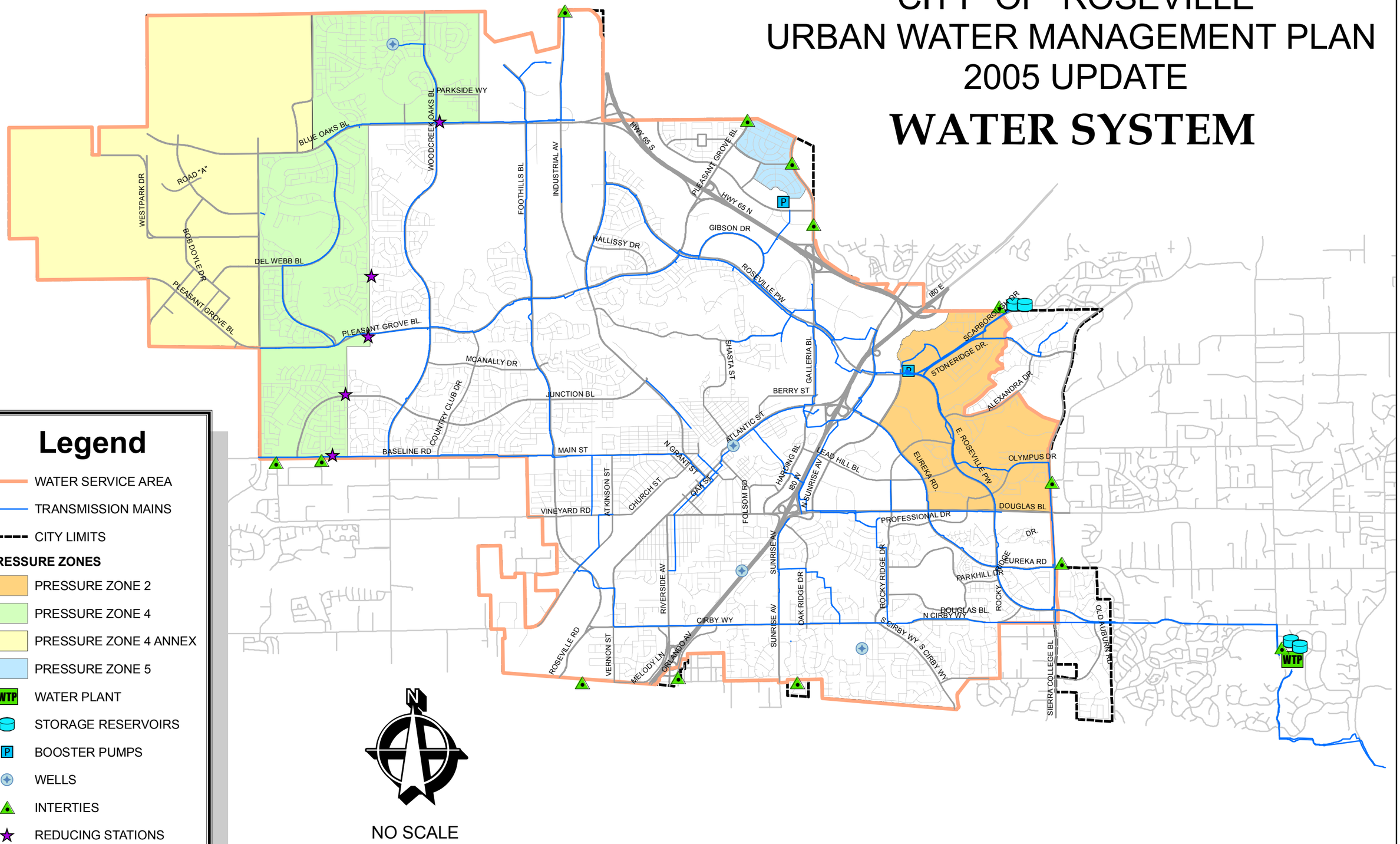

FIGURE 2-2

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Recycled water is available from Roseville's two wastewater treatment plants (WWTP), Dry Creek WWTP and Pleasant Grove WWTP. Both plants produce a Title 22 quality effluent that is available for recycled applications. The system currently serves recycled water through a distribution network to parks, streetscapes, and golf courses. System expansion is planned for more intensive use of recycled water in the western service area as new development is built. A more detailed discussion of the recycling system, operations, and future plans is presented in Chapter 5.

2.4. Water Distribution Facilities

The water distribution system includes pipes, storage facilities, booster pumping stations, and pressure stations. The service area is currently divided into five pressure zones which cover the entire service area of Roseville and are shown in Figure 2-2. On the service area's western edge, pressure is reduced through pressure reducing stations. Pressure Zone 1 and 4 are fed by gravity from the WTP. The remaining Zones 2, 3, and 5 are higher and require boosting or service by adjacent water agencies that have pressure sufficient to serve these customers. Booster pumping stations are summarized in Table 2-3. The City has five storage tanks for a total of 28 million gallons of storage as summarized in Table 2-5. The major facilities of the distribution system are shown on Figure 2-2.

Table 2-3. Roseville Booster Pumping Station Summary

Facility	Service	Pump No.	Rated Capacity, gpm, each	Year Constructed
Tank Fill	Fill 6 MG and 10 MG reservoirs	1-5	3,300	1998
Zone 2	Boost pressure to Zone 2	1-5	2,015	1998

Note:
gpm = gallons per minute

Table 2-4. Roseville Storage Tank Summary

Facility	Pressure Zone Served	Capacity, MG	Type	Year Constructed
WTP 2 MG	1, 2, 4, 5	2	Steel	1971
WTP 4 MG	1, 2, 4, 5	4	Pre stressed concrete	1190
WTP 6 MG	1, 2, 4, 5	6	Pre stressed concrete	2004
Northeast 6 MG	1-5	6	Pre stressed concrete	1971
Northeast 10 MG	1-5	10	Pre stressed concrete	1998

Note:
MG = million gallons

The system maintains 13 interties with five neighboring water utilities for emergency backup and special service needs. Interties with each agency are described below and summarized in Table 2-5.

Table 2-5. Roseville Intertie Summary

Intertie Agency	Facility	Size, inches
Placer County Water Agency	Stoneridge	12
	5 Star	10
	Highland Park	12
	Pleasant Grove	12
	Industrial	16
	Bianchi Estates	12
San Juan Water District	WTP	12
	Eureka[1]	12
	Cavitt Stallman	12
Cal-Am	Crowder	12
	Vernon Oaks[1]	12
Citrus Heights Water District	Orlando[1]	6
	Blossom Hill[1]	6
Sacramento Suburban Water District	PFE/North Antelope	24

Note:
[1] Local zone feed only due to zone hydraulic grade line matching. Zone isolation required to move water between agencies.

2.4.1. Placer County Water Agency (PCWA) Intertie

Roseville maintains six interties with PCWA with a total capability of delivering 13 mgd. These facilities are designed to be used for wheeling water through the Roseville service area to PCWA customers and for short-term demand shortage assistance. This capability has been used during water transmission interruptions and for supplemental water to particular areas. In addition, intertie facilities have been designed and constructed that will increase reliability to PCWA customers residing within the City of Roseville. This facility, located at the Northeast tank site, allows PCWA to meet demands within their service area during peak times of the year.

2.4.2. San Juan Water District (SJWD) Intertie

Three interties exist between Roseville and SJWD. Two interties are capable of delivering a maximum of 2.5 mgd directly into Roseville's distribution system. One intertie has the capability of up to 10 mgd and is located at the Roseville water treatment plant. These interties have been used during water plant interruptions and for localized water supply when required.

2.4.3. California American Water Company Intertie

Two interties exists between Roseville and California American Water Company (formerly Citizens Utilities). Due to low operating pressures in the California American distribution system, one small intertie is only good for emergency zonal use within Roseville and cannot be relied upon as a continued

source of water. A second intertie is used to service a development adjacent to Roseville and is capable of delivering up to 10 mgd. This intertie goes into a closed California American service area with no water source. This connection does not provide an opportunity for Roseville to receive water at this point.

2.4.4. Citrus Heights Water District Intertie

Two interties exist between Roseville and Citrus Heights Water District. Due to low operating pressures in adjoining agency's distribution system these interties are only good for emergency zonal use within Roseville and can not be relied upon as a continued source of water.

2.4.5. Sacramento Suburban Water District Intertie

One intertie is being developed between Roseville and the Sacramento Suburban Water District. As part of regional development of conjunctive use programs a 24-inch connection is being developed to connect Roseville and SSWD water service areas. At this time the actual operations or capacity has yet to be developed. It is planned, however, to be used to fully utilize Roseville water treatment and conveyance capacities.

SECTION 3
HISTORICAL AND PROJECTED WATER USE

Water demand projections provide the basis for sizing and staging future water facilities. Water use and production records, combined with projections of population, employment, and urban development, provide the basis for estimating future water requirements. This chapter summarizes the water use and demand projections through the year 2030.

3.1. Employment, Land Use, and Population

The City completed a development study, 2025 Development Projections with West Roseville Specific Plan (2025 Development Plan) that analyzed current development trends and presented future employment, land use, and population projections. This section presents the findings from the study as they relate to the UWMP requirements. The complete study is included in Appendix E.

3.1.1. Employment Characteristics

The City has experienced significant increases in commercial and office employment over the last 10 years due to additions of a regional mall, local shopping centers, and many office parks. Prior to that, a large portion of the City's total employment had been industrial employment through the railroad yard and two large industries, NEC Technologies and Hewlett-Packard. As NEC and HP have moved a significant portion of manufacturing jobs out of Roseville, the industrial workforce demand has decreased, but has been replaced by a higher demand for professional and retail jobs. City studies indicate the employment trend will continue to move from, industrial-based workforce centered around a few, large companies, to a more diverse professional and research and development based workforce.

3.1.2. Land Use Characteristics

Land use characteristics have followed the employment characteristics for the City. Historically, there were a few industries with large land holdings for their manufacturing facilities and future expansions. As industrial jobs have relocated, the larger industrial tracts have and are being split and put back on the market with rezoning to allow development of residential and non-residential uses. New planning areas that are or are planning to be annexed into the City also have similar land use plans, with large portions of commercial and retail space to meet the projected demands. However, Roseville anticipates an industrial sector demand that is much smaller and more specialized than past industrial employers. Roseville is therefore planning for smaller parcels of industrial land use located near existing industrial-zoned land.

With an increase in commercial and office related employment demands, Roseville is also planning for increased residential land use requirements. Due to high housing demands near places of employment and recent market trends for smart growth from Sacramento Area Council of Governments (SACOG)

and the market, Roseville is planning for an increase of medium and high density residential land uses in the new development areas. Overall, it is anticipated that the older residential areas of Roseville will maintain their low to medium density character, and the newer areas will have the signature of a smart growth development with high density residential units close to commercial and office space land uses.

3.1.3. Population Projections

Projections for population, employment, and dwelling units were completed out to the year 2025 in the 2025 Development Projections With West Roseville Specific Plan, MuniFinanical, April 28, 2004 (2025 Development Plan). The 2025 Development Plan is based on the approved land use designations in the current General Plan. The projected numbers were interpolated for five-year increments from 2005-2025. The 2025 Development Plan assumes that the City reaches significant build-out capacity by 2015, but then slowly grows through 2025 at 0.2 percent. Projected population, employment, and dwelling units are extrapolated from 2025 to 2030 to develop the 2030 projections. Current and projections for population, employment, and dwelling units are summarized below in Table 3-1. Projections are only for the current City of Roseville boundary, including the newly annexed West Roseville Specific Plan area.

Table 3-1. Current and Projected Population, Employment, and Dwelling Units

Year	Population	Employment	Dwelling Units
2005	103,783	81,100	42,508
2010	118,732	98,000	48,738
2015	133,680	114,900	54,967
2020	134,801	123,500	55,538
2025	135,922	132,100	56,108
2030	137,043	140,700	56,678

Note:
Source: 2025 Development Projections With West Roseville Specific Plan, MuniFinancial, April 28, 2004, Table 8, Table 9, and Table 7, respectively. 2030 projection extrapolated.

3.2. Historical and Future Water Use

This section presents the historical and projected water use for specific customer types and other water uses. The projected customer water demands are based on the City's General Plan land use and population estimates in coordination with the water utilities specific unit water demands and planning efforts.

3.2.1. Historic Annual Water Delivery

Table 3-2 presents the annual water delivery, population, and per capita demand from 1980 through 2004. As the table indicates, the per capita demand has not significantly changed over the 25-year period

until 2000. The data covers the 1986-1992 drought periods. Note that the per capita demand initially increased at the beginning of the drought, but decreased over the length of the drought to just below the overall average per capita demand. Figure 3-1 compares the average annual unit water demand versus annual precipitation for the 1980-2004 time periods. As shown in the figure, the unit water demand does not respond linearly to average precipitation. Unit water demand is influenced by many other hydrologic and socioeconomic factors, in addition to precipitation, and is difficult to predict on a yearly basis.

Table 3-2. Historical Water Demands

Year	System Delivery, MG	Population	Per Capita Demand, gpd/capita
1980	2,621	24,347	291
1981	2,359	25,079	252
1982	2,612	26,127	271
1983	2,979	26,618	300
1984	3,360	27,750	326
1985	3,474	28,988	323
1986	3,797	29,897	338
1987	3,988	31,612	331
1988	3,968	34,468	302
1989	4,089	37,101	275
1990	4,641	43,900	290
1991	4,808	46,700	282
1992	5,253	49,500	291
1993	5,255	52,500	274
1994	5,818	54,400	293
1995	6,139	56,479	298
1996	6,890	59,804	316
1997	7,558	63,479	326
1998	6,664	67,338	271
1999	7,876	72,126	299
2000	8,356	80,069	286
2001	9,156	82,087	305
2002	9,729	85,533	312
2003	9,749	90,739	294
2004	10,626	96,600	301
		Average	298

Source:
1980-2000: TM 1 (Final) Evaluation of Water System Capacity – Water Demands Evaluation, MWH, February 26, 2002.
2001-2004: system delivery source from Roseville, population source from City of Roseville web site.
MG = million gallons
gpd/capita = gallons per day per capita

Roseville does not wholesale water to other agencies and does not plan to wholesale water to other agencies. Table 3-3 reflects this per the DWR Guidelines. Roseville does maintain 13 interties with neighboring water agencies to provide, or receive, water for emergencies or special operating conditions. One such special operating condition is at two connections with PCWA where, due to system infrastructure and operating characteristics, water is more easily delivered from the other supplier's system. This results in the City providing PCWA water in one location, but accepting PCWA water at the other location. The net gain/loss varies from year to year depending on operating conditions. In 2002, there was a net gain for Roseville of 123 acre-feet, in 2003, a net gain to PCWA of 46 acre-feet, and in 2004, a net gain to Roseville of 12 acre-feet.

Table 3-3. Historical and Projected Water Sales

Year	Agency	Total, acre-feet/year
N/A	N/A	N/A

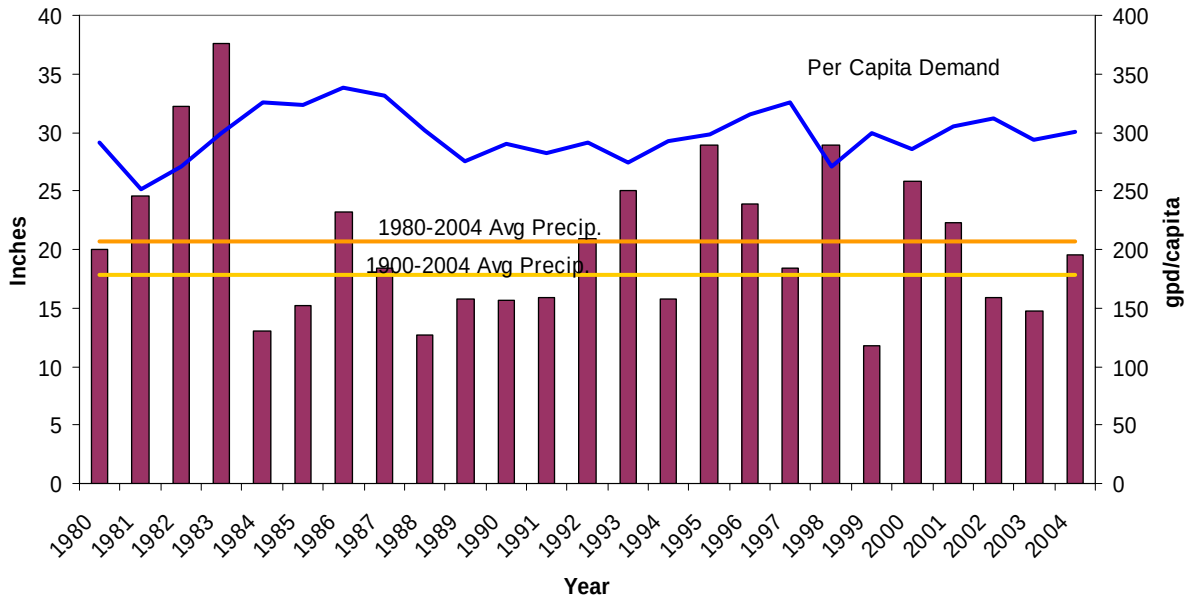


Figure 3-1. Historical Per Capita Demand Versus Precipitation

3.2.2. Unaccounted-for Water

Unaccounted-for water use is un-metered water use; such as, for fire protection and training, system and street flushing, sewer cleaning, construction, system leaks, and unauthorized connections. Unaccounted-for water can also result from meter inaccuracies. The City is assuming eight percent unaccounted-for water. The City intends to be fully metered by 2012, and will be able to better evaluate unaccounted-for water as more data is available for analysis.

3.2.3. Customer Connections

Historical and future projected City connections by customer type are presented in Table 3-4. Projected connections are based on the same growth percentages used for projecting water demands as presented below in Section 3.3.1.

Table 3-4. Roseville Connections by Customer Classification

Customer Classifications	Historical connections		Projected connections					
	2000[a]	2004[a]	2005	2010	2015	2020	2025	2030
Single-family								
Metered	336	20,202	26,324	43,822	53,122	58,434	61,356	64,424
Unmetered	22,260	12,953	10,566	446	--	--	--	--
Total Single Family	22,596	33,155	36,890	44,268	53,122	58,434	61,356	64,424
Multi-family	115	222	247	296	356	391	411	431
Commercial	1,297	1,534	1,707	2,048	2,458	2,704	2,839	2,981
Industrial	18	24	27	32	38	42	44	47
Institutional	101	116	129	155	186	204	215	225
Landscape irrigation	812	1,127	1,254	1,505	1,806	1,986	2,086	2,190
Agricultural	--	--	--	--	--	--	--	--
Other	--	--	--	--	--	--	--	--
Total	24,939	36,178	40,254	48,305	57,966	63,762	66,950	70,298

Notes:
[a] Source: Customer counts from utility billing system, adjusted for customer type breakout required.

3.3. Projected Water Demands By Water Year Type

This section presents the projected water demands for three water year scenarios: normal-year, single dry year, and multiple dry years. The demands for all water year scenarios are projected through 2030.

3.3.1. Projected Normal-Year Water Demands

Normal-year water demands through the year 2030 are presented in Table 3-5. Impacts to water use due to any conservation measures implemented in the future are not reflected in the projected water demands. The 2005 potable demand was 31,500 acre-feet and the recycled demand was 2,045 acre-feet, for a total of 33,545 acre-feet. This demand is less than projected (35,600 acre-feet/year) due to a

longer, wet Spring. Roseville assumes that most of its planned growth will occur up to 2015, reflecting the annexation of the WRSP area and the high rate of build out in Roseville's existing service areas. The demand growth will flatten from 2015 through 2030. The demand is increased at 20 percent between 2005 and 2015, 10 percent from 2015 to 2020, and 5 percent from 2020 to 2030. The ultimate build out demand is 58, 662 acre-feet/year. Therefore, the 2030 projected demand of 58,582 acre-feet is slightly less than the projected build out demand.

Table 3-5. Historical and Projected Normal Year Water Demands by Customer Category and Additional Water Uses and Losses, acre-feet/year

Water use category	2000	2005	2010	2015	2020	2025	2030
Single-family	13,233	16,660	19,992	23,990	26,389	27,709	29,094
Multi family	1,035	1,303	1,564	1,877	2,064	2,167	2,276
Commercial	1,253	1,577	1,893	2,271	2,498	2,623	2,754
Industrial	2,647	3,332	3,998	4,798	5,278	5,542	5,819
Institutional	1,259	1,585	1,901	2,282	2,510	2,635	2,767
Landscape irrigation	3,987	4,360	3,287	4,391	4,879	4,953	5,052
Saline barriers	0	0	0	0	0	0	0
Groundwater recharge[a]	0	0	0	0	0	0	0
Raw water	0	0	0	0	0	0	0
Recycled[b]	1,100	2,045	4,399	4,832	5,266	5,699	6,133
Unaccounted-for water[c]	2,132	2,684	3,220	3,864	4,251	4,463	4,687
Total annual average	26,644	33,545	40,254	48,305	53,135	55,792	58,582
Percent of year 2005	79%	100%	120%	144%	158%	166%	175%

Notes:
Water savings from future water conservation is not included in demand projections.
[a] Groundwater recharge system not approved.
[b] Recycled water estimates from RMC TM – Market Assessment for Recycled Water Distribution System, November 29, 2005. Projected recycled demands subtracted from Landscape irrigation demands. Only recycled demands within the City's water service are shown. See Chapter 5 for a more detailed discussion of recycled water demands and supplies.
[c] Unaccounted –for water assumed to be 8 percent of total water production.

Total projected normal year water demands presented in this plan are compared in Table 3-6 with demands projected in the previous Plan and the Regional Water Master Plan for each respective end date. The demand projections have been slightly increased than those presented in the 2003 UWMP. Demands have also been projected in the American River Basin Cooperating Agencies Regional Water Management Plan (MWH, 2003). The Regional Water Master Plan did not include the WRSP area and therefore is less than the current projections of this Plan which do include the WRSP area.

Table 3-6. Comparison of Projected City Retail Demands, acre-feet/year

Year	2003 UWMP Plan	This Plan	Regional Water Master Plan[a]
2020	53,095	53,135	--
2025	--	55,792	--
2030	--	58,582	54,900[a]

Note:
[a] Montgomery Watson, 2003 American River Basin Cooperating Agencies, Regional Water Management Plan, does not include WRSP area.

3.3.2. Projected Single-Dry Year Water Demands

Water use patterns change during dry years. During dry years some water agencies cannot provide their customers with 100 percent of what they deliver during normal-water years. The City of Roseville plans to reduce demands during dry years to meet the commitments to reduce American River diversions as described in Chapter 4. In any one dry year, the City will need to carefully manage its water supply and will initiate a voluntary conservation request consistent with regional approaches that are being taken to educate customers and prepare for potential future shortages. In the second consecutive dry year, the City will likely need to enter into a Stage I water shortage response. In the third consecutive dry year, or in the event of a major system failure, the City would continue a Stage I water shortage response or move into a Stage II water shortage response. These measures are dependant on the supplies that are available and would be coordinated with other agencies receiving water from Folsom Lake. In all instances, Roseville will initiate reduction measures to meet the supply commitments made in the Water Forum. Roseville will reduce the overall demand during dry years up to 10 percent. It is expected that the recycled water demand will not be reduced and the reduction will come from potable water demands. Table 3-7 provides an estimate of the projected single-dry year water demands. Normal year and dry year demands from 2005 to 2030 are summarized in Figure 3-2.

Table 3-7. Roseville Single Dry Year Water Demands, acre-feet/year

	2005	2010	2015	2020	2025	2030
Roseville demand	30,191	36,229	43,474	47,822	50,213	52,723
Percent of projected normal[a]	90%	90%	90%	90%	90%	90%

Notes:
Demand is decreased 10 percent due to conservation measures implemented during drought, but regular conservation measures due to Water Forum BMPs are not included in the demand reductions.
[a]Projected normal from Table 3-5.

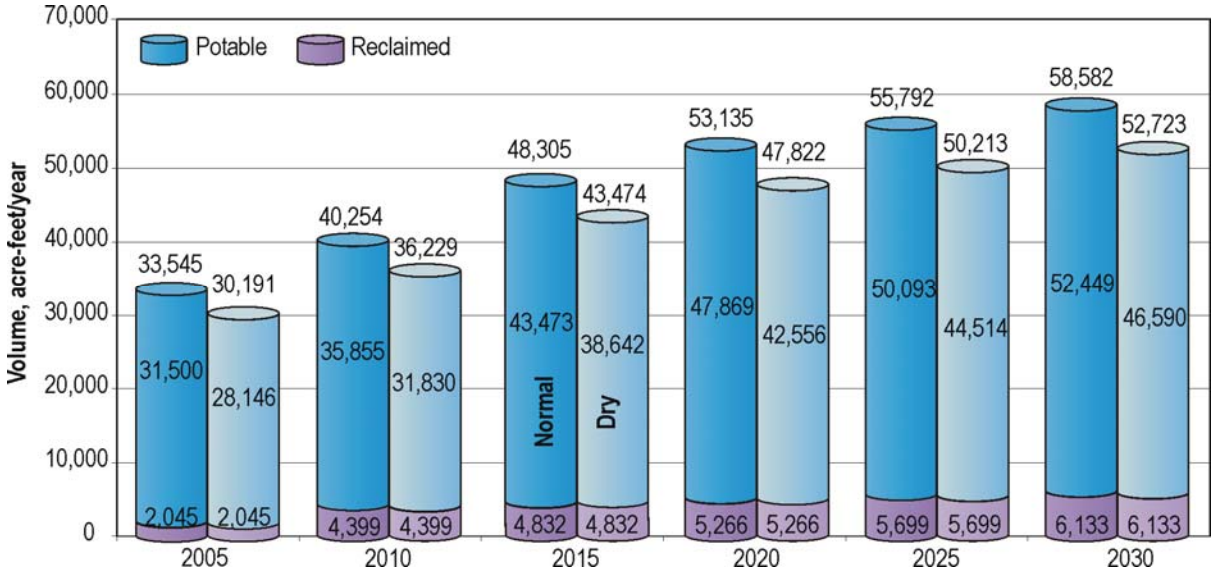


Figure 3-2. Normal and Dry Year Demand Projections

3.3.3. Projected Multiple-Dry Year Water Demands

Similar to the single-dry year demand estimates, it is assumed that overall demands will be reduced up to 10 percent during a multiple dry year. According to the Water Forum Agreement and water supply strategy, Roseville does not anticipate having to reduce demands greater than 10 percent during multiple year droughts. Dry year supply strategies are presented in Chapter 4. Table 3-10 provides an estimate of the projected multiple-dry year water demands from 2005 to 2030.

Table 3-8. Projected Multiple Dry Year Water Demands

Year	Dry year demand, Acre-feet/year	Normal Year demand, Acre-feet/year	Dry year demand percent of normal rear demand
2005	30,191	33,545	0.90
2006	31,398	34,887	0.90
2007	32,606	36,229	0.90
2008	33,813	37,570	0.90
2009	35,021	38,912	0.90
2010	36,229	40,254	0.90
2011	37,678	41,864	0.90
2012	39,127	43,474	0.90
2013	40,576	45,084	0.90
2014	42,025	46,695	0.90
2015	43,474	48,305	0.90
2016	44,344	49,271	0.90
2017	45,213	50,237	0.90
2018	46,083	51,203	0.90
2019	46,952	52,169	0.90
2020	47,822	53,135	0.90
2021	48,300	53,667	0.90
2022	48,778	54,198	0.90
2023	49,256	54,729	0.90
2024	49,735	55,261	0.90
2025	50,213	55,792	0.90
2026	50,715	56,350	0.90
2027	51,217	56,908	0.90
2028	51,719	57,466	0.90
2029	52,221	58,024	0.90
2030	52,723	58,582	0.90

SECTION 4
WATER SUPPLIES

The City of Roseville's water source has historically been from surface sources. Folsom Lake has been the primary source since the Roseville water treatment plant came on-line in 1971. Through this intake Roseville receives water from the USBR as well as PCWA raw water that is wheeled through USBR facilities. Groundwater is occasionally used as a short term, back-up supply. The last instance of groundwater use was in drought conditions experienced in 1991. Intertie water from adjacent agencies typically occurs due to treatment plant disruptions experienced during plant construction projects or other maintenance operations that require plant shutdown. A few interties are used for equal trading of water supplies in two different service areas due to local operational needs. Recycled water is supplied from the regional wastewater treatment plants also operated by the City of Roseville, and is discussed in Chapter 5. The following describes the surface, groundwater, and other potential water supplies for the City of Roseville.

4.1. Surface Water

This section provides a description of the City's surface water supply as well as the physical and legal constraints of this supply. Currently, the City receives surface water from Folsom Lake.

4.1.1. Description

The City's current annual surface water supply of 66,000 acre-feet is American River water diverted from Folsom Lake. The surface supply is summarized in Table 4-1. The City maintains a contract entitlement with the United States Bureau of Reclamation for 32,000 acre-feet for Central Valley Project (CVP) supplies. A contract entitlement with PCWA for 10,000 acre-feet, with options for 20,000 acre-feet more, serves Middle Fork Project water through Folsom Lake. The City has a current contract with SJWD for 4,000 acre-feet. The SJWD supply is served from part of SJWD's contract with PCWA for 25,000 acre-feet of Middle Fork Project water, also served from Folsom Lake.

The contract with SJWD for PCWA water allows for 800 acre-feet per year to serve the City of Roseville service areas of Doctors Ranch and Foothills Business Park. An additional 3,200 acre-feet from the SJWD PCWA water is contracted to provide supply to the West Roseville Specific Plan area. These supplies are only available during wet and normal years.

The City may purchase Section 215 water from the US Bureau of Reclamation when available, but has not done so at this time. Section 215 water is water the Bureau releases from Folsom lake that is in excess of the entitlements and rights of downstream users, and is usually only available during winter months.

Table 4-1. Roseville Surface Water Supplies

Source	Contract number	Amount (acre-feet)
USBR – Central Valley Project, Folsom Lake	14-06-200-3474A	32,000
PCWA – Middle Fork Project	--	10,000
Option	--	10,000
Option	--	10,000
SJWD – PCWA Middle Fork Project	--	4,000
Total		66,000

4.1.2. Physical Constraints

There are no physical constraints on the current surface water supplies that limit the ability to meet current and projected demands within the City's existing service area. The capacities of the Folsom Dam diversion, Roseville Water Treatment Plant plus current expansion, and distribution systems are sufficient to divert, treat, and convey the projected surface water demands. A 150 CFS capacity limitation at the USBR pumping plant, agreed to based on pumping plant improvements made, is sufficient to provide water to meet Roseville's need legal constraints.

The only legal constraints on the current surface water entitlements are contract stipulations. The Water Forum includes a signed agreement that is not legally binding, but the City intends to comply with all conditions negotiated and agreed to.

Contract stipulations are placed on each of the contracts. The USBR CVP contracts are subject to 25 percent reductions during "dry years" as determined by the USBR. The PCWA contract does not include restrictions and is considered 100 percent reliable, absent a catastrophic event. The City is working on a long term supply contract with PCWA for the full 30,000 acre-feet/year. The contract with SJWD for 4,000 acre-feet per year of PCWA water limits the availability to only during wet or normal years as defined.

The Water Forum Agreement was developed in an attempt to preserve the fishery, wildlife, recreational, and aesthetic values of the lower American River and in an effort to provide a reliable and safe water supply for the region. The City is a signatory of the Water Forum Agreement and a member of the successor effort.

The Water Forum Agreement diversion restrictions are dependant upon the March through November projected unimpaired flows to Folsom Reservoir. When the projected March through November unimpaired inflow into Folsom Reservoir is greater than 950,000 acre-feet, the City agreed to only diverting 58,900 acre-feet per year from Folsom Reservoir, which is less than its full contract entitlement of 66,000 acre-feet. Years during which the March through November unimpaired inflow into the Folsom Reservoir is between 950,000 acre-feet per year and 400,000 acre-feet per year are considered to be drier years by the Water Forum. During drier years, the City agreed to divert a decreasing amount from 58,900 acre-feet per year down to 39,800 acre-feet per year from Folsom Reservoir in proportion

of the decreasing unimpaired inflow to Folsom Reservoir. Driest years (also known as Conference Years) are defined as years when projected March through November unimpaired inflow into Folsom Reservoir is less than 400,000 acre-feet per year. The City agreed to only divert 39,800 acre-feet per year during the Driest Years. When supplies are limited to the lower end of the Water Forum ramp, the City will also provide up to 20,000 acre-feet of re-operation water to the American River (equal to difference between 39,800 acre-feet and 1995 baseline demand of 19,800 acre-feet). The City will enter into an agreement with Placer County Water Agency whereby PCWA will modify operations of their reservoirs to provide the agreed upon flow in the American River for that year. During all supply reduction scenarios, the City will reduce the demand through additional conservation and supplement supplies with groundwater and increased recycled water use.

4.2. Groundwater

The City maintains groundwater wells for backup supply and dry year supply. The City is also investigating using its wells for aquifer storage and recovery (ASR) purposes to store potable water in the aquifer when available for use during other times. The groundwater basin was studied in the 1998 West Placer Groundwater Management Plan by PCWA, as included in this UWMP in Appendix D. This plan is currently under update but is not yet complete. The Groundwater Management Plan is summarized below as it pertains to the City of Roseville's water supply.

4.2.1. Description

Roseville is over the North American River groundwater basin which underlies north Sacramento, south Sutter, and west Placer Counties. The DWR Bulletin 118-80 divides the basin into two sub-basins within Placer and Sacramento Counties. The Sacramento County Basin is that basin north of the American River in Sacramento County. The second basin is immediately adjacent to the Sacramento County Basin, and is the remaining basin in the Sacramento Valley that includes west Placer County (West Placer Groundwater Management Plan, PCWA, 1998).

Groundwater elevation levels in the basin along the Placer/Sacramento County line have been steadily declining 1 to 1.5 feet per year through 1998 (the date of the groundwater management plan). The steady decline in groundwater levels has resulted in a decrease in quality for some wells. Quality concerns can be attributed to increased movement in known contaminant areas (such as McClellan AFB or the Union Pacific rail yard), or due to areas of natural occurring contaminants influencing the pumping zone of wells. However, the City has not lost any wells due to water quality issues from these two known contaminant areas.

The basin has historically been pumped by agricultural and urban users. Over the past ten years, agriculture land is being developed and converted to urban uses. With this conversion, the agriculture pumping demand will decrease. If the demand is not replaced by other pumping demands, it is anticipated that the basin pumping demands will decrease, potentially improving the condition of the basin.

4.2.2. Physical Constraints

The physical constraints on the current groundwater supply are the pumping capacities of existing wells. Two of Roseville's wells (Pacific Street and Church Street) have been taken out of service. The Pacific Street well water level decreased to below the pump. The Church Street well was placed off line due to low levels of TCE in the groundwater, although it is still connected to the system. Limited use of the well is allowed by California Department of Health Services, but it is the City's policy that it not be operated. The City plans to install more wells in the future to provide backup and dry year supply, in addition to potential wet and normal year storage of potable water as described later in this chapter.

4.2.3. Legal Constraints

There are no existing legal constraints that limit groundwater pumping. A recent draft study by PCWA indicates a potential safe yield of 130,000 acre-feet/year has been suggested for this basin. However, the legal authority to enforce the safe yield has not been created, and the basin is subject to the users cooperation in managing the basin until a formal authority is created. These issues and concerns are being discussed as part of the groundwater management plan update.

4.3. Desalination

As shown in Table 4-2, there are no opportunities for the development of desalinated water within the City's service area as a future supply source.

Table 4-2. Opportunities for Desalinated Water

Sources of water	Opportunities
Ocean water	none
Brackish ocean water	none
Brackish groundwater	none

4.4. Water Quality

This section describes the water quality of the existing water supply sources within the City and the manner in which water quality affects water management strategies. In addition, this section describes the manner in which water quality affects the water supply.

The quality of existing surface water and groundwater supply sources over the next 25 years is expected to be adequate. Surface water will continue to be treated to drinking water standards, and no raw water quality deficiencies are foreseen to occur in the next 25 years.

The City is currently conducting an ASR pilot study that injects treated water into the groundwater basin for withdrawal at a later time. The City anticipates that test result will indicate that the groundwater

quality is not adversely impacted by the ASR process, and that the ASR process will be permitted.

Although there have been instances of localized groundwater quality issues, it is anticipated these will continue to be local and that overall, the groundwater quality will remain above potable water standards. All groundwater supplies currently meet or exceed current drinking water standards, including secondary standards regulated for aesthetic qualities. Iron and manganese are two metals that occur naturally within the geological formations from which the groundwater is extracted, and are known to be at elevated levels in wells of surrounding water systems. The City does not anticipate that iron and/or manganese will impact their groundwater supply availability.

Water quality affects the City's water management strategies through the City's efforts to be in compliance with Federal and State regulations. These regulations require rigorous water quality testing, source assessments, and treatment compliance. If permitted, the ASR system will conduct the required testing as defined by the State. No other special water management strategies due to water quality are anticipated.

A summary of the current and projected water supply changes due to water quality is provided in Table 4-3.

Table 4-3. Current and Projected Water Supply Changes Due to Water Quality, percent

Water supply sources	2005	2010	2015	2020	2025	2030
Surface Water – Lake Folsom	0	0	0	0	0	0
Groundwater	0	0	0	0	0	0
Recycled water[a]	0	0	0	0	0	0
Desalination water	0	0	0	0	0	0

Note:
[a] Recyled water supply is discussed separately in Chapter 5.

4.5. Current and Projected Normal Year Water Supplies

Table 4-4 presents the projected normal year supply for the City's service area. The groundwater supply is assumed zero as the City only plans on using groundwater as a backup supply or during dry years. The recycled water supply is described in Chapter 5. No water supply loss due to water quality is anticipated.

Table 4-4. Projected Normal-Year Water Supplies, acre-feet/year

Water supply sources	2005	2010	2015	2020	2025	2030
Surface Water						
USBR CVP	32,000	32,000	32,000	32,000	32,000	32,000
PCWA	30,000	30,000	30,000	30,000	30,000	30,000
SJWD – PCWA	4,000	4,000	4,000	4,000	4,000	4,000
Surface water subtotal	66,000	66,000	66,000	66,000	66,000	66,000
Water Forum Max Surface Water Diversion[a]	58,900	58,900	58,900	58,900	58,900	58,900
Groundwater[b]	0	0	0	0	0	0
Recycled water[c]	2,045	4,399	4,832	5,266	5,699	6,133
Water supply loss due to water quality	(0)	(0)	(0)	(0)	(0)	(0)
Desalination water	0	0	0	0	0	0
Total	60,945	63,299	63,732	64,166	64,599	65,033

Notes:
[a] Total surface water diversion limited to 58,900 acre-feet/yr per the Water Forum Agreement.
[b] Groundwater not to be used in normal and wet years.
[c] Recycled water is discussed in Chapter 5 of this Plan.

4.6. Water Supply Reliability

This section describes the reliability of the water supply and vulnerability to seasonal or climatic shortage. A water supply reliability comparison is made in Table 4-5 and shown in Figure 4-1 for the year 2025 considering three water supply scenarios: average/normal-water year; single-dry water year; and multiple-dry water years. Restrictions listed in the table are due to contract and Water Forum restrictions. The contract restrictions on the CVP water are enforced by the USBR during "dry" years. It is assumed that the CVP water will be reduced to its contracted stipulated amount of 75 percent of contract for each water supply scenario. The Water Forum restrictions do not apply to specific contracts or entitlements, but are applied to the City's surface water use as a whole. Restrictions are based on the terms as described in Section 4.1.3. In summary, the City can divert between 39,800 acre-feet per year and 58,900 acre-feet per year of American River water in "drier" years and 39,800 acre-feet or less in "conference" years.

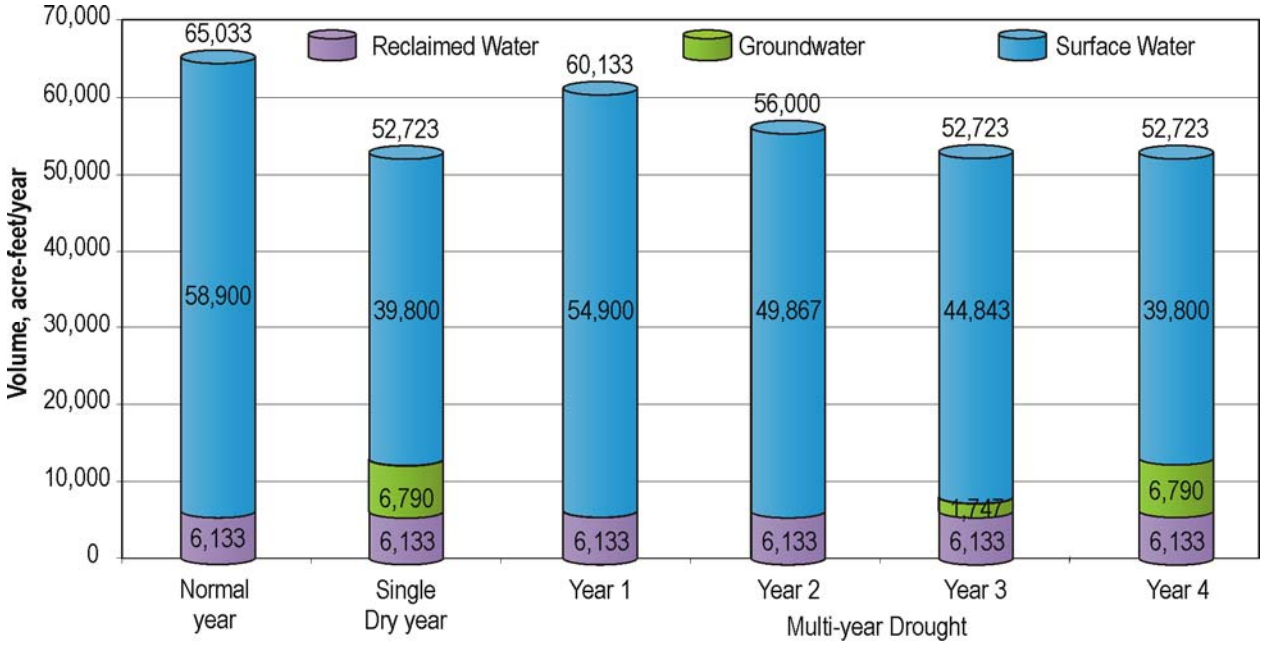


Figure 4-1. 2030 Supply Reliability Comparison

Table 4-5. Water Supply Reliability at 2030, acre-feet/year

Water supply sources	Normal water year	Single dry water year[b]	Multiple dry water years[c]			
			Year 1	Year 2	Year 3	Year 4
Surface Water						
USBR CVP	32,000	24,000	24,000	24,000	24,000	24,000
PCWA	30,000	30,000	30,000	30,000	30,000	30,000
SJWD – PCWA	4,000	0	0	0	0	0
Surface water total	66,000	54,000	54,000	54,000	54,000	54,000
Water Forum max. allowable[a]	58,900	39,800	54,900	49,867	44,843	39,800
Groundwater	0	6,790	0	0	1,747	6,790
Recycled water[d]	6,133	6,133	6,133	6,133	6,133	6,133
Water supply loss due to water quality	(0)	(0)	(0)	(0)	(0)	(0)
Desalination water	0	0	0	0	0	0
Total Supply	65,033	52,723	60,133	56,000	52,723	52,723
Percent of normal year supply	100%	81%	92%	86%	81%	81%

Notes:

[a] Water Forum restrictions are on allowable surface water diversion only and do not impact groundwater or recycled supply availability. Water Forum restrictions are the controlling factor on allowable surface water diversions, except for Year 1 of a Multiple-dry water year, when the Contract restriction is controlling.

[b] Single Dry Water Year is assumed to be the minimum Water Forum Ramp flow based on inflow to Folsom equal to 400,000 af; SJWD 4,000 af is not available.

[c] Dry Year assumptions as follows:

Year 1 - Folsom inflow = 950,000 af., SJWD 4,000 af is not available.

Year 2 – Year 4 - Folsom inflow is reduced per a straight line method from 950,000 af to 400,000 af, corresponding Water Forum surface water restrictions are also reduced per a straight line method from 54,900 af to 39,800 af

[d] Recycled water is discussed in Chapter 5 of this Plan.

The definitions of the three water supply scenarios, as provided by DWR (DWR, 2005), are provided below. The basis of the water year data to develop the water supply reliability in Table 4-5 is provided in Table 4-6.

1. Normal year is a year in the historical sequence that most closely represents median runoff levels and patterns. Normal is defined as the median runoff over the previous 30 years or more. This median is recalculated every ten years.

2. Single-dry year is generally considered to be the lowest annual runoff for a watershed since the water year beginning in 1903.

3. Multiple-dry year period is generally considered to be the lowest average runoff for a consecutive multiple year period (three years or more) for a watershed since 1903.

Table 4-6. Basis of Water Year Data

Water year type	Base year(s)
Single-dry water year	1976-1977
Multiple-dry water years	1987-1990

This data is based on American River flows into Folsom Reservoir. The single dry water year March to November runoff during the 1977 water years was 311,000 acre-feet. Applying the Water Forum Agreement, the maximum allowable diversion for the City is 39,800 acre-feet. This value is listed in Table 4-5 as the surface water Water Forum maximum allowable for the single dry water column. The lowest four-year average runoff into the Folsom Reservoir was during the 1987-1990 water years. However, this dataset contains an anomaly in that the third year was a normal year and the March-November inflow to Folsom Reservoir exceeded 950,000 acre-feet. Using this dataset for the multiple dry year supply projections would mean that there would be no reductions during the third year. As the City prefers to take a more conservative approach, a different methodology was used to determine the supply scenario during a multiple year drought. The first year of the multiple year drought was assumed to have inflow to Folsom Reservoir right at the upper limit of the ramp, 950,000 acre-feet. At this level, the SJWD 4,000 acre-feet is not available and the maximum diversion for the City is 54,900. The analysis then assumes that maximum allowable surface diversions will be decreased according to the linear reductions of the Water Forum ramp, with the fourth year of the drought allowable diversion assumed to be 39,800 acre-feet. The assumed allowable surface water diversions are listed in Table 4-5 as the Surface Water Forum Maximum Allowable for Year 1 through Year 4 of the multiple dry water years.

The City intends to use up to 6,790 acre-feet of groundwater for dry year supply only although additional capacity may exist. When excess water is available, the City intends to recharge the groundwater basin through ASR when permitted, and allow natural recharge of the basin, so that water is available during "dry" years. It is assumed groundwater quantity is generally unaffected by short-term drought conditions and therefore does not impact this conjunctive use strategy employed by the City. The conjunctive use strategy is indicated in the supply and demand tables throughout this Plan.

Water quality issues are not anticipated to have significant impact on water supply reliability. At this time, it appears there are no known surface water quality issues that could impact availability or reliability. It is assumed that any localized groundwater contamination can be isolated and/or mitigated by constructing new treatment facilities for treatment prior to delivery into the water distribution system. No groundwater treatment systems are currently anticipated or planned.

A summary of the factors resulting in inconsistency of the surface water and groundwater supply sources is provided in Table 4-7.

Table 4-7. Factors Resulting in Inconsistency of Supply

Water supply sources	Legal	Environmental	Water quality	Climatic
Surface water	X	X		X
Groundwater	X	X	X	

4.6.1. Projected Single-Dry Year Water Supplies

The projected single-dry year water supplies are provided in Table 4-8. The value assumes that CVP water will be reduced to 75 percent of contract value. The value is based on the reliability analysis summarized in Table 4-5. For the years 2005-2015, the available supply is greater than the dry year demand, and groundwater is not required. For years 2020-2030, groundwater is necessary to meet the dry year demand due to cutbacks to surface water. Detailed comparisons of demands and supplies are presented in Chapter 7.

Table 4-8. Projected Single-Dry Year Water Supplies, acre-feet/year

	2005	2010	2015	2020	2025	2030
Surface water	39,800	39,800	39,800	39,800	39,800	39,800
Groundwater	0	0	0	2,756	4,714	6,790
Recycled water	2,045	4.399	4,832	5,266	5,699	6,133
Total supply	41,845	44,199	44,632	47,822	50,213	52,723
Percent of normal year supply	69%	70%	70%	75%	78%	81%

Note:
Units of Measure: acre-feet/year
Normal year supply from Table 4-4

4.6.2. Projected Multiple-Dry Year Water Supplies

This section projects the impact of a multiple-dry year period for each five-year period up to 2030. Table 4-9 provides an estimate of the projected multiple-dry year water supplies for each five-year period. Individual supply components are compared to projected demands in Chapter 7.

Table 4-9. Projected Multiple-Dry Year Water Supply for Five-Year Groupings

Year	Total Supply, Acre-feet/year	Percent of Normal Year Supply
2006	56,516	92%
2007	52,854	85%
2008	48,300	77%
2009	43,728	70%
2010	44,199	70%
2011	59,386	94%
2012	54,439	86%
2013	49,502	78%
2014	44,545	70%
2015	44,632	70%
2016	59,819	94%
2017	54,873	86%
2018	49,935	78%
2019	46,952	73%
2020	47,822	75%
2021	60,253	94%
2022	55,306	86%
2023	50,369	78%
2024	49,735	77%
2025	50,213	78%
2026	60,686	94%
2027	55,740	86%
2028	51,719	80%
2029	52,221	80%
2030	52,723	81%

Note: Assumes multiple-dry year water condition begins at the beginning of each 5-year grouping.

4.6.3. Three-Year Minimum Water Supply

The City's water supply is subject to two separate restrictions, contractual and the Water Forum. The USBR contract allows for 75 percent reduction during dry years, and the SJWD contract allows for complete reduction if inflow to Folsom Reservoir is 950,000 acre-feet per year or less. The Water Forum represents the other restriction as previously discussed. Both the three-year minimum water supply scenarios for the next three years are presented below in Table 4-10. As the Water Forum restriction is the lowest reduction, it is used as the surface water supply, then the recycled and groundwater supplies are added to develop the total available supply. The Normal supply is shown in the last column for comparison.

Table 4-10. Estimated Minimum Water Supply, acre-feet/year

Source	2006	2007	2008	Normal (2008)
Surface Water				
USBR CVP	24,000	24,000	24,000	32,000
PCWA	30,000	30,000	30,000	30,000
SJWD – PCWA	0	0	0	4,000
Total	54,000	54,000	54,000	66,000
Water Forum Allowable Surface Water	39,800	39,800	39,800	58,900
Supplier produced groundwater	0	0	0	0
Recycled water	2,516	2,987	3,457	3,457
Total	42,316	42,787	43,257	62,357

4.7. Water Supply Projects

The City is currently planning to implement a variety of water supply projects to increase reliability and provide dry year supplies. Projects that will increase water supplies are listed in Table 4-11. The City intends to construct eight new wells for dry weather supply only. The total new supply from the wells will be limited to only the volume required to meet the dry year demands. Therefore, a total supply is shown in the table instead of individual well supplies. The City is converting some wastewater force mains for use in the recycling distribution system, and is adding recycling infrastructure as new developments are constructed to meet the projected system demands. Future planning efforts and projects are described below.

Table 4-11. Future Water Supply Projects

Project Name	Projected start date	Projected completion date	Normal water year, Acre-feet/ yr	Single-dry water year, acre-feet/year	Year 1	Year 2	Year 3	Year 4
New Wells[2]								
Woodcreek North Well	2006	2006	--	--	--	--	--	--
Woodcreek West Well	2007	2008	--	--	--	--	--	--
HP Well	2008	2009	--	--	--	--	--	--
Del Webb Well	2009	2010	--	--	--	--	--	--
West Roseville Specific Plan (Annexation Area) -4 Wells	2006-2009	2007-2010	--	--	--	--	--	--
Well Totals[1]			0	6,790	6,790	6,790	6,790	6,790
Recycled water distribution infrastructure[2]	ongoing	2015	6,133	6,133	6,133	6,133	6,133	6,133

Notes:

[1] Groundwater wells will only be used for dry year supply, it is assumed total groundwater production during dry years will be 6,790 acre-feet/year.

[2] Recycled projects will support up to 6,133 acre-feet/year in 2030.

4.7.1. Water Supply Facilities

Roseville has made improvements to the Folsom Dam pumping station and the raw water delivery system to meet the needs of the City through projected build out. No additional supply capacity is currently anticipated or planned for. Water supply reliability, however, is being studied. At the request of the USBR, Roseville and other water purveyors that receive Folsom Lake water are studying the feasibility of onsite facility improvements to allow for maintenance of the existing single dam outlet and a pipeline on USBR property to add additional operational flexibility required for maintenance.

4.7.2. Water Treatment Facilities

Roseville's water treatment plant is currently under expansion from 60 mgd to 100 mgd, scheduled for completion in 2008. The expansion is for system reliability, daily peaking requirements, and regional conjunctive use strategies, not for dry year supplies. Therefore, the expansion does not provide additional supply dry year scenarios.

The City is also part of a group of agencies that are studying the construction of a new water treatment facility on the Sacramento River, led by PCWA. The new treatment plant will allow access to USBR water without impacting the Lower American River, which is consistent with the Water Forum Agreement. Roseville plans to receive 10 mgd of capacity from this new plant when it is constructed.

4.7.3. Water Storage Facilities

Water storage capacity is required to manage flow fluctuations in the system on a daily basis and maintain sufficient storage to address emergency needs such as main breaks or fire flows. The water system currently has 28 million gallons (MG) of storage and is projected to need a total of 49 MG at system build out. Storage projects currently in the capital plan along with the anticipated schedule are listed in Table 4-12. None of the storage projects are expected to increase total water supplies.

Table 4-12. Future Water Storage Projects

Project name	Tank Volume, MG	Projected completion date
Northeast tank	6	2013
Stoneridge Zone 2	3	2009
North Industrial Tank	6	2018
West Roseville Specific Plan Tank	6	2008

Note:
MG = million gallons

4.7.4. Water Distribution Facilities

Water transmission facilities have been mostly completed within the City of Roseville with exception to the annexation area which has no existing infrastructure and all is planned as part of the project development. There are several small sections of water main within the pre-annexation City service area that must be completed to finish the master plan distribution system and will be completed over the next several years. These facilities are mainly pipe segments in the North Central Specific Plan area of Roseville for which layout has been completed. Construction of these projects is anticipated to begin in 2006.

Annexation area infrastructure has been conceptually designed, sized, and timing identified in a phasing plan linked to development. This infrastructure will be constructed by the developer with design approval and construction oversight by the City of Roseville. Infrastructure improvements will be made through the 15-year build out of the annexation area and will include looped transmission and distribution mains to meet the needs to the community.

When the Sacramento River water treatment plant is constructed, it will also include a new supply line to deliver treated water to the west side of Roseville's distribution system.

4.7.5. Groundwater Wells

Groundwater wells are currently only utilized for backup and dry year water supplies. In order to prepare for shortages in the future and eventual use of conjunctive use programs currently being studied, additional wells are being planned for the system. These wells are planned to produce a nominal 2,000 gallons per minute (gpm) with final production identified upon drilling and well development. When wells are used for backup or dry year supply, it is anticipated that they will only be run for short periods of time (in the case of backup), and for only a portion of the year (in the case of dry year supply). All wells will be constructed with capability to recharge the aquifer directly with treated surface water as a key element required for conjunctive use programs. Storage projects currently in the capital plan along with the anticipated schedule are listed in Table 4-13.

Table 4-13. Future Well Projects

Project name	Production, gpm	Projected completion date
Woodcreek North Well	1,800	2006
Woodcreek West Well	1,800	2008
HP Well	1,800	2009
Del Webb Well	1,800	2010
West Roseville Specific Plan (Annexation Area) – 4 Wells	1,800 x 4	2007-2010
Total new supply anticipated for dry year use	6,790 acre-feet[1]	

Notes:
[1] Groundwater wells will only be used for backup or dry year supply, it is assumed total groundwater production during dry years will be 6,790 acre-feet/year based on estimates of surface water available and system demands..
gpm = gallons per minute

4.8. Transfer and Exchange Opportunities

Roseville maintains an on-demand treated water system that is used for municipal and industrial purposes. Raw water for other appropriate uses, common in surrounding areas, is not an option due to the location of the treatment facilities and raw water source. In addition, Roseville maintains direct treated water interties with four surrounding jurisdictions. Roseville can transfer water between jurisdictions through these interties or access water to supplement its distribution system. These facilities are designed to be used for wheeling water through the service area or for short-term demand shortage assistance. These exchanges are transfers are not considered long term and not included as long term or permanent opportunities.

The City recently participated in a pilot groundwater banking and exchange program in conjunction with the Regional Water Authority. This pilot program has the potential to transfer water to the California Department of Water Resources' environmental water account on a short-term basis. The City intends to work with the RWA to identify both short-term and long-term exchange and transfer opportunities with other RWA members.

The regional water master plan developed by the American River Basin Cooperating Agencies (Montgomery Watson, 2003) identifies several potential projects for transferring water. The City is constructing a large interconnection, pipelines, and pumping station, and is installing a 24-inch connection in PFE Road for transferring water.

The Water Forum Agreement calls for Roseville to enter into a re-operation agreement with PCWA for up to 20,000 acre-feet during when Roseville's surface diversion is cut back. In general, the agreement will call for PCWA to release up to an additional 20,000 acre-feet to the American River on an annual basis. The water is to maintain flows in the Lower American River (Nimbus dam to Sacramento River), and therefore is not available for Roseville's use. This re-operation water is considered a transfer, although the ultimate user, if any, of the water will not be selected until the agreement is created. It is possible there could be multiple users, as the water will flow to the Delta and theoretically be available to all Delta water users.

The City is party to the current study evaluating the construction of a new water treatment plant on the Sacramento River. If constructed, Roseville would receive up to 7,100 acre-feet of its American River water from this new plant. As the new source would be the Sacramento River, the City will need to modify its contracts and agreements to allow for an exchange of its American River rights to Sacramento River rights.

A summary of the City's water supply transfer and exchange opportunities is provided in Table 4-14. The Water Code definition of short and long-term is that short-term is for a period of one year or less and long-term is for a period of more than one year. Currently, the City only exchanges water with PCWA in two specific areas where each respective agency can more easily service the other's small service area. The assumed net exchange between agencies is 0.0. Other transfers (PCWA and SJWD) have been converted to contracts and are listed as contract water supply in Table 4-1.

Table 4-14. Transfer and Exchange Opportunities

Transfer agency	Transfer or exchange	Short-term quantity, acre-feet/year	Long term quantity, acre-feet/year
PCWA	Exchange	0.0 net	--
PCWA (through re-operation agreement with Roseville)	Transfer	20,000	--
Bureau of Reclamation (American River to Sacramento River)[a]	Potential exchange	--	7,100

Notes:

[a] This exchange is planned if a new treatment plant is constructed on the Sacramento River per the ongoing study.

SECTION 5
RECYCLED WATER

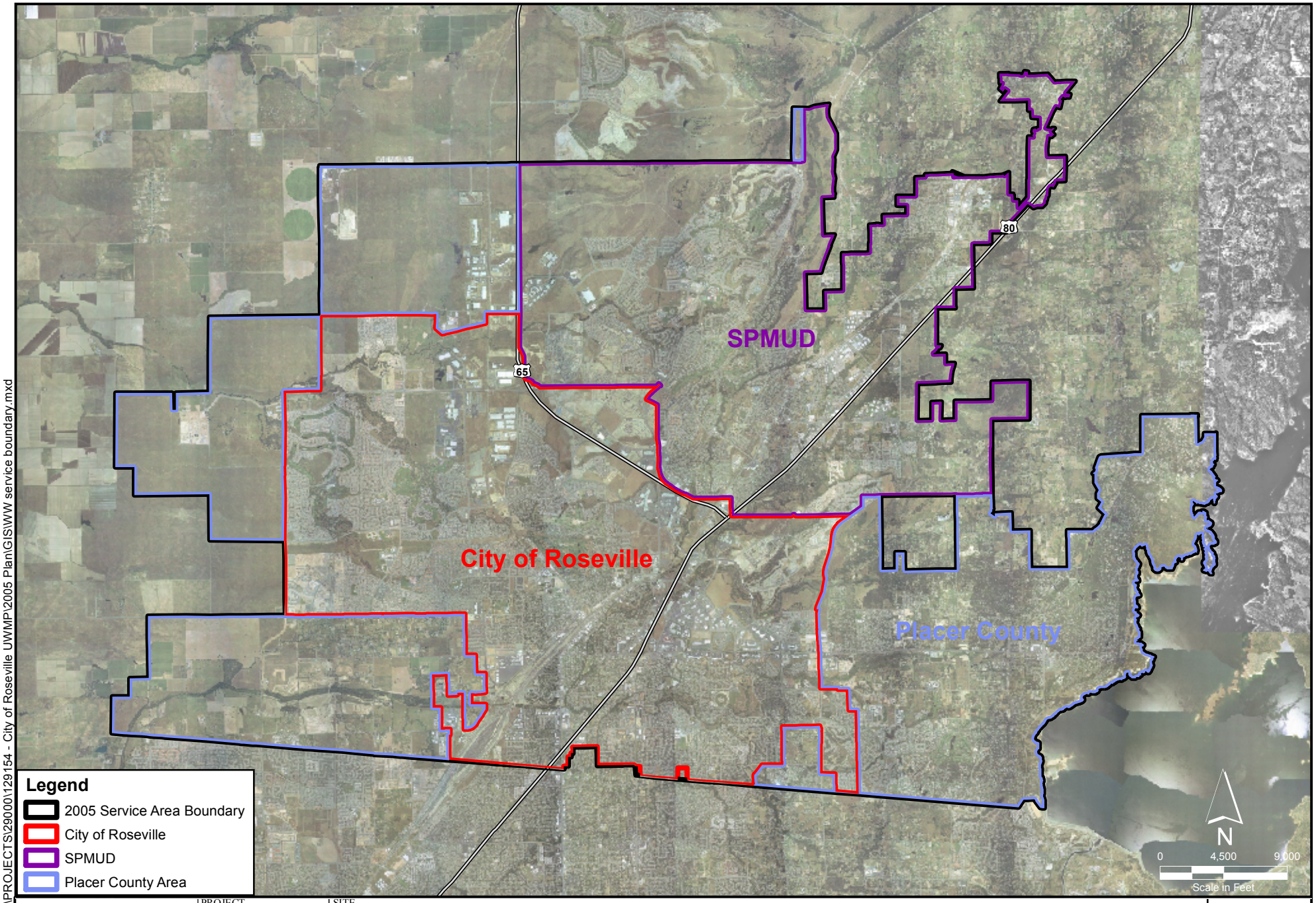
The City of Roseville currently operates two regional wastewater treatment facilities that treat flow from the City of Roseville, South Placer Municipal Utilities District, and areas of Placer County. This chapter provides information on the wastewater and its current and potential reuse as a recycled water resource in the City.

5.1. Recycled Water Plan Coordination

The City of Roseville has recently completed a regional wastewater and recycled water study comprised of a series of technical memorandums (Wastewater and Recycled Water Systems Evaluation Project, RMC and Brown and Caldwell) to evaluate potential demands and supply requirements for a range of scenarios. The study was completed by the City of Roseville on behalf of the South Placer Wastewater Authority. The study included the agencies in the wastewater collection area and the recycled water demand area, which is larger than the City of Roseville. Existing wastewater agency boundaries are shown in Figure 5-1. Prior to the recent study, Roseville had completed recycled master plans for the City and the West Roseville Specific Plan, both of which considered potential demands outside of the City and the West Roseville area. All agency elements for a reuse program within the City boundary, including land planning, development, wastewater treatment, and water supply, are all part of the City of Roseville government organization. Table 5-1 lists the agencies involved in reuse planning and each respective involvement.

Table 5-1. Agency Participation in Reuse Planning

Participating agencies	Role
City of Roseville	Planning, development, wastewater treatment, and water supply all active in development of plan regarding each respective area.
City of Roseville on behalf of South Placer Wastewater Authority	Lead in regional recycled planning. Lead in regional wastewater planning
Regional Water Authority	Provides forum and update to local water agencies regarding Roseville's reuse program.
Placer County Water Agency	Integrated Roseville's recycled study results into PCWA water demand projections.
Placer County	Consolidating WWTP's in west Placer with some flow going to Roseville, updated by Roseville on recycled water study progress and impacts.



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BROWN AND CALDWELL

PROJECT	SITE	
129154	City of Roseville UWMP, Roseville, California	Figure
DATE	TITLE	
1-16-06	Wastewater Service Boundary	5-1

5.2. Existing Wastewater Treatment and Collection

The City of Roseville currently operates two regional wastewater treatment facilities. The Dry Creek wastewater treatment plant (DCWWTP) is located on Dry Creek. The DCWWTP collection system is primarily gravity. Tertiary treated effluent that is not reclaimed is discharged into Dry Creek. The DCWWTP average dry weather flow capacity is currently 18 mgd.

The new Pleasant Grove wastewater treatment plant (PGWWTP) discharges to the Pleasant Grove Creek. The PGWWTP wastewater collection system is also primarily gravity flow. Tertiary treated effluent that is not recycled is discharged into Pleasant Grove Creek. The PGWWTP average dry weather flow capacity is currently 12 mgd.

Both the DCWWTP and PGWWTP are activated sludge treatment plants that produce disinfected tertiary-treated effluent (Title 22). This treatment level is achieved through screening, grit removal, primary clarification, aeration, secondary clarification, filtration, chlorination, and dechlorination.

Wastewater collection is handled through individual agency staffs. Roseville handles collection within the service area corresponding to the City incorporated boundaries. Other surrounding agencies that are also part of the regional facility collect wastewater which is conveyed through trunk sewers to the regional treatment facilities. Metering stations are located at service area boundaries to account for the wastewater treated for each entity.

5.3. Estimated Wastewater Quantity and Quality

The City of Roseville wastewater treatment plants serve an area that is larger than the City of Roseville. The service area also encompasses areas served by Placer County and the South Placer MUD (SPMUD) as shown in Figure 5-1. Wastewater is generated both in and outside the City from a combination of residential and commercial sources. The quantities of wastewater generated are proportional to the population and the water use in the service area. Estimates of the wastewater flows generated within the service area and for the City-specific boundary for the present and future conditions are presented in Table 5-2. Figure 5-2 illustrates the region's general wastewater and recycled water flows. All effluent from both WWTPs meets Title 22 recycled water standards.

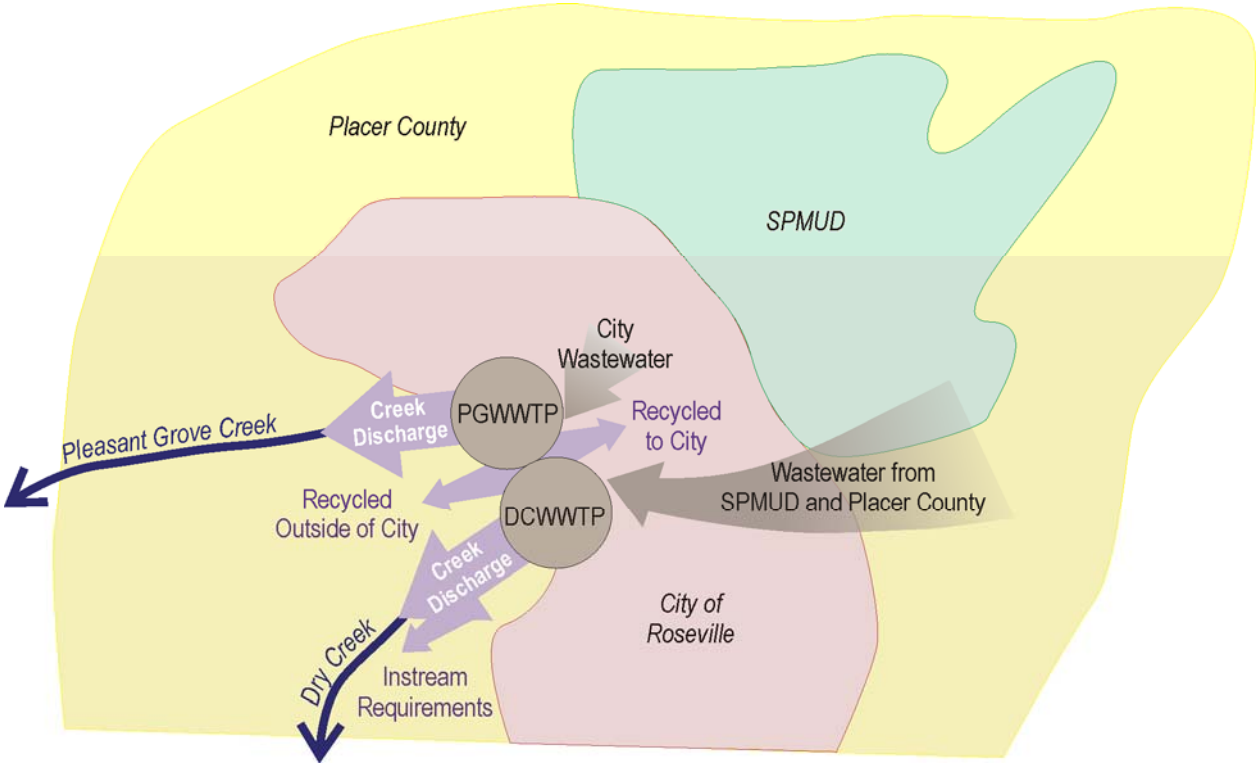

Figure 5-2. Regional Wastewater and Recycled Water Schematic

Planned disposal methods and quantities are presented in Table 5-2. The City is required to maintain a four million gallons per day discharge into Dry Creek as an in-stream flow requirement. This demand is listed separately in Table 5-2, as it is not counted as a recycling water demand in the recycling customer and demand information presented throughout this Plan. The City is currently conducting a reclaimed study that is evaluating all potential demands within economically feasible distances from the two WWTPs. Total Reclaimed listed in Table 5-2 for 2010-2030 represents the demands the City has determined are economically feasible to serve. City demands are only those within the City's existing water service boundary (including West Roseville Specific Plan), and do not include other areas, such as the MOU areas. These projected demands are also shown in Figure 5-3. Figure 5-4 presents the total projected regional reclaimed water demands. The Potential Reclaimed Usage is all remaining flow that will be discharged to the two creeks but is not assigned to a demand, which is the total wastewater generated minus Environmental Use minus projected Total Reclaimed. Because all discharged effluent is Title 22 compliant, it is available for potential reclaimed usage. However, the City has not identified specific regional or downstream uses at this time for the excess flow. It is important to realize that the City has maximized the use of recycled water. For example, the highest demand for recycled water is in the month of July, the same time the recycled supply is the lowest. To use the recycled water listed as "Potential", the City would have to "bank" or store the water produced in the winter months when there is no demand. The storage volume necessary would depend on actual demand requirements, but at this time, winter storage requirements are considered too large to be economically feasible. The City will continue to evaluate regional reclaimed demands and consider its ability to provide reclaimed water supply for future project.

Table 5-2. Current and Projected Reclaimed Water

	2000 actual		2005 actual		2010 projected		2015 projected		2020 projected		2025 projected		2030 projected	
	Regional	City	Regional	City	Regional	City	Regional	City	Regional	City	Regional	City	Regional	City
Wastewater Generated														
DCWWTP	17,027	10,216	14,193	8,516	15,660	8,535	17,126	8,554	18,592	8,572	20,059	8,591	21,525	8,610
PGWWTP	--	--	6,083	3,650	10,128	5,024	14,173	6,399	18,218	7,774	22,263	9,149	26,308	10,523
Annual ADF Adjust. (10%)	--	--	--	--	2,579	1,356	3,130	1,495	3,681	1,635	4,232	1,774	4,783	1,913
Total:	17,027	10,216	20,276	12,166	28,366	14,915	34,429	16,448	40,491	17,981	46,554	19,514	52,617	21,047
Quantity that meets Title 22	17,027	10,216	20,276	12,166	28,366	14,915	34,429	16,448	40,491	17,981	46,554	19,514	52,617	21,047
Environmental Use (4 mgd)	4,481	4,481	4,481	4,481	4,481	4,481	4,481	4,481	4,481	4,481	4,481	4,481	4,481	4,481
Reclaimed Water Use														
Agriculture														
Landscape	1,100	1,100	2,045	2,045	4,345	2,479	6,644	2,912	8,944	3,346	11,243	3,779	13,543	4,213
Wildlife Habitat														
Wetlands														
Industrial					3,633	1,920	3,633	1,920	3,633	1,920	3,633	1,920	3,633	1,920
Groundwater Recharge														
Total Reclaimed:	1,100	1,100	2,045	2,045	7,978	4,399	10,277	4,832	12,577	5,266	14,876	5,699	17,176	6,133
Discharged to Creek	15,927	9,116	18,231	10,121	20,389	10,516	24,152	11,616	27,915	12,715	31,678	13,814	35,441	14,914
Potential Reclaimed Usage (only for groundwater recharge)[c]	11,446	4,636	13,750	5,640	15,908	6,036	19,671	7,135	23,434	8,234	27,197	9,334	30,960	10,433

Footnotes:

a. Annual ADF adjust converts average dry weather flow to annual average flow - assumed to be 10 percent (only for projected years beyond 2005)

b. Environmental Use is 4 mgd in-stream flow requirement for Dry Creek.

c. Potential Reclaimed Usage equals total flow discharged to creeks that are not assigned any demand. The Environmental Use is not counted as it is considered an assigned demand. Actual use of this water for normal reclaimed applications is unlikely as it will require an economically unfeasible storage reservoir to store winter discharge until it is needed in the summer months.

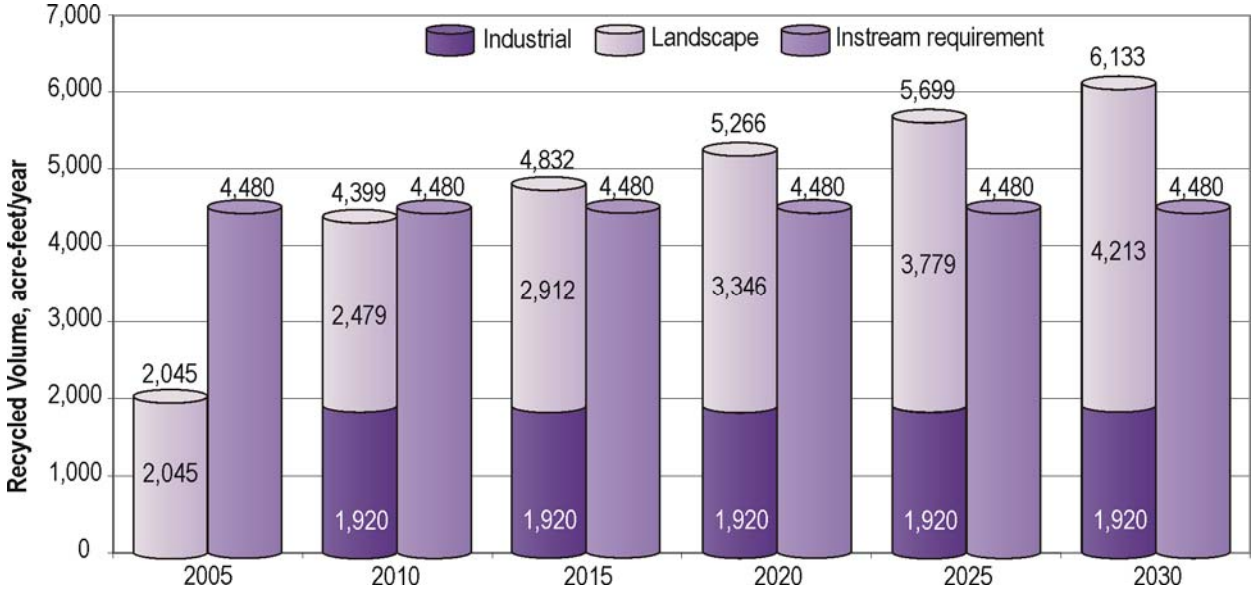

Figure 5-3. City-only Projected Recycled Water Uses

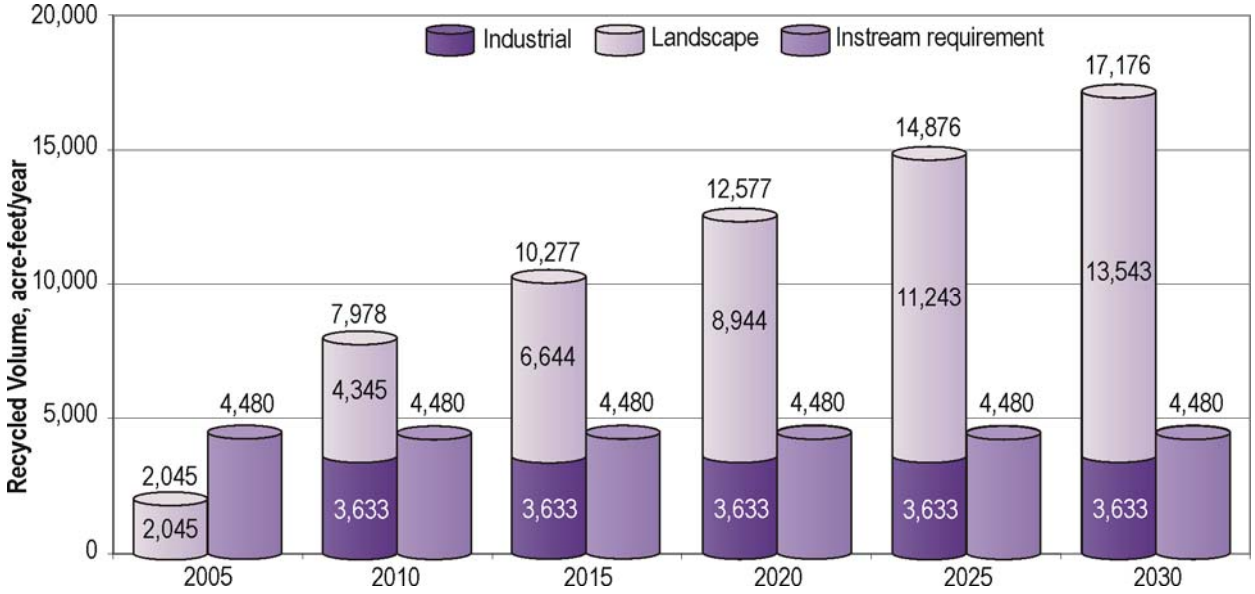

Figure 5-4. Regional Projected Recycled Water Uses

5.4. Water Recycling Current Uses

The City of Roseville's recycling program currently relies on landscape irrigation for its customers. Major customers are the Del Webb community, the Woodcreek Oaks Golf Club, and the Diamond Oaks Golf Course, with some smaller uses that include streetscape landscaping, parks, and irrigation at the Dry Creek WWTP.

Table 5-3 provides a summary of projected and actual use of recycled water. The projected demand for recyled water customers of 2,000 acre-feet was impacted by one major demand that did not connect to the system as planed in 2005. The Wildlife habitat demand is the 4 mgd instream requirement.

Table 5-3. Recycled Water Uses – 2005 Projection Versus Actual

Method of disposal	2000 projection for 2005	2005 actual use
Agriculture	0	0
Landscape	2,000	2,045
Wildlife habitat[1]	0	0
Wetlands	0	0
Industrial	0	0
Groundwater recharge	0	0
4 mgd in-stream requirement	4,480	4,480
Total	6,480	6,525

5.5. Optimizing the Use of Recycled Water

It is the policy of the City that where the use of recycled water is feasible, appropriate, and acceptable to all applicable regulatory agencies, the City will require an owner or customer to use recycled water in lieu of potable water. The City has other methods of encouraging recycled water use including rate discounts and public education. The recycled water rate for customers is 50 percent of the potable water rate. The reduced rate represents a long-term cost savings to the customer. For example, an eighteen-hole golf course could save thousands of dollars per month using recycled water in lieu of potable water. The City also implements an extensive public education campaign to educate its customers about the reliability and other benefits of recycled water. Table 5-4 identifies the measures that are used to encourage the use of recycled water. Roseville has not calculated the individual projected recycled water use per action. Instead, Roseville has implemented all these measures and anticipates that they will result in the total projected demands as listed in Table 5-2.

Table 5-4. Methods to Encourage Recycled Water Uses

Actions	Acre-feet/year of use projected to result from this action				
	2010	2015	2020	2025	2030
Rate discounts	--	--	--	--	--
Prohibit specific fresh water uses	--	--	--	--	--
Public education	--	--	--	--	--
"Guarantee" recycled water supply reliability	--	--	--	--	--
Lack of potable water	--	--	--	--	--
Total	4,399	4,832	5,266	5,699	6,133

SECTION 6
WATER CONSERVATION

The unpredictable water supply and ever increasing demand on California's complex water resources have resulted in a coordinated effort by the DWR, water utilities, environmental organizations, and other interested groups to develop a list of urban demand management measures (DMMs) or best management practices (BMPs) for conserving water. This consensus-building effort resulted in a Memorandum of Understanding Regarding Urban Water Conservation in California (MOU), which formalizes an agreement to implement these DMMs and makes a cooperative effort to reduce the consumption of California's water resources. The DMMs as defined by the MOU are presented in Table 6-1. The DMMs as defined in the MOU are generally recognized as standard definitions of water conservation measures. The MOU is administered by the California Urban Water Conservation Council (CUWCC).

The City of Roseville is not a signatory to the MOU and is, therefore, not a member of the CUWCC. Roseville is, however, a United States Bureau and Reclamation (USBR) contractor that is required to develop and maintain a water conservation plan consistent with the requirements of the CVP of 1992. In addition, Roseville is a member and signatory to the American River Water Forum which also includes requirements for water conservation programs. Both of these plans include conservation measures that are consistent with the BMPs identified by CUWCC MOU. The City addresses the 14 water conservation DMMs by outlining the programs described in the current water conservation plan submitted to the United States Bureau of Reclamation in 2005. Table 6-1 lists the 14 DMMs addressed by the City's conservation program, which are the same as the CUWCC MOU DMMs.

Table 6-1. Water Conservation Demand Management Measures

No.	DMM Name
1.	Water survey programs for single-family residential and multi-family residential connections.
2.	Residential plumbing retrofit.
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.
8.	School education programs.
9.	Conservation programs for commercial, industrial, and institutional accounts.
10.	Wholesale agency assistance programs.
11.	Conservation pricing.
12.	Conservation coordinator.
13.	Water waste prohibition.
14.	Residential ULFT replacement programs.

6.1. Current Water Conservation Program

The City conducts an ongoing water conservation program. A description of each DMM that is currently being implemented or scheduled for implementation, a schedule of implementation, and a method to evaluate effectiveness is provided in this section. The existing and projected conservation implementation, water savings, and costs are also discussed.

DMM 1. Water survey programs for single-family residential and multi-family residential connections.

Description: This water conservation measure involves inspecting the interior and exterior of single-family and multi-family residential water customers' homes by trained surveyors. Surveys identify water-savings potential and provide incentives to reduce water demand.

Single-family surveys are about two hours in length and are conducted by a one to two-member team. During the interior portion of the survey the team measures flow rates of existing plumbing fixtures and tests for toilet leakage with dye tablets, offers showerheads and faucet aerators (if necessary), provides information on the City's ultra-low flush toilet (ULFT) replacement programs, recommends adjustments to the hot water temperature and make recommendations for energy audits if necessary. At this time Roseville does not perform any installation of plumbing or energy conservation hardware due to liability concerns.

The team then conducts a landscape survey. This involves testing the sprinkler system for irrigation efficiency and distribution uniformity, teaching the customer how to set the irrigation controller, suggesting a three-season irrigation schedule (based on soil moisture content, and irrigation system), recommending sprinkler system repairs or improvements, reviewing water bill information, and providing brochures on water efficiency methods and ideas. Multi-family surveys are similar, but require coordination with owners/managers, tenants, and landscaping services. Soil moisture probes are also provided to help schedule irrigation times based on soil moisture content. This has proven to be a valuable incentive to reduce water run off.

In addition to conservation professional audits, Roseville has developed an on-line, homeowner initiated water and energy use review of their home. This helps to provide additional conservation information to those that may not take the time to have an audit performed at their home.

As the City becomes metered and data is collected, the top 20 percent of water users are identified through the billing system. Phone calls are made and site visits are scheduled during which the City offers rebates and services including Water Wise House Calls to the highest water users. City staff also offer other incentives if customers do not choose to participate in an audit.

Methods to Evaluate Effectiveness: For each dwelling unit or customer account participating in a City program, the survey team completes a customer data form (including number of people per

household, number of bathrooms, number of flushes per-person, toilet tank volumes, and faucet/showerhead flow rates. This data is used to analyze the customer's water use, and to refine the program.

City staff can review the surveyed customers' water use records, if available, and compare historic with current use for one year after the survey.

Budget: Proposed annual budget: $32,596, includes staff labor, staff training program, brochures, consulting services, website maintenance, and purchase of showerheads, aerators, dye tablets, and other miscellaneous materials. This budget does not reflect the costs associated with ultra-low flush toilets rebates (DMM 14).

Schedule: The City began offering free residential water use surveys in 1999 to single-family and multi-family customers. Water use surveys are offered to any customer upon request, and it is the City's goal to complete surveys for 15 percent of the single-family and 15 percent of the multi-family connections to the top 20% of water users over the next ten years. The City uses available metered data to identify the top 20 percent of metered water users in the residential and multi-family sectors to offer Water Wise House Calls.

The past and projected number of plumbing retrofit kits distributed, including expenditures and estimated water savings, are provided in Tables 6-2 and 6-3, respectively. Annual expenditures and water savings for Water Wise House Calls are illustrated on Figure 6-1.

Table 6-2. Actual Conservation Activities, Expenditures, and Water Savings, DMM 1. Water Survey Programs for Single-family Residential and Multi-family Residential Connections

Year	2001	2002	2003	2004	2005 (proj)
Single family surveys-full service	16	200	85	248	75
Single family self survey	1,987	224	220	275	600
Multi family surveys	4	3	1	4	2
Expenditures, $	$15,000	$17,603	$34,713	$35,212	$31,862
Water savings, acre-feet/year	1	8	11	21	26

Note:
Water Savings are cumulative savings based on water savings life.

Table 6-3. Projected Conservation Activities, Expenditures, and Water Savings, DMM 1. Water Survey Programs for Single-family Residential and Multi-family Residential Connections

Year	2006	2007	2008	2009	2010
Single family surveys-full service	82	82	82	82	82
Single family self survey	600	600	600	600	600
Multi family surveys	24	24	24	24	24
Expenditures, $	$35,100	$35,100	$35,100	$35,100	$35,100
Water savings, acre-feet/year	33	45	50	60	60

Notes:
The City of Roseville is in the process of evaluating this DMM, and as a result actual future implementation may vary from the data provided in this table.
Water Savings are cumulative savings based on the water savings life and starting in 2001.
Future expenditures do not include inflation.

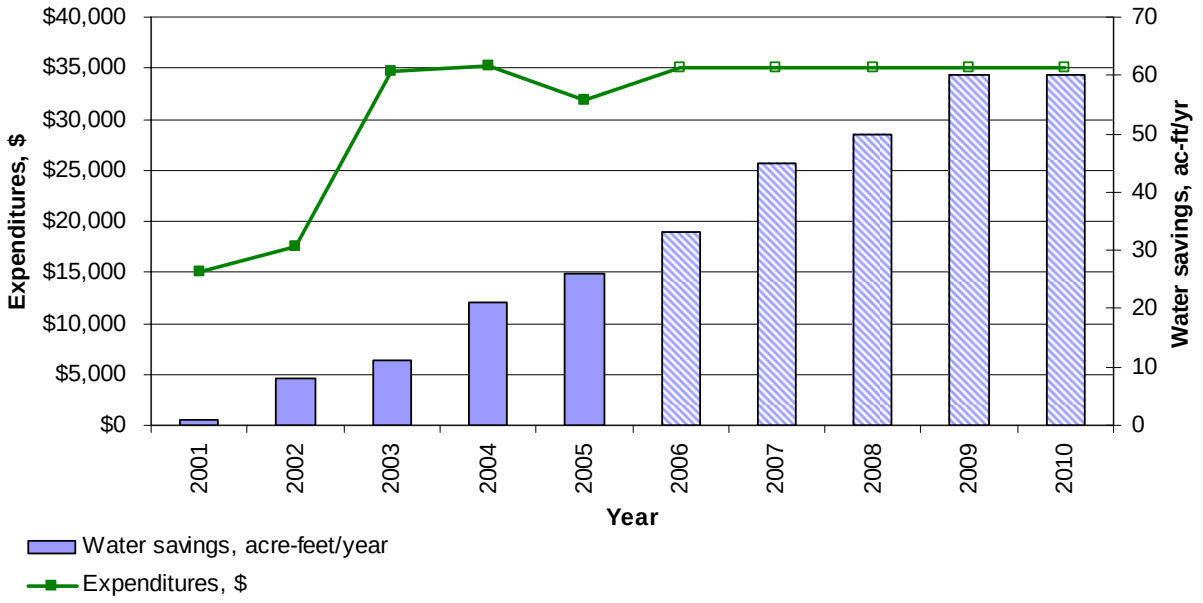

Figure 6-1. Historical and Projected Annual Expenditures and Water Savings DMM 1. Water Survey Programs for Single-family Residential and Multi-family Residential Connections

DMM 2. Residential plumbing retrofit.

Implementation Description: The City distributes showerheads, aerators, water shutoff nozzles, toilet flappers, moisture meters, toilet tank leak detection tablets, and toilet displacement devices at local events as well as during in-home water audits. At these events the City also emphasizes availability of all programs, including water use surveys, washing machine rebates, and ultra-low

flush toilet replacement rebates (DMM 1, DMM 6, DMM 14). Through these methods the City will offer retrofit materials to no less than 10 percent of the 15,010 pre-1992 single-family homes each year for 10 years or until 75 percent have been reached with these materials. The City will reach this target through programs, events, and aggressive public outreach newsletters and mailings, including offers to all customers receiving meter retrofits.

Methods to Evaluate Effectiveness: The City monitors distribution of materials to customers and perform surveys as to customer satisfaction with the materials provided.

Budget: Proposed annual budget: $18,686 includes staff time, purchase of showerheads, aerators, dye tablets, and other miscellaneous materials.

Schedule: The City will continue to implement this DMM at a targeted rate of 10 percent of pre-1992 single-family customers each year. Staff believes this program will have more participation as the City begins to bill all residential water customers by metered water use.

The past number of actual retrofit kits and the projected number of retrofit kits distributed including expenditures and estimated water savings are provided in Tables 6-4 and 6-5, respectively. Annual expenditures and water savings are illustrated on Figure 6-2.

Table 6-4. Actual Conservation Activities, Expenditures, and Water Savings, DMM 2. Residential Plumbing Retrofit

Year	1992-2001[c]	2002	2003	2004	2005 (proj)
Single family devices	705	1,208	1,111	829	1,600
Multi family devices[a]	--[a]	--[a]	--[a]	--[a]	--[a]
Expenditures, $	$46,500	$8,570	$12,565	$ 10,581	$18,686
Water savings, acre-feet/year	7	23	37	48	69

Notes: Water Savings are cumulative savings based on water savings life of this BMP.
[a] Multi family devices included in single family device count.
[b] Estimated.
[c] Includes retrofit kits distributed in 2000 to 2001. The number of retrofit kits distributed prior to 2000 is not available.

Table 6-5. Projected Conservation Activities, Expenditures, and Water Savings, DMM 2. Residential Plumbing Retrofit

Year	2006	2007	2008	2009	2010
Single family devices	647	647	647	647	647
Multi family devices	--[a]	--[a]	--[a]	--[a]	--[a]
Expenditures, $	$18,686	$18,686	$18,686	$18,686	$18,686
Water savings, acre-feet/year	162	133	93	31	31

Notes:
The City of Roseville is in the process of evaluating this DMM, and as a result actual future implementation may vary from the data provided in this table.
Water Savings are cumulative savings based on the water savings life and starting in 2001.
Future expenditures do not include inflation.
[a] Multi family devices included in single family device count.
[b] An additional $10,000 in grant funding is included under BMP 8, School education, for 2006 expenditures.

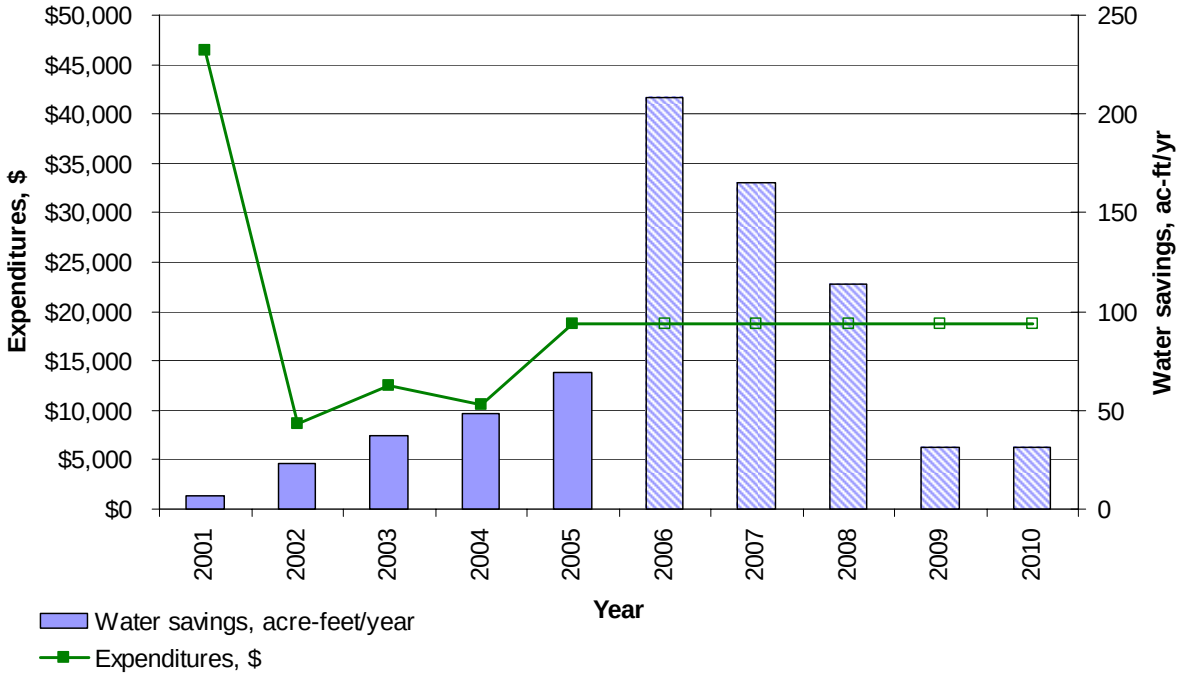

Figure 6-2. Historical and Projected Annual Expenditures and Water Savings DMM 2. Residential Plumbing Retrofit

DMM 3. System water audits, leak detection and repair.

Implementation Description: Full system water audits cannot take place until the City is completely metered. However, an annually updated "system map" indicating pipe size, pipe material, connection points and leak history is maintained within the City's maintenance database. When areas of high leak incidences are identified, corrective action is taken. System leaks are repaired as they are identified. This includes corrosion monitoring programs, service cathodic protection and/or replacement. This may also include doing a detailed leak detection survey to identify leaks in the system. The infrastructure management system is updated with repair information. This enables the City to query for leak prone areas in order to prioritize future rehabilitation programs.

Methods to Evaluate Effectiveness: The City focuses on the older areas of town that are more leak prone. The City will continue to monitor the system for areas that have high incidences of leaks. This evaluation will improve as more customers are converted to metered usage. The number of leaks repaired each year are estimated based on interviews with operation crews and an estimation of time spent on the technical repair.

Budget: An annual expenditure of $780,800 is estimated for repair of water leaks when identified. All water leaks identified as the City's responsibility will be eliminated through repair or replacement by City staff.

Schedule: Full system water audits to determine system water loss can occur when metering is completed. This program will be re-evaluated when the system is completely metered.

The past and projected number of leaks repaired, expenditures, and estimated water savings are provided in Tables 6-6 and 6-7, respectively. Annual expenditures and water savings are illustrated on Figure 6-3.

Table 6-6. Actual Conservation Activities, Expenditures, and Water Savings, DMM 3. System Water Audits, Leak Detection, and Repair

Year	2001	2002	2003	2004	2005 (proj)
Percent unaccounted-for water	8%[a]	8%[a]	8%[a]	8%[a]	8%[a]
Miles of distribution lines surveyed	0	0	0	0	0
Number of leaks repaired (estimated)	150	150	150	150	150
Expenditures[b] $	$660,000	$690,000	$720,000	$750,000	$780,000
Water savings, acre-feet/year	1,785	3,570	5,355	7140	8,925

Notes:
Water Savings are cumulative savings based on water savings life.
[a] The City is not completely metered and can only estimate un-accounted-for water.
[b] Detailed historical records of repair costs are not maintained.

Table 6-7. Projected Conservation Activities, Expenditures, and Water Savings, DMM 3. System Water Audits, Leak Detection, and Repair

Year	2006	2007	2008	2009	2010
Percent unaccounted-for water	8%[a]	8%[a]	8%[a]	8%[a]	8%[a]
Miles of distribution lines surveyed	0	0	0	0	0
Number of leaks repaired (estimated)	150	150	150	150	150
Expenditures, $	$780,000	$780,000	$780,000	$780,000	$780,000
Water savings, acre-feet/year	8,925	8,925	8,925	8,925	8,925

Notes:
The City of Roseville is in the process of evaluating this DMM, and as a result actual future implementation may vary from the data provided in this table.
Water Savings are cumulative savings based on water savings life and starting in 2001.
Future expenditures do not include inflation.
[a] The City is not completely metered and can only estimate un-accounted-for water.

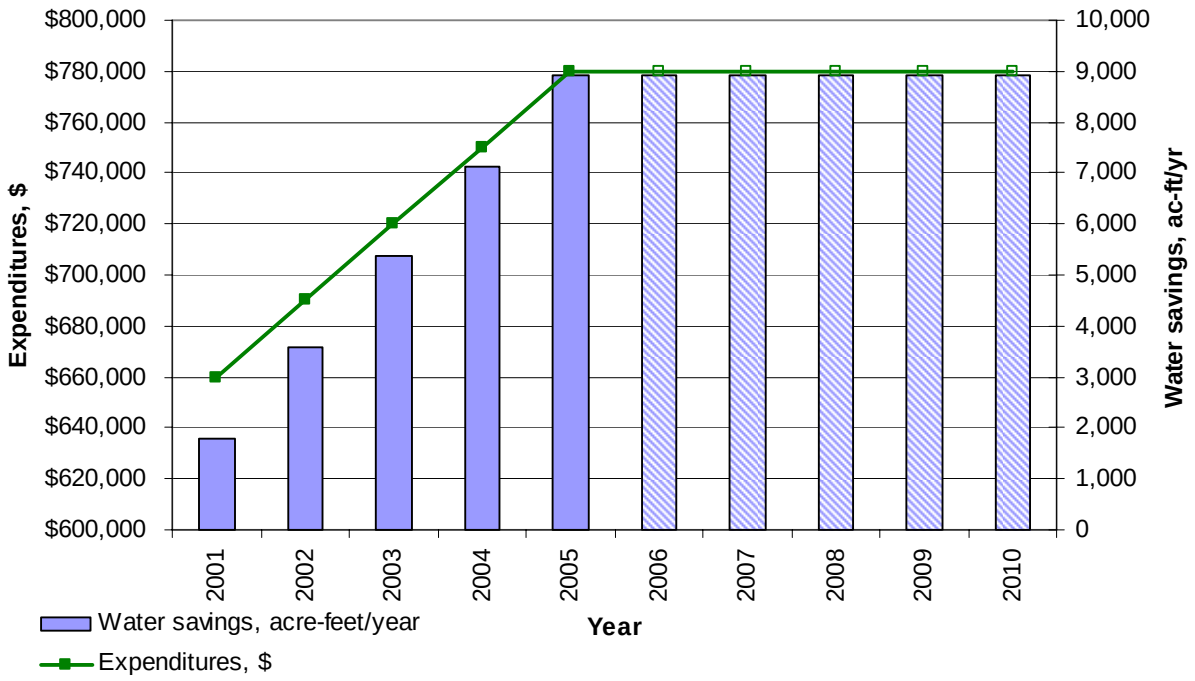

Figure 6-3. Historical and Projected Annual Expenditures and Water Savings DMM 3. System Water Audits, Leak Detection, and Repair

DMM 4. Metering with commodity rates for all new connections and retrofit of existing connections.

Implementation Description: A meter retrofit program has been developed and is currently being implemented. The retrofit program addresses metering of all pre-1992 residential services in Roseville as well as a transition of all residential accounts to an inclining block rate structure. Implementation of metered rates began immediately on all residential metered connections established after January 1, 2002, with the remaining retrofitted homes transitioned in large blocks as retrofits are completed. During program development, it was requested that customers be provided water use information for a period of one year before transitioning to a metered rate. This has been incorporated into the plan, and the first block of homes to be transitioned began receiving comparative data in March 2003 with transition to metered rates in April 2004. Other blocks of homes will have metered rates implemented after completion of meter installation and following a year of comparative bill information. For rate information see DMM 11.

Methods to Evaluate Effectiveness: Program will be evaluated and compared to the plan estimated and approved by Roseville City Council. This will be done on an annual basis with an evaluation of actual program costs vs. program estimates and program schedule compared to the installation schedule proposed. Effectiveness of this DMM will be evaluated by comparison of prior water use to future water use once the system is completely metered.

Budget: A total budget of nearly $9,200,000 starting in July 2001 has been estimated to retrofit the existing un-metered 15,010 accounts in the service area. A pay-as-you-go funding mechanism was approved by City Council and is currently being implemented to result in the collection of over $1,000,000 per year required to fund the program.

Schedule: In August 1999, the City agreed to install water meters on all unmetered service connections within a 13-year period. In 1992, a State law required all new construction to include water meters. As a result, all post 1992 City residential customers are metered (approximately 40% of total residential customers). As of January 2002, new residential services are automatically placed on a metered rate. In April 2003 approximately 12,000 customers who had never received a meter as part of the meter retrofit program began receiving a mock bill allowing them the ability to compare their current flat rate bill with the new metered rate structure. In May 2004, these customers transitioned to a metered rate structure.

In July 2001 the meter retrofit program began to meter pre-1992 customers. The remaining unmetered homes in the City will be metered and transitioned to a metered rate through 2012 with an average installation by City crews of 1,514 meters per year.

An estimate of water saved as a result of meter retrofits, number of metered and unmetered accounts, and the number of accounts without commodity rates as well as expenditures to-date and projected are provided in Tables 6-8 and 6-9, respectively. Annual expenditures and water savings are illustrated on Figure 6-4.

Table 6-8. Actual Conservation Activities, Expenditures, and Water Savings, DMM 4. Metering with Commodity Rates for All New Connections and Retrofit of Existing Connections

Year	2001	2002[b]	2003	2004	2005 (proj)
Unmetered accounts[a]	26,243	26,243	26,243	12,278	10,566
Retrofit meters installed[c]	1,098	907	1,118	2,046	1,514
Accounts without commodity rates	26,243	26,243	26,243	12,278	10,566
Expenditures, $	$505,590	$876,095	$739,266	$1,125,142	$1,068,242
Water savings, acre-feet/year	132	242	379	629	810

Note:
Water Savings are cumulative savings based on water savings life.
[a] Single family residential on flat rate.
[b] All new services established in 2002 were immediately billed on a metered rate.
[c] 2001-2004 customers transitioned to a metered rate. Meters installed from 2001 through 2004.

Table 6-9. Projected Conservation Activities, Expenditures, and Water Savings, DMM 4. Metering with Commodity Rates for All New Connections and Retrofit of Existing Connections

Year	2006	2007	2008	2009	2010
Unmetered accounts	9,066	6,911	4,756	2,601	446
Retrofit meters installed	1,514	1,514	1,514	1,514	1,514
Accounts without commodity rates	9,066	6,911	4,756	2,601	446
Expenditures, $	$1,068,242	$1,068,242	$1,068,242	$1,068,242	$1,068,242
Water savings, acre-feet/year	1,046	1,282	1,516	1,749	1,982

Notes:
The City of Roseville is in the process of evaluating this DMM, and as a result actual future implementation may vary from the data provided in this table.
Water Savings are cumulative savings based on water savings life and starting in 2001.
Future expenditures do not include inflation.

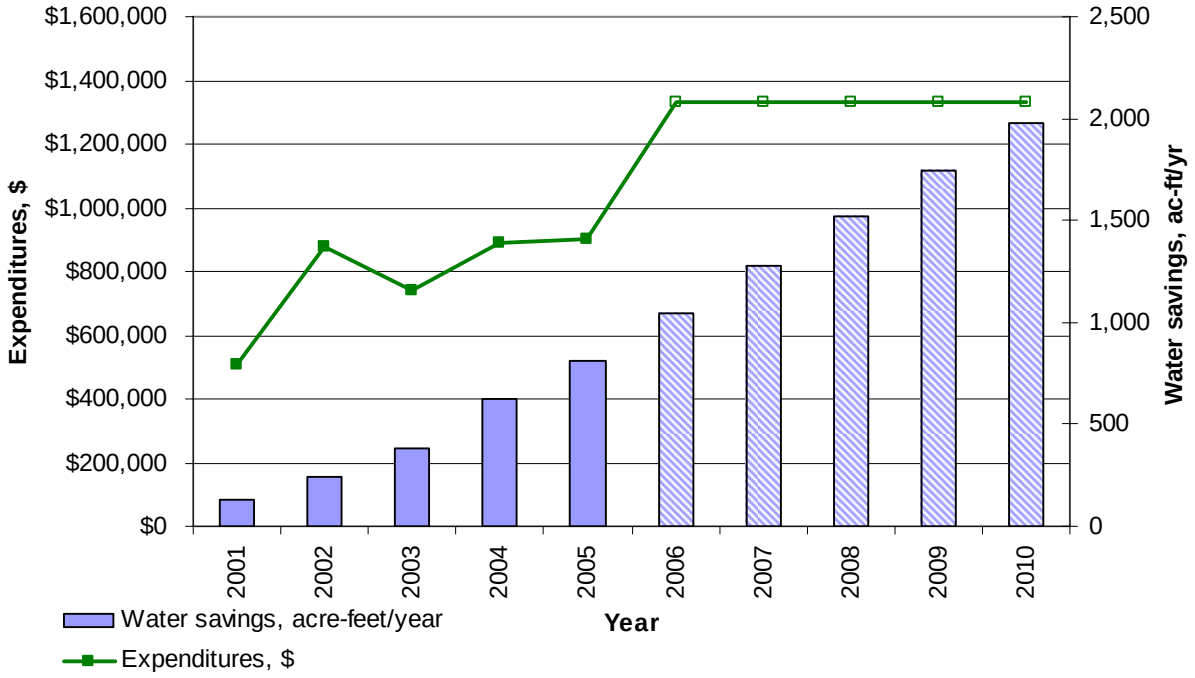

Figure 6-4. Historical and Projected Annual Expenditures and Water Savings DMM 4. Metering with Commodity Rates for All New Connections and Retrofit of Existing Connections

DMM 5. Large landscape conservation programs and incentives.

Implementation Description: Large landscape areas (one acre or greater) in the Roseville service area and maintained by the City of Roseville consist mainly of parks and other active use areas. These areas are all monitored and automated by two weather stations located at the City of Roseville's Corporation yard and the Maidu Community Center. These stations transmit ETo data

to a central computer (temperatures, relative humidity, wind velocity, and precipitation). Controllers located at large landscape areas that are City facilities are updated to reflect the anticipated water needs based on this information. This can be done manually or automatically if the controller is interfaced with the control system. At this time there are 48 parks and many City-owned streetscape currently connected to this system.

In all newly developed landscape areas a separate irrigation connection is required. This allows better monitoring of actual irrigation usage as well as a tool to utilize during future water audits. These separate services have been required since the mid-1980's, so a significant number of large landscapes have metered data available to assist in the identifying savings.

Two public golf courses are also owned, operated and maintained by the City of Roseville. Both Woodcreek Oaks and Diamond Oaks golf courses are now connected to recycled water and utilize this water source for irrigation.

Other large privately owned and maintained landscaped areas include two private golf courses, Sierra View Country Club's 18-hole golf course and Sun City's 27-hole course. Sierra View uses well water for irrigation and is not connected to the City water system. Sun City utilizes recycled water delivered by the City of Roseville for all the irrigation needs of its golf course.

Roseville has also adopted water efficient landscape requirements pursuant to the Water Conservation in Landscaping Act (California Code of Regulations, Chapter 2.7, Title 23), on February 3, 1993. These requirements apply to all new landscaping for industrial, commercial, office, institutional, multi-family residential common areas, model homes and developer installed landscaping for single-family residences. Roseville will continue to enforce these landscape requirements through submittals to the Planning Department. Developer landscape architect self-certification, along with periodic spot checks of plans, ensures compliance with landscape requirements.

Roseville offers programs to assist with water conservation projects or improvements. These programs include free large landscape audits and grant funding available through a 2003 USBR grant. For most commercial metered accounts, large irrigation accounts and large lot residential accounts, financial savings due to water conservation are realized directly on monthly water bills. Roseville staff can help identify these savings through water use reviews and resulting education opportunities. In most instances, helping customers understand the savings that can be achieved and methods available to achieve these savings can be enough to motivate changes. The City continually works with the Parks Department, area school districts, and other large landscape customers to improve water use efficiency.

Methods to Evaluate Effectiveness: The City will continue to implement this DMM by annual review of customers' water use and by offering on-site follow-up evaluations to customers whose total water use is thought to exceed normal patterns.

Review of the landscape requirements is initiated as required, and spot checking for compliance by the Planning Department determines compliance. Continued reduction in the per capita water consumption

for the City also indicates the effectiveness in these requirements. Once meters are installed a more detailed evaluation of water usage can be completed.

Budget: Proposed annual budget is approximately $15,000. This includes contractual support over the next two to five years will be used for water audits and equipment.

Schedule: The City plans to complete the few remaining large landscape customers' water use surveys over the next five years.

An estimate of water saved, budgets developed, surveys completed, as well as expenditures to-date and projected are provided in Tables 6-10 and 6-11, respectively. Annual expenditures and water savings are illustrated on Figure 6-5.

Table 6-10. Actual Conservation Activities, Expenditures, and Water Savings, DMM 5. Large Landscape Conservation Programs and Incentives

Year	2001	2002	2003	2004	2005 (proj)
Budgets developed	3	7	5	1	6
Surveys completed	3	7	0	1	6
Follow-up visits	3	7	0	1	6
Expenditures, $	$510	$1,975	$0	$2,124	$10,500
Water savings, acre-feet/year	3	9	9	10	16

Note:
Water Savings are cumulative savings based on water savings life.

Table 6-11. Projected Conservation Activities, Expenditures, and Water Savings, DMM 5. Large Landscape Conservation Programs and Incentives

Year	2006	2007	2008	2009	2010
Budgets developed	6	7	7	7	7
Surveys completed	6	7	7	7	7
Follow-up visits	6	7	7	7	7
Expenditures, $	$14,653	$15,130	$15,623	$16,134	$16,663
Water savings, acre-feet/year	23	39	55	67	69

Notes:
The City of Roseville is in the process of evaluating this DMM, and as a result actual future implementation may vary from the data provided in this table.
Water Savings are cumulative savings based on water savings life and starting in 2001.
Future expenditures do not include inflation.

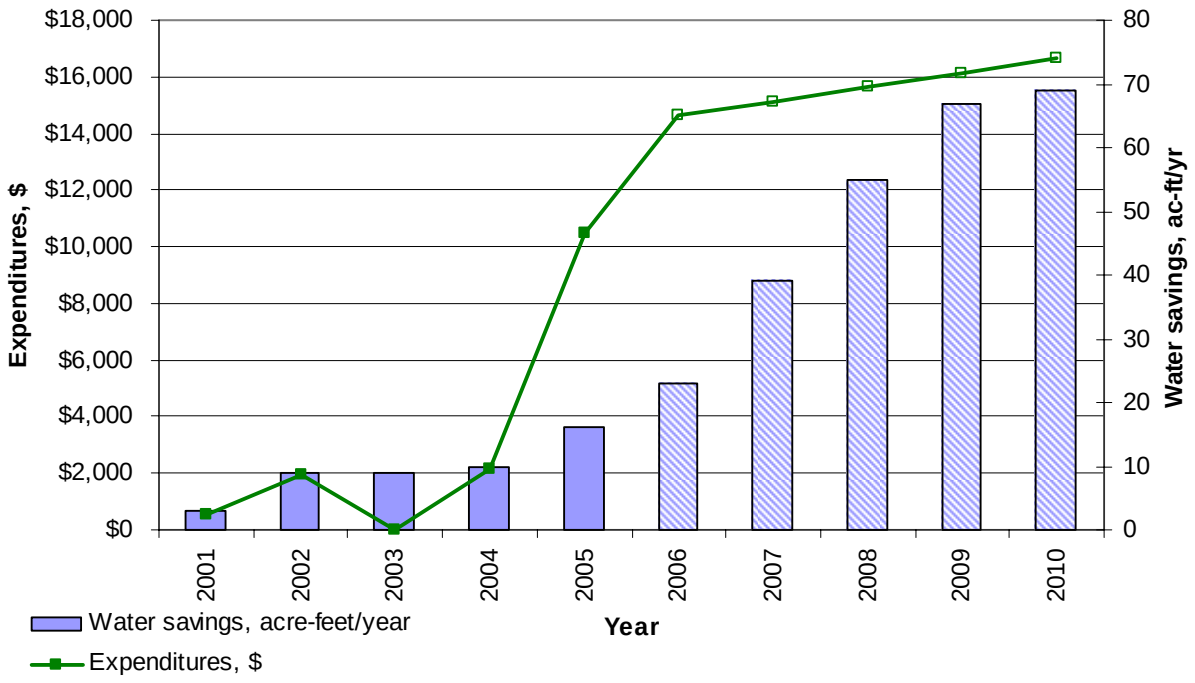

Figure 6-5. Historical and Projected Annual Expenditures and Water Savings DMM 5. Large Landscape Conservation Programs and Incentives

DMM 6. High-efficiency washing machine rebate programs.

Description: In addition to providing water service to customers within the Roseville service area, the City is also responsible for providing electric service within the service area and wastewater collection and treatment on a much larger, regional area. A cooperative program is in place that provides for rebates between $75 and $100 toward the purchase of a high-efficiency washing machine. This program is run much the same way as the current ULFT replacement program identified in DMM 14, utilizing a set budget based on contributions from the participating utilities and provided to applicants on a first come, first serve basis.

Methods to Evaluate Effectiveness: The City will monitor program success through the number of rebates requested. Expansion of the program is considered annually based on the previous years' participation levels. The washing machine rebate program has the highest participation levels of all conservation programs. Funding for the program has grown each year.

Budget: A total budget of $42,500 (rebates only) was available for the rebate program. Project administration is conducted by the electric utility.

Schedule: This program was approved as part of the FY2003/04 budget and will continue as long as funding is available.

An estimate of water saved as a result of the washing machine rebate program to-date and projected are provided in Tables 6-12 and 6-13, respectively. Annual expenditures and water savings are illustrated on Figure 6-6.

Table 6-12. Actual Conservation Activities, Expenditures, and Water Savings, DMM 6. High-Efficiency Washing Machine Rebate Programs

Year	2001	2002	2003	2004	2005 (proj)
$ per rebate	0	0	75	75	100
No. of rebates paid	0	0	377	335	473
Expenditures, $	$0	$0	$15,000	$15,000	$41,325
Water savings, acre-feet/year	0	0	6	11	18

Notes:
Water Savings are cumulative savings.
Rebate amount increased from $75 to $100 July 1, 2005.

Table 6-13. Projected Conservation Activities, Expenditures, and Water Savings, DMM 6. High-Efficiency Washing Machine Rebate Programs

Year	2006	2007	2008	2009	2010
$ per rebate	100	100	100	100	100
No. of rebates paid	300	300	300	300	300
Expenditures, $	$30,000	$30,000	$30,000	$30,000	$30,000
Water savings, acre-feet/year	23	23	23	23	23

Notes:
The City of Roseville is in the process of evaluating this DMM, and as a result actual future implementation may vary from the data provided in this table.
Water Savings are cumulative savings based on water savings life and starting in 2001.
Future expenditures do not include inflation.

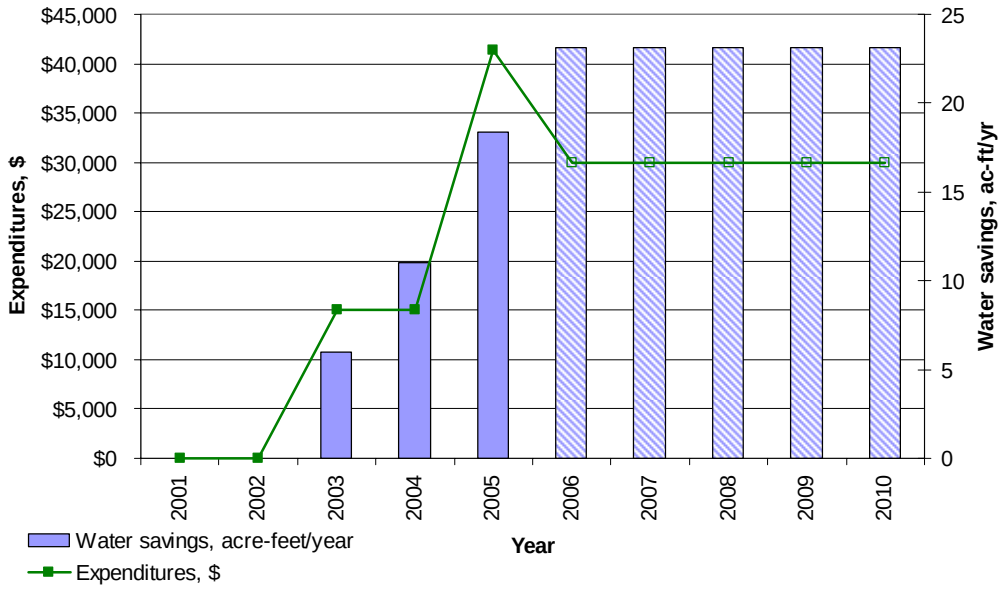

Figure 6-6. Historical and Projected Annual Expenditures and Water Savings DMM 6. High-Efficiency Washing Machine Rebate Programs

DMM 7. Public information programs.

Description: The City promotes water conservation and other resource efficiencies in coordination with USBR, Regional Water Authority (RWA), Roseville Electric, Roseville Media Department, and Roseville Public Information Department. The City distributes information through bill inserts, bill messages, brochures, community speakers, and many special events every year. Conservation articles are produced and printed in the following regular publications:

- *Roseville Reflections* publication produced and sent to each homeowner three times/year, and
- Environmental Utilities newsletters produced six times/year and distributed in the utility bills.
- Press Tribune, City View article one time/year.

In addition, regular special programs are produced and aired on government access cable television run by the City of Roseville. Programs that have been produced and continue to run include:

- Reminders to wrap outdoor plumbing to minimize freezing and resulting water loss;
- A summary of all the City's available water conservation programs and rebates; and
- Educational videos purchased through AWWA.

In May 2001, the City established a Web page to encourage water conservation. This site is linked to the Regional Water Authority and USBR Web sites which include other water related sites and pertinent conservation information. Through a collaborative effort with Roseville Electric and use of consultants, a water and energy conservation self assessment was developed in 2003.

In 2005, water bills have been redesigned to show historical water usage on individual accounts. This information will allow businesses and homeowners to monitor water usage as it varies through the year and can be used to reinforce the conservation message. In 2005 a "this month last year" comparison was started.

Roseville's regional waste water treatment plant located at 1800 Booth Road, installed a recycled water garden to demonstrate the benefits of using recycled water as an alternative. This facility is open for tours and can be scheduled through plant staff.

Methods to Evaluate Effectiveness: The City will monitor the effectiveness of the conservation message through planned customer surveys.

Budget: This City currently budgets $39,361 for production of newsletters, updated brochures, outreach events, and promotional items (giveaways). *Roseville Reflections* is produced and distributed through the Public Information Office and will continue to be supported.

Schedule: The City will continue to provide public information services and materials to remind the public about water use efficiency and other resource issues.

Active public information programs and planned activities are summarized in Tables 6-14 and 6-15, respectively. Annual expenditures are illustrated on Figure 6-7.

Table 6-14. Actual Conservation Activities and Expenditures, DMM 7. Public Information Programs

Year	2001	2002	2003	2004	2005 (proj)
a. Paid advertising					
b. Public service announcement			X	X	X
c. Bill inserts/newsletters/brochures	X	X	X	X	X
d. Bill showing water usage					X
e. Demonstration gardens				X	X
f. Speaker events, media events					X
g. Speaker's bureau					
h. Program to coordinate with other government agencies, industry, and public interest groups and media			X	X	X
Expenditures, $	$15,000	$41,000	$46,000	$37,000	$36,622

Table 6-15. Projected Conservation Activities and Expenditures, DMM 7. Public Information Programs

Year	2006	2007	2008[a]	2009	2010
a. Paid advertising					
b. Public service announcement	X	X	X	X	X
c. Bill inserts/newsletters/brochures	X	X	X	X	X
d. Bill showing water usage	X	X	X	X	X
e. Demonstration gardens	X	X	X	X	X
f. Speaker events, media events	X	X	X	X	X
g. Speaker's bureau	X	X	X	X	X
h. Program to coordinate with other government agencies, industry, and public interest groups and media	X	X	X	X	X
Expenditures, $	$39,361	$139,361[a]	$139,361[a]	$139,361[a]	$139,361[a]

Notes:
The City of Roseville is in the process of evaluating this DMM, and as a result actual future implementation may vary from the data provided in this table.
Future expenditures do not include inflation.
[a] Expenditures include the proposed development of the Roseville Utility Exploration Center at the Mahany Community Center.

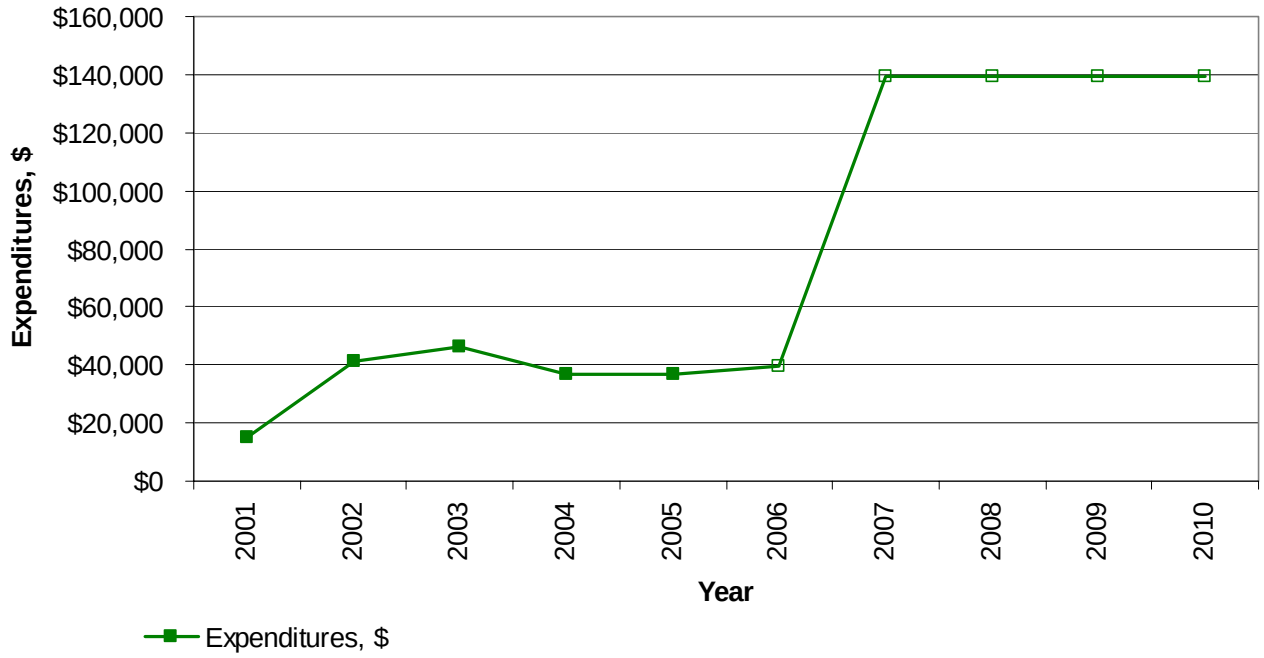

Figure 6-7. Historical and Projected Annual Expenditures
DMM 7. Public Information Programs

DMM 8. School education programs.

Description: The City continues to work with the Regional Water Authority (RWA) and the school districts to promote water conservation and other resource efficiencies at school facilities and to educate students about these issues. This is accomplished through full participation in the school education program coordinated by RWA on behalf of all the member agencies. In addition to being a participating member in RWA, Roseville also contributes to the education programs that are focused directly on in-school education. School outreach, media advertising campaigns, promotional materials, community events and fairs, and a Web site are all a part of this program.

In addition to RWA participation, Roseville supports requests from local schools for presentations, conservation related materials, and facility tours. These are offered to any school within the service area and supported as requested. The City's program also includes the student art calendar, Living Wise program, and educational concerts.

Methods to Evaluate Effectiveness: The City receives a report from RWA on the number of programs, materials distributed and attendance at water conservation activities, and grade levels. City staff will also track this information along with additional support provided by City conservation staff.

Schedule: The City will continue to implement this DMM at the levels described.

Budget: The City currently budgets $23,500 for all student programs including RWA participation and support. This does not include the additional time spent by Conservation staff in addressing the periodic requests from local schools or facilitating tours.

The activities performed in this program as well as expenditures to-date and projected are provided in Tables 6-16 and 6-17, respectively. Annual expenditures are illustrated on Figure 6-8.

Table 6-16. Actual Conservation Activities and Expenditures, DMM 8. School Education Programs

Year	2001	2002	2003	2004	2005 (proj)
Grades K-3rd	X	X	X	X	X
Grades 4th-6th	X	X	X	X	X
Grades 7th-8th	X	X	X	X	X
High School	X	X			
Expenditures, $	$8,000	$22,385	$27,000	$27,000	$28,500

Table 6-17. Projected Conservation Activities and Expenditures, DMM 8. School Education Programs

Year	2006	2007	2008	2009	2010
Grades K-3rd	X	X	X	X	X
Grades 4th-6th	X	X	X	X	X
Grades 7th-8th	X	X	X	X	X
High School		X	X	X	X
Expenditures, $	$38,500[a]	$28,500	$28,500	$28,500	$28,500

Notes:
The City of Roseville is in the process of evaluating this DMM, and as a result actual future implementation may vary from the data provided in this table.
Future expenditures include projected costs of education programming for the Mahany Educational Center.
Future expenditures do not include inflation.
[a] 2006 expenditure includes $10,000 from USBR grant funding.

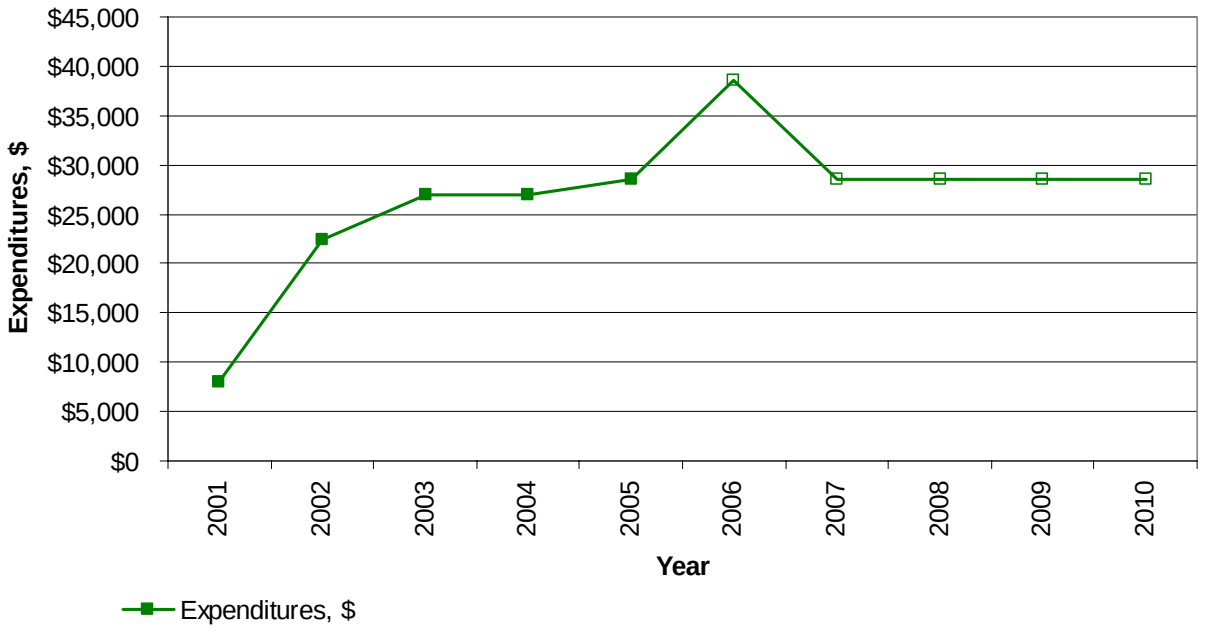

Figure 6-8. Historical and Projected Annual Expenditures
DMM 8. School Education Programs

DMM 9. Conservation programs for commercial, industrial, and institutional accounts.

Description: For the last several years, the City has provided water use surveys to commercial/ industrial/institutional (CII) customers upon request. The City also conducts an analysis of all CII customers by monthly and annual water usage to identify the top 10 percent of the commercial customers. The City contacts these customers by letter with follow-up telephone calls or by phone call to offer surveys. Surveys are conducted by consulting firms that have experience and expertise in these types of large scale water users.

For new commercial and industrial development, the City Planning Department coordinates the implementation of this DMM at the request of Environmental Utilities. Water usage and required conservation measures are currently reviewed during the project approval process. This is due to the complexity of many commercial/industrial operations that require savings to be identified by design professionals associated with the project. When projects come in that can potentially require high levels of usage, a requirement is placed on the applicant to review the process for water saving opportunities. Suggested methods may be included in the project conditions if sufficient information is available. This can include items such as requiring recycle capability in car wash facilities, or other conservation measures. In addition, it is expected that the Building Department review the applicable conservation requirements of the Uniform Plumbing Code (UPC) and require compliance.

Methods to Evaluate Effectiveness: The City will continue to implement this DMM by annual review of customers' water use data, and/or by offering on-site follow-up evaluations to customers whose total water use increases or stays the same after an initial survey. All new commercial and industrial water applicants will be reviewed for potential savings. There is no economically feasible method to evaluate the effectiveness of this program.

Budget: The City budgets $25,000 annually for consultant fees associated with requested surveys.

Schedule: The City will continue to implement this DMM at the annual target rate of 20 surveys per year over the next five years. Recommendations and estimated savings and/or payback evaluations are provided to the City and the customer by the consultant.

The activities performed in this program as well as expenditures to-date and projected are provided in Tables 6-18 and 6-19, respectively. Annual expenditures and water savings are illustrated on Figure 6-9.

Table 6-18. Actual Conservation Activities, Expenditures, and Water Savings, DMM 9. Conservation Programs for Commercial, Industrial, and Institutional Accounts

Year	2001	2002	2003[a]	2004	2005 (proj)
On-site surveys completed	4	1	72	2	14
Were incentives provided?	No	No	No	No	No
Follow-up visits	4	0	0	2	14
Expenditures, $	$2,000	$500	$4,500	$10,980	$15,000
Water savings, acre-feet/year	1	1	22	23	27

Notes:
Water Savings are cumulative savings based on water savings life.
[a] Rinse and Save program.

Table 6-19. Projected Conservation Activities, Expenditures, and Water Savings, DMM 9. Conservation Programs for Commercial, Industrial, and Institutional Accounts

Year	2006	2007	2008	2009	2010
On-site surveys completed	20	20	20	20	20
Will incentives be provided?	No	No	No	No	No
Follow-up visits	20	20	20	20	20
Expenditures, $	$25,823	$25,823	$25,823	$25,823	$25,823
Water savings, acre-feet/year	33	19	24	27	27

Notes:
The City of Roseville is in the process of evaluating this DMM, and as a result actual future implementation may vary from the data provided in this table.
Water Savings are cumulative savings based on the water savings life and starting in 2001.
Future expenditures do not include inflation.

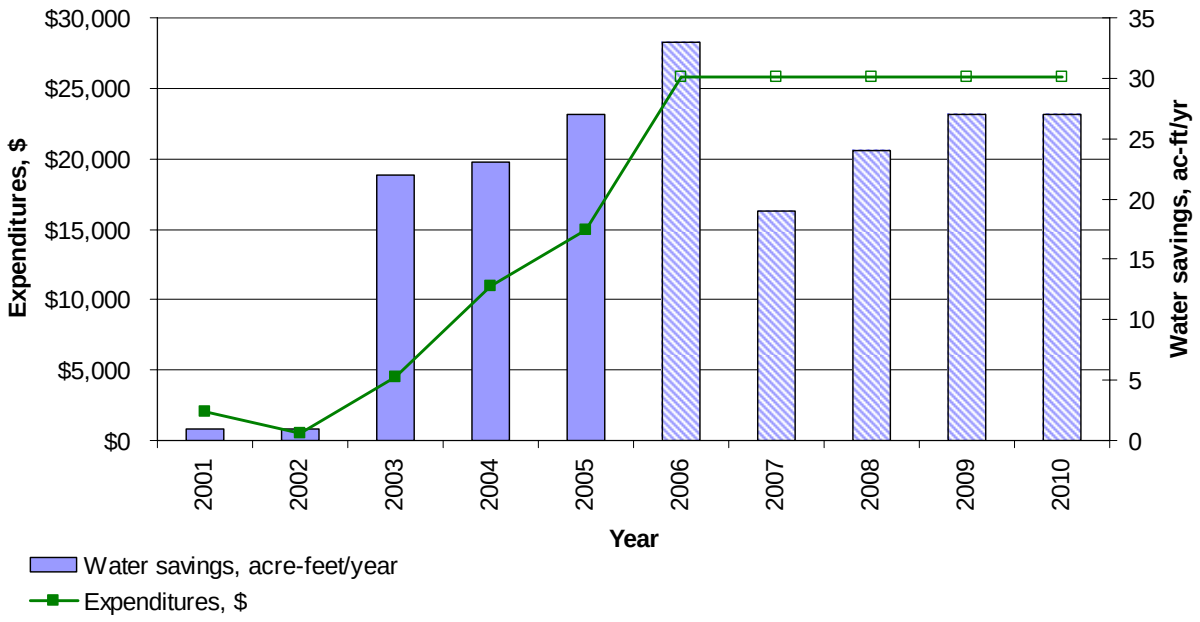

Figure 6-9. Historical and Projected Annual Expenditures and Water Savings
DMM 9. Conservation Programs for Commercial, Industrial, and Institutional Accounts

DMM 10. Wholesale agency assistance programs.

This DMM is not applicable to the City because the City is not a wholesale agency.

DMM 11. Conservation pricing.

Description: As a component of development of the meter retrofit program Roseville adopted conservation pricing for water on all metered accounts. This includes an inclining block rate structure for residential water accounts based on the measured water through the meter on top of a service charge for operational fixed costs. Current residential rates (effective October 1, 2005) are based on water use units of 100 cubic feet and are:

- $0.24 per unit (Lifeline Rate)
- $0.48 per unit for the next 3,800 cubic feet (Standard Rate)
- $0.72 per unit for water over 5000 cubic feet (Conservation Rate)

For non-residential accounts, water usage is billed on top of a monthly service charge for fixed operational costs. Current uniform non-residential rates are based on 100 cubic foot units as follows:

- 0.48 per unit for all water on non-residential accounts

Methods to Evaluate Effectiveness: The City monitors the annual revenue and water usage for its customers and adjusts revenue requirements as necessary to cover operational costs as water use reductions occur resulting from the new rates. As the metering program is fully implemented, the City will be able to better collect and analyze data to track the effectiveness of this DMM.

Schedule: The City of Roseville adopted an inclining block rate structure in May 2003. Rates are evaluated annually to ensure appropriate revenue collection. A copy of Roseville Municipal Code 14.08 which outlines these rates in included in Appendix E.

Budget: The City maintains an annual budget of $20,000 to cover consultant fees to assist in rate reviews on an annual basis.

Schedule: The implementation of this DMM is ongoing.

Tables 6-20 presents the rates for each customer category.

Table 6-20. Description of City Rate Structures, DMM 11. Conservation Pricing

Account type	Define
Residential	
Water rate structure	$0.24/unit first 1,200 cubic feet,$ 0.48/unit 1,200-5000 cubic feet, $0.72/unit 5,001+ cubic feet
Year rate effective	2005
Commercial, Industrial, Institutional	
Water rate structure	$0.48 per 100 cubic feet
Year rate effective	2005
Irrigation (dedicated meter)	
Water rate structure	$0.48 per 100 cubic feet
Year rate effective	2005

DMM 12. Conservation coordinator.

Description: The City has a full time water conservation specialist. In addition the City has a full time water conservation manager (50 percent labor split with San Juan Water District). The City also pulls assistance from the utility service staff to perform water leak detection and leak repair.

Methods to Evaluate Effectiveness: The City has no method to quantify the savings but believes that this program is in the public's interest.

Budget: The City budgets a total of $212,860 for the various conservation positions and responsibilities in the conservation program.

Schedule: The City will continue to support this DMM at this level.

Tables 6-21 and 6-22 present the past and projected conservation coordinator positions and expenditures, respectively. Annual expenditures are illustrated on Figure 6-10.

Table 6-21. Actual Conservation Activities and Expenditures, DMM 12. Water Conservation Coordinator

Year	2001	2002	2003	2004	2005 (proj)
Full-time positions	1	1	1	1	1.5
Part-time staff	0	0	0	0	0
Position supplied by other agency	0	0	0	0	0
Expenditures, $	$82,420	$89,990	$94,220	$159,280	$180,360

Note:
[a] Data not available.

Table 6-22. Projected Conservation Activities and Expenditures, DMM 12. Water Conservation Coordinator

Year	2006	2007	2008	2009	2010
Full-time positions	2.5	3	3	3	3
Part-time staff	1	1	1	1	1
Position supplied by other agency	0	0	0	0	0
Expenditures, $	$227,329	$238,695	$250,630	$263,162	$276,320

Notes:
The City of Roseville is in the process of evaluating this DMM, and as a result actual future implementation may vary from the data provided in this table.
Futures are increased by COLA (5%) each year.

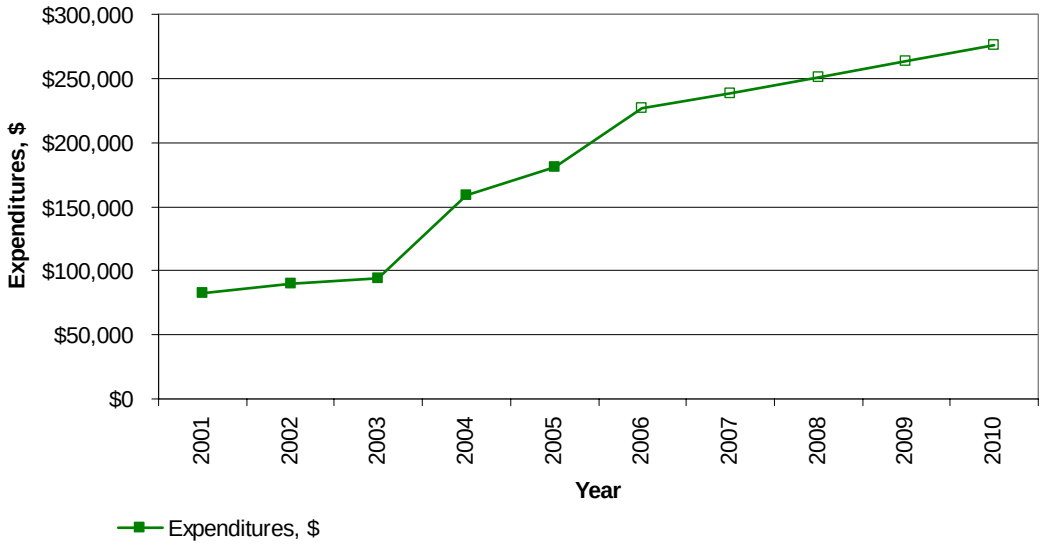

Figure 6-10. Historical and Projected Annual Expenditures DMM 12. Water Conservation Coordinator

DMM 13. Water waste prohibition.

Description: Roseville currently restricts water waste within the service area. Roseville Municipal Code 14.09.140 (presented in Appendix F) defines water waste and associated penalties of continued infractions. Per Water Division policy, water wasters are provided a notice at the location (3 notices in stage 1, 2 notices in stages 2 or 3, immediately in stages 4 or 5). If the situation is not remedied by this time then additional measures can be taken to gain compliance. This includes fines, water restrictions, and transition to a metered water rate, low flow devices or discontinued service.

Notices were provided to over 600 identified water wasters during the 1991 drought and resulting water shortage. During that time a water patrol was active and provided coverage 16 hours per day, 5 days per week. In recent non-drought years patrols are initiated through customer complaints and for investigations of problem areas. Complaints are reviewed on a case-by-case basis and when noted by field crews during normal work travels. Waterwaste notices issued in non-drought years average 100 to 250 per year, with the first notices usually sufficient to resolve the issue. In 2004 the City made 505 on-site visits and in 2005 the City made 756 on-site visits. The program is based on customer contact. The City's intent is to speak with customers before leaving a notice. The time reflected in this Plan is the City's comprehensive program.

Methods to Evaluate Effectiveness: All citations and violations are reported annually. Over the period of implementation the City has increased patrols and marketing budgets to increase awareness of the program. The continually increasing population within the City requires continuous education efforts.

Budget: The City maintains an annual budget of $32,000 which includes informational publications and staff time related to the periodic patrols and follow-up. In the event that drought conditions exist, additional funds will be dedicated to expanded patrols. No estimate of the additional staff is available at this time

Schedule: The City continues to implement the DMM.

Tables 6-23 and 6-24 presents the past and projected ordinance program and expenditures, respectively. Annual expenditures are illustrated on Figure 6-11.

Table 6-23. Actual Conservation Activities and Expenditures, DMM 13. Water Waste Prohibition

Year	2001	2002	2003	2004	2005 (proj)
Waste ordinance in effect	Yes	Yes	Yes	Yes	Yes
On-site visits	331	510	507	505	756
Water softener ordinance	No	No	No	No	No
Expenditures, $	$13,379	$17,450	$13,975	$19,193	$31,338

Note:
[a] Data not available.

Table 6-24. Projected Conservation Activities and Expenditures, DMM 13. Water Waste Prohibition

Year	2006	2007	2008	2009	2010
Waste ordinance will be in effect	Yes	Yes	Yes	Yes	Yes
On-site visits	600	600	600	600	600
Water softener ordinance	No	No	No	No	No
Expenditures, $	$32,000	$32,000	$32,000	$32,000	$32,000

Notes:
The City of Roseville is in the process of evaluating this DMM, and as a result actual future implementation may vary from the data provided in this table.
Future expenditures do not include inflation.

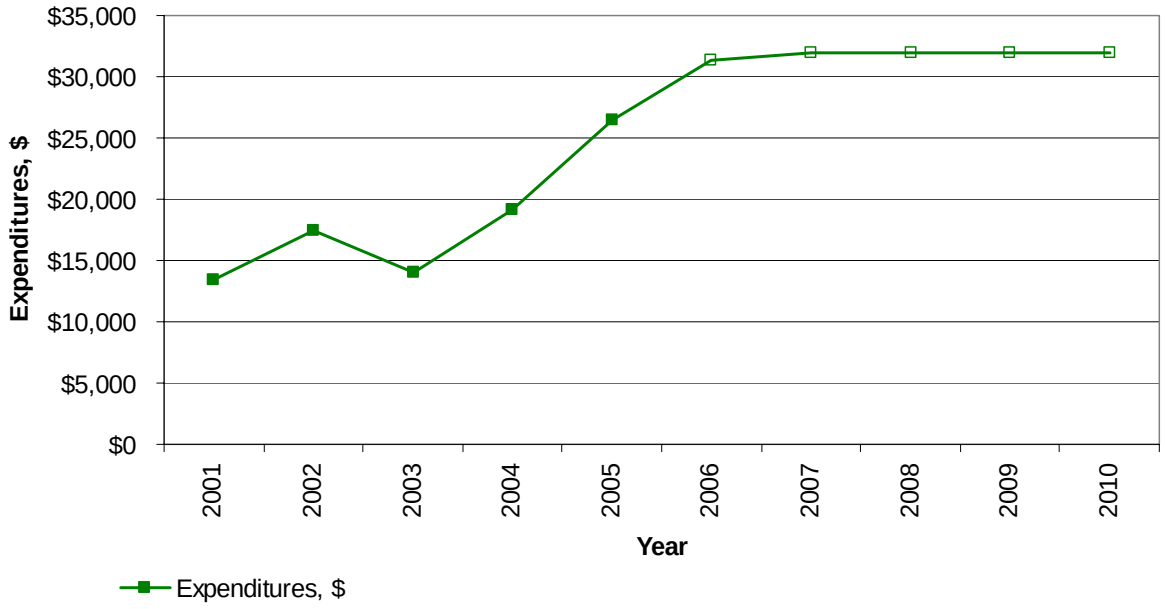

Figure 6-11. Historical and Projected Annual Expenditures DMM 13. Water Waste Prohibition

DMM 14. Residential ULFT replacement programs.

Description: The City established a ULFT replacement program in 1999. Rebates up to $125 per toilet replacement are offered on a first come/first service basis to customers on an annual basis.

The ULFT rebate program is advertised regularly on Roseville's Channel 11, within bill inserts, conservation articles, newsletters, and the City Conservation Web site which includes a rebate

application that can be downloaded. Customers can also obtain an informational brochure and application by mail or at special events and City office public counters.

Methods to Evaluate Effectiveness: The City will continue to maintain the replacement program and monitor its success through rebate requests. Expansion of the program will be considered annually based on the previous years' participation.

Budget: The City maintains an annual budget of $19,000 to fund the rebate program. This budget does not include staff time for implementation or administrative costs.

Schedule: The City will continue to implement this program until the City's goal of replacing at least 80 percent of all non-conserving and low-flush model toilets in the City are replaced with ultra-low flush models.

The activities performed in this program as well as expenditures to-date and projected in the future are provided in Tables 6-25 and 6-26, respectively. Annual expenditures and water savings are illustrated on Figure 6-12.

Table 6-25. Actual Conservation Activities and Expenditures, DMM 14. Residential ULFT Replacement Program

Year	2001	2002	2003	2004	2005 (proj)
SF toilet rebates	49	99	147	123	149
MF toilet rebates	0	6	2	4	0
Expenditures, $	$4,175	$8,875	$12,075	$14,376	$20,779
Water savings, acre-feet/year	1	4	7	10	14

Table 6-26. Projected Conservation Activities and Expenditures, DMM 14. Residential ULFT Replacement Program

Year	2006	2007	2008	2009	2010
SF toilet rebates	200	200	200	200	200
MF toilet rebates					
Expenditures, $	$33,430	$33,430	$33,430	$33,430	$33,430
Water savings, acre-feet/year	36	57	77	97	115

Notes:
The City of Roseville is in the process of evaluating this DMM, and as a result actual future implementation may vary from the data provided in this table.
Water Savings are cumulative savings based on the water savings life and starting in 2001.
Future expenditures do not include inflation.

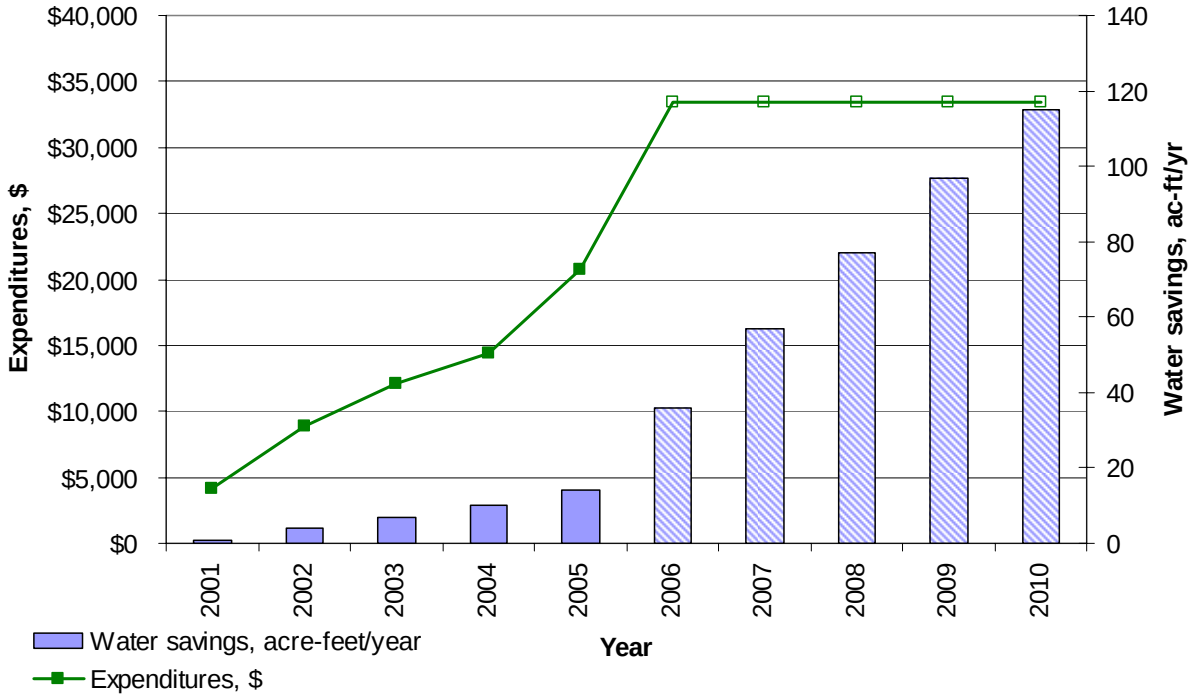

Figure 6-12. Historical and Projected Annual Expenditures and Water Savings DMM 14. Residential ULFT Replacement Program

SECTION 7
WATER SUPPLY VERSUS DEMAND COMPARISON

This chapter provides a comparison of projected water supplies and demand and water shortage expectations. The water shortage contingency plan and its anticipated affect on water demand management is presented.

7.1. Normal Year Water Supplies vs. Demand

This section provides a comparison of normal supplies versus normal water demands. Water demands are addressed in Chapter 3, water supply is addressed in Chapter 4, and recycled water supply is addressed in Chapter 5 of this Plan. The normal water year current and projected water supplies are compared to the current and projected demand for the City in Table 7-1. Normal year supplies and demands are compared next to dry supplies and demands in Figure 7-1.

Table 7-1. Normal Year Water Supply and Demand Comparison, acre-feet/year

	2005	2010	2015	2020	2025	2030
Supply						
Surface water (under Water Forum Agreement)	58,900	58,900	58,900	58,900	58,900	58,900
Groundwater	0	0	0	0	0	0
Recycled water	2,045	4,399	4,832	5,266	5,699	6,133
Supply totals	60,945	63,299	63,732	64,166	64,599	65,033
Demand totals	33,545	40,254	48,305	53,135	55,792	58,582
Difference (supply minus demand)	27,400	23,045	15,427	11,031	8,807	6,451
Difference as a percent of supply	45%	36%	24%	17%	14%	10%
Difference as a percent of demand	82%	57%	32%	21%	16%	11%

7.2. Dry Year Water Supplies vs. Demand

The Water Forum Agreement limits surface water diversions to a range of 39,800-54,900. After the Water Forum process, Roseville secured an additional 4,000 acre-feet/year to supply new areas that were recently approved for development in Roseville. The 4,000 acre-feet/year of water is contracted with SJWD from its PCWA contract supplies, bringing Roseville's total maximum surface water allocation to 58,900. Note that Roseville's surface water supply contracts are greater than this at 62,000 acre-feet/year.

Roseville plans to meet water demands during dry years by increasing supplies from other sources, and decreasing demands. Increased supplies will come from the network of groundwater wells currently under construction or planned for construction. The City anticipates these wells will provide up to 6,790 acre-feet during single and multi-year dry periods. The City plans to provide up to 6,133 acre-

feet/year of recycled water to offset potable water demand, which will remain constant regardless of normal or dry years. The City plans to reduce demands during dry year periods through continued implementation of its water conservation program and through the water shortage contingency plan. The water shortage contingency plan will be enacted as the City anticipates the beginning of dry year periods. Demand reductions measures are expected to result in a total reduction of 10 percent, or 5,858 acre-feet in 2030. These values are reflected below in the supply to demand comparison tables for dry-year scenarios.

7.2.1. Current and Projected Single-Dry Year Water Supplies vs. Demand

The current and projected water supplies are compared to the demands for a single dry year for the City in Table 7-2. It is assumed that the single dry year demand is reduced through conservation efforts as discussed in Chapter 3. Surface supply is limited by the Water Forum commitment limited surface water diversions to 58,900, as discussed in Chapter 4. Dry year supplies and demands are compared next to normal year supplies and demands in Figure 7-1.

Table 7-2. Single-Dry Year Water Supply and Demand Comparison, acre-feet/year

	2005	2010	2015	2020	2025	2030
Supply						
Surface water	39,800	39,800	39,800	39,800	39,800	39,800
Groundwater	-	-	-	2,756	4,714	6,790
Recycled water	2,045	4,399	4,832	5,266	5,699	6,133
Supply totals	41,845	44,199	44,632	47,822	50,213	52,723
Demand totals	30,191	36,229	43,474	47,822	50,213	52,723
Difference (supply minus demand)	11,654	7,970	1,158	-	-	-
Difference as a percent of supply	28%	18%	3%	0%	0%	0%
Difference as a percent of demand	39%	22%	3%	0%	0%	0%

7.2.2. Projected Multiple-Dry Year Water Supplies vs. Demand

The projected water supplies are compared to the demands for multiple-dry years for the City in Tables 7-3 through 7-7. The first year of a multiple-dry year is actually limited by Roseville's water supply contracts to 54,000 acre-feet, not the Water Forum limit of 54,900 acre-feet. The multiple-dry year supply scenario is detailed in Chapter 4. The supply and demands are compared for a multiple-dry year event for 2030 in Figure 7-2.

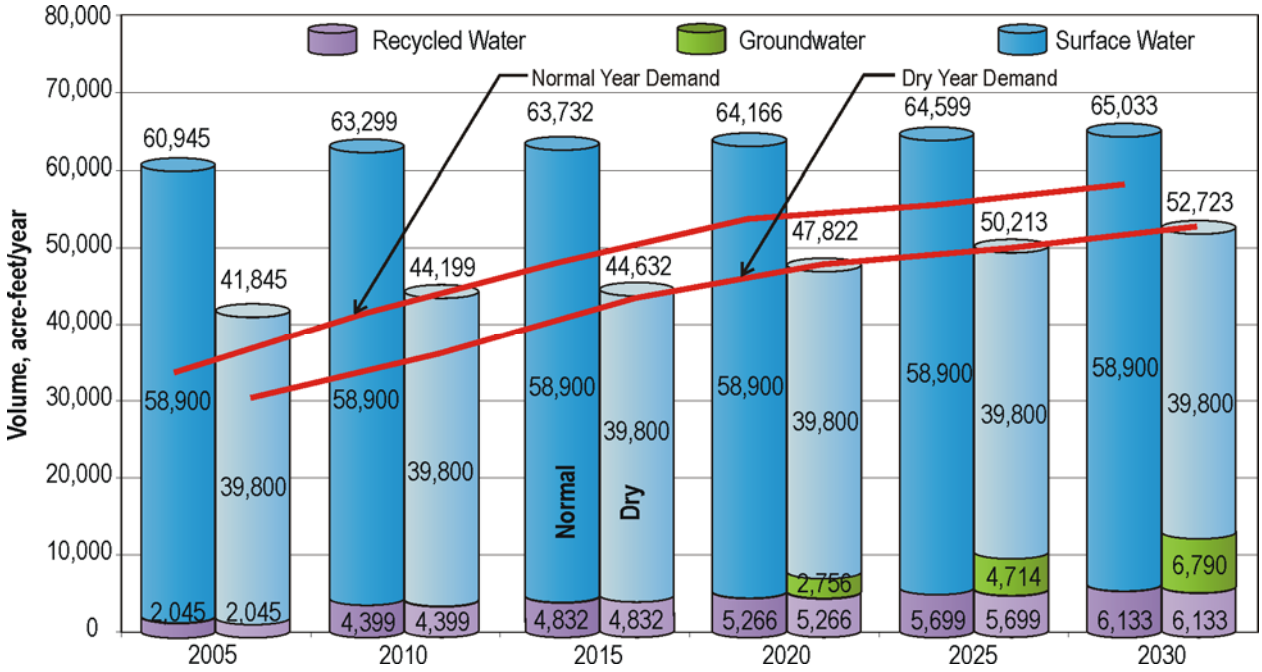

Figure 7-1. Normal and Dry Year Supply and Demand Comparison

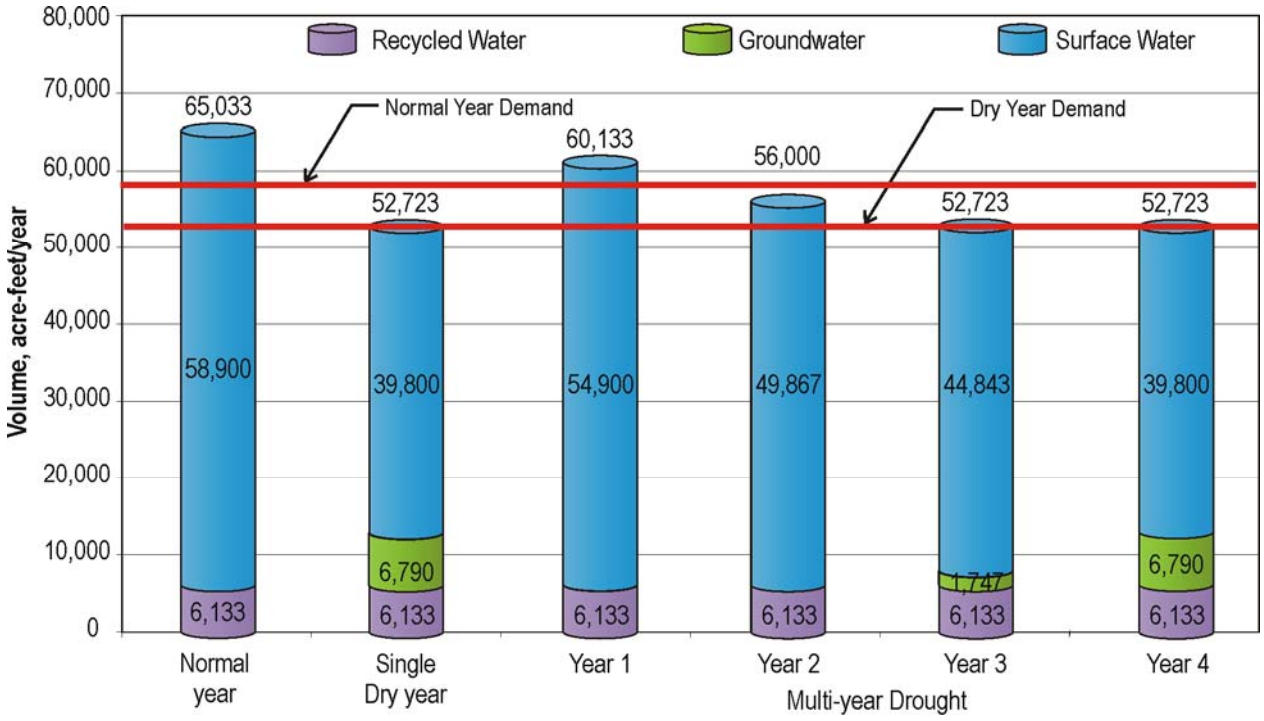

Figure 7-2. Multiple-Dry Year Supply and Demand Comparison for 2030

Table 7-3. Multiple-Dry Year Water Supply and Demand Comparison, acre-feet/year, Period Ending in 2010

	2006	2007	2008	2009	2010
Supply					
Surface water	54,000	49,867	44,843	39,800	39,800
Groundwater	-	-	-	-	-
Recycled water	2,516	2,987	3,457	3,928	4,399
Supply totals	56,516	52,854	48,300	43,728	44,199
Demand totals	31,398	32,606	33,813	35,021	36,229
Difference (supply minus demand)	25,118	20,248	14,487	8,707	7,970
Difference as a percent of supply	44%	38%	30%	20%	18%
Difference as a percent of demand	80%	62%	43%	25%	22%

Table 7-4. Multiple-Dry Year Water Supply and Demand Comparison, acre-feet/year, Period Ending in 2015

	2011	2012	2013	2014	2015
Supply					
Surface water	54,900	49,867	44,843	39,800	39,800
Groundwater	-	-	-	-	-
Recycled water	4,486	4,572	4,659	4,745	4,832
Supply totals	59,386	54,439	49,502	44,545	44,632
Demand totals	37,678	39,127	40,576	42,025	43,474
Difference (supply minus demand)	21,708	15,312	8,926	2,520	1,158
Difference as a percent of supply	37%	28%	18%	6%	3%
Difference as a percent of demand	58%	39%	22%	6%	3%

Table 7-5. Multiple-Dry Year Water Supply and Demand Comparison, acre-feet/year, Period Ending in 2020

	2016	2017	2018	2019	2020
Supply					
Surface water	54,900	49,867	44,843	39,800	39,800
Groundwater	-	-	-	1,973	2,756
Recycled water	4,919	5,006	5,092	5,179	5,266
Supply totals	59,819	54,873	49,935	46,952	47,822
Demand totals	44,344	45,213	46,083	46,952	47,822
Difference (supply minus demand)	15,475	9,659	3,853	0	0
Difference as a percent of supply	26%	18%	8%	0	0
Difference as a percent of demand	35%	21%	8%	0	0

Table 7-6. Multiple-Dry Year Water Supply and Demand Comparison, acre-feet/year, Period Ending in 2025

	2021	2022	2023	2024	2025
Supply					
Surface water	54,900	49,867	44,843	39,800	39,800
Groundwater	-	-	-	4,322	4,714
Recycled water	5,353	5,439	5,526	5,612	5,699
Supply totals	60,253	55,306	50,369	49,735	50,213
Demand totals	48,300	48,778	49,256	49,735	50,213
Difference (supply minus demand)	11,953	6,528	1,112	-	-
Difference as a percent of supply	20%	12%	2%	0	0
Difference as a percent of demand	25%	13%	2%	0	0

Table 7-7. Multiple-Dry Year Water Supply and Demand Comparison, acre-feet/year, Period Ending in 2030

	2026	2027	2028	2029	2030
Supply					
Surface water	54,900	49,867	44,843	39,800	39,800
Groundwater	-	-	917	6,375	6,790
Recycled water	5,786	5,873	5,959	6,046	6,133
Supply totals	60,686	55,740	51,719	52,221	52,723
Demand totals	50,715	51,217	51,719	52,221	52,723
Difference (supply minus demand)	9,971	4,523	-	-	-
Difference as a percent of supply	16%	8%	0	0	0
Difference as a percent of demand	20%	9%	0	0	0

7.3. Water Shortage Expectations

As part of an overall water plan the City of Roseville has considered probabilities of shortages and outages that could affect water supply. In most instances, there will be time to review options available, such as in times of drought or prolonged water shortage. Other instances require more immediate and drastic measures to react to catastrophic events. Options vary depending on the situation at hand, and processes are in place to minimize impacts.

Water shortages can be the result of a number of events. Shortages are determined whenever there is a possibility that water users in Roseville's service area may not be able to receive the full amount of water needed. This may be due to persistent shortages affecting the surface water supplies or through short term disruptions resulting from system damage or failure.

Long duration supply reductions are handled through implementation of the dry year supply strategy and contingency plan as outlined below. Short term disruptions are addressed through use of existing system storage and interties with adjacent jurisdictions.

7.4. Water Shortage Contingency Plan

The Water Forum Agreement describes supply scenarios for normal, dry, and conference years. However, the Water Forum Agreement acknowledges that there may be years where surface water supply is less than even the stipulated decreased demands. The City may also experience short-term water shortages due to mechanical failures or other circumstances. For these instances, the City has developed a water shortage contingency plan. The contingency plan and water waste ordinances are presented in Appendix F.

In the event of an immediate outage, an action plan is developed to address the issue. Key personnel in the development include the Water Utility Manager, Water Treatment Plant Chief Operator, Principal Engineer, and any Water Distribution staff as required to address the issues. Employees are available on an as-needed basis, after hours and weekend response is met by the Water Distribution on-call service worker.

One of the initial elements to be addressed in planning for or reacting to an outage is identifying the duration and potential impact to utility customers. Outages in the summer are more difficult than those in lower demand periods, since system demands are higher and available storage is impacted more quickly. In addition to assessing disruption characteristics, other agencies can be called upon to assist with supplemental water through system interties. These additional contacts, as well as numbers where they can be reached are maintained in the emergency operations plan developed for the water treatment plant.

Customer notifications can be achieved through a variety of means. For impacts limited in duration and size, a direct notification is used. In other instances it becomes necessary to use public service announcements and news releases. Emergency action plans maintained at the water treatment plant also include resources needed in the event that water quality is impacted and requires notification as mandated by the state Department of Health Services.

7.4.1. Stages of Action

The City's water shortage contingency plan is based on five stages as defined in Table 7-8. The Director of Environmental Utilities determines the drought stage as outlined in Roseville Municipal Code (RMC) 14.09.040. In determining the water drought stage in effect, the Director shall take into account only surface water available from the United States Bureau of Reclamation and Placer Country Water Agency. In the event this would result in a stage three drought or higher, groundwater wells could be activated to reduce the impact of reduced surface water supplies, however, in no case shall well water be used as an alternative to declaration of a drought stage one or two.

Table 7-8. Water Shortage Contingency Plan Stages

Stage	Water supply conditions	Percent shortage
Stage I	When surface water supply is adequate to meet only 90% of projected demands.	Up to 10%
Stage II	When surface water supply is adequate to meet only 80% of projected demands.	10-20%
Stage III	When total water supply is adequate to meet only 70% of projected demands.	20-30%
Stage IV	When total water supply is adequate to meet only 60% of projected demands.	30-40%
Stage V	When total water supply is adequate to meet only 50% of projected.	40-50% and greater

7.4.2. Prohibitions, Consumption Reduction Methods, and Penalties

The City of Roseville's "No Waste" ordinance currently restricts water waste within the service area. Roseville Municipal Code 14.09 includes prohibitions on various wasteful water uses such as installing water intensive landscaping, and promotes the use of recycled water as available. As drought stages become more severe so do restrictions on water use. These restrictions are identified in Roseville Municipal Code (RMC) section 14.09 included in Appendix F. A summary of measures identified is summarized in Table 7-9. As noted in Chapter 3, the City expects to reduce demand during dry years up to eight percent, or 4,130 acre-feet at buildout. The values below represent a range of potential savings, of which Roseville is relying on only eight percent, which is a conservative approach for water supply planning purposes.

Table 7-9. Consumption Reduction Methods

Examples of consumption reduction methods	Stage when method takes effect	Projected reduction (percent)
Demand reduction program	All stages	1-5%
Incentives to reduce water consumption	All stages	Up to 10%
Education program	All stages	Up to 10%
Outdoor water use restrictions	All stages	Up to 20%
Use prohibitions	All stages	Up to 10%
Water waste pricing	All stages	Up to 10%
Plumbing fixture replacement	All stages	1-5%
Mandatory rationing	II, III, IV, V	10-50%
Commercial landscape irrigation allocations	II, III, IV, V	1-5%
Flow restriction	Individual service due to continued waste.	<1%
Restrict building permits	Will be considered	<10%

Note:
Demand hardening reduces demand reduction potential over time. Percent reduction values are typical for a demand reduction program consisting of multiple efforts, reductions are not additive.

Table 7-10 lists the mandatory prohibitions that are part of Roseville's Water Shortage Contingency Plan.

Table 7-10. Mandatory Prohibitions

Prohibitions	Stage when prohibition is voluntarily requested	Stage when prohibition becomes mandatory
Street/sidewalk cleaning	1	1[a]
Washing cars	1	1
Watering lawns/landscapes	2	5
Uncorrected plumbing leaks	1	1
Gutter flooding	1	1
No refilling or filling of pools	3	4

Note:
[a] Exceptions made for public health and safety

7.4.3. Penalties

Roseville currently restricts water waste within the service area and enforces water waste penalties for continued infractions. Water wasters are provided a notice at the location of infraction as well as a registered letter to the property owner upon the third notice. Notices were provided to over 600 identified water wasters during the 1991 drought and resulting water shortage. During this time a water patrol was active and provided coverage 16 hours per day, five days per week. Since this time, regular patrols have not been dedicated to water education and waste patrol. Complaints are reviewed on a case-by-case basis and when noted by field crews during normal work travels. Waste notices issued in non-drought years are estimated at 40-75 per year with first notices usually sufficient to resolve the issue.

In the event water waste continues to be an issue, penalties can be assessed to gain compliance. Measures that may be implemented include placement of a water meter if not so configured, application of a restrictor, and an allocation of water that can be used. In the event water is used in excess of the quantities allocated, a water waste rate is imposed with the intent to encourage reductions through financial penalties. Penalties are identified in RMC 14.09.150 in Appendix F, and summarized in Table 7-11.

Table 7-11. Penalties and Charges

Examples of Penalties and Charges	Stage when penalty takes effect
Penalties for not reducing consumption	2
Termination of service and reconnect fee	Basic[a]
Continued and repeated water waste	Basic[a]

Note:
[a] Basic is the normal weather stage that is always in effect.

7.4.4. Analysis of Revenue Impacts of Reduced Sales During Shortages

Roseville Water Division maintains an economic reserve of at least 10 percent to cover costs associated with reduction in revenue due to drought conditions as well as additional program costs. Under the current rate structure a percentage of residential use is through flat rate accounts. This allows for continued revenues even though water conservation measures are in place. As more accounts transition to a metered rate, the sensitivity to revenue shortfalls becomes more of an issue without a properly designed rate structure.

Water rates were reviewed and modified in 2005 for implementation of the metering program. Rates accounted for operational fixed costs to be collected through a service fee that will remain fixed and stable. Fixed operational costs include staff, equipment, and facility maintenance required for the water operation. Variable costs are allocated to water use and collected based on the customer water quantity used. In theory, as water use reduces so do the variable costs of the operation, and less revenue is required to offset these costs. Variable costs include power and chemicals used in treatment. With a proper rate structure, sufficient revenues will be collected to cover operational costs.

The objective of having a rate structure that is relatively insensitive to water demand is that rate increases should not be required in times of drought. This scenario has played out in the past in other agencies, and the outcome is a deterrent to efficient water use. Through use of a properly structured water rate and economic reserves within the Division is anticipated that rate increases will not be required in times of water shortage.

The following Tables 7-12 through 7-15 summarize the City's analysis of revenues and expenditures during water shortages.

Table 7-12. Actions and Conditions that Impact Revenues

Type	Anticipated revenue reduction
Reduced sales	Minor with properly designed rates, expect full metering by 2012.

Table 7-13. Actions and Conditions that Impact Expenditures

Category	Anticipated cost
Increase staff cost	Management of demand reduction measures expected to increase costs, amount not estimated at this time.
Increased O&M cost	Costs will increase as groundwater supply is added to system, amount not estimated at this time.
Increased program costs	Flyers, ads, and enforcement, amount not estimated at this time.

Table 7-14. Proposed Measures to Overcome Revenue Impacts

Name of measures	Summary of effects
Development of reserves	City currently maintains a reserve of 10 percent.
Rate design	Have inclining block rate structure that is less sensitive to changes in usage

Table 7-15. Proposed Measures to Overcome Expenditure Impacts

Name of measures	Summary of effects
None	City does not currently have any proposed measures.

7.4.5. Reduction Measuring Mechanisms

Under normal water supply conditions, potable water production figures are recorded daily. Totals are reported monthly to the Water Utility Manager and are incorporated into the water supply report which is reviewed by the Director and the Roseville Public Utilities Commission.

During times of water shortage, daily production figures and projected demands will be reviewed by the Water Treatment Plant Chief Operator. The Chief Operator will compare the weekly production to the target weekly production to verify that the reduction goal is being met. These weekly reports are forwarded to the Water Utility Manager and Director. If reduction goals are not met, the Director will notify the City Council so that corrective action can be taken.

During emergency shortages and outages, production figures are reported to the Chief Operator hourly and to the Water Utility Manager daily. The following Table 7-16 summarizes City's procedure for monitoring its various water shortage mechanisms for effectiveness.

Table 7-16. Reduction Measuring Mechanisms

Mechanism for determining actual reduction	Type and quality of data expected
Treatment plant production volume	Daily production will be monitored from the plant's production meters. Production meters are accurate within +/- 5 percent.
Customer records	As customers are converted to metered accounts, customer accounts can be grouped by type or by specific customers to monitor usage. Data will be evaluated monthly depending on situation. Data is based on customer meters which are accurate within +/- 1 percent.

SECTION 8
REFERENCES AND SOURCES

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APPENDIX A

Notice of Public Hearing

16108181

NOTICE

PUBLIC NOTICE IS HEREBY GIVEN that a public hearing will be held before the City Council of the City of Roseville for the purpose of considering the following:

Approval of the 2005 Urban Water Management Plan, as required by the Urban Water Management Planning Act (California Water Code Division 6, Part 2.6, Sections 10610 through 10657).

Complete copies of the Urban Water Management Plan are available for public review in the City Clerk's Department, Roseville Environmental Utilities Department at 2005 Hilltop Circle, and Roseville's Main Library and the Maidu library.

The hearing will be held on the 1st day of March, at 7:00 PM, or as soon thereafter as may be heard, in the Council Chambers at City Hall, 311 Vernon Street, Roseville, CA. All interested persons are invited to appear and be heard.

ROSEVILLE CITY COUNCIL
Sonia Orozco, CMC
City Clerk
Dated: February 15, 2006

Published Roseville Press-Tribune: February 18, 2006

APPENDIX B

Adopted Resolution

RESOLUTION NO. 06-108

ADOPTING THE 2005 URBAN WATER MANAGEMENT PLAN

WHEREAS, the Urban Water Management Planning Act requires every urban water supplier providing water for municipal purposes to more than 3,000 customers to adopt and submit an Urban Water Management Plant every five years to the California Department of Water Resources; and

WHEREAS, the Plan was last updated in 2003 when the service area boundaries were modified for the West Roseville Specific Plan; and

WHEREAS, as demonstrated in the 2005 Plan, Roseville has planned for and secured sufficient water supplies for the existing General Plan area as well as the West Plan annexation area; and

WHEREAS, the City has prepared and circulated for public review the 2005 Urban Water Management Plan, and a properly noticed public hearing regarding said Plan was held by the City Council on March 1, 2006; and

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Roseville that the 2005 Urban Water Management Plan is hereby adopted and ordered filed with the City Clerk; The Mayor is hereby authorized and directed to file the 2005 Urban Water Management Plan with the California Department of Water Resources within 30 days after this date.

PASSED AND ADOPTED by the Council of the City of Roseville this 1st day of March, 2006, by the following vote on roll call:

AYES COUNCILMEMBERS: Gray, Roccucci, Rockholm, Garbolino

NOES COUNCILMEMBERS: None

ABSENT COUNCILMEMBERS: Allard

MAYOR

ATTEST:

City Clerk

The foregoing instrument is a correct copy of the original on file in this office.

ATTEST:
City Clerk of the City of Roseville, California

DEPUTY CLERK

APPENDIX C

Cover Page of Emergency Response Plan

WATER FACILITIES EMERGENCY RESPONSE PLAN

1. ACTIVATE NEEDED EMERGENCY SERVICES AND COMPANY PERSONNEL

Business Center	**916/ 774-5770**
Placer County Office of Emergency Services	**911**, Non-Emr.: 530/ 886-5300
Roseville Fire Department	**911**, Non-Emr.: 916/ 774-5800
Roseville Police Department	**911**, Non-Emr.: 916/ 774-5000
California Highway Patrol	**911**, Non-Emr.: 916/ 861-1333
Placer County Sheriff Department	**911**, Non-Emr.: 530/ 886-5375
Ambulance and Paramedics	**911**
Water Quality Control	**916/791-4586**
Department of Health Services	**916/449-5666**

	Office	Pager	Cellular	Home
Water Utility Manager	916/774-5714	NA	916/223-7714	916/ 781-3899
Water Operations Manager	916/774-5668	NA	916/521-6979	916/773-4640
Water Treatment Plant Chief Operator	916/791-4586	NA	916/847-8414	NA

Roseville Water Treatment Plant
9595 Barton Road, Granite Bay, CA 95746

Northeast Tank Site
Scarborough Drive, Rocklin, CA

Dual-Purpose Pump Station
1401 East Roseville Parkway, Roseville, CA 95661

2. ASSESS THE SITUATION

Where is the emergency incident located ?

Are there are any injuries ?

Is there a fire ?

Is there a chemical release ?

Is a Security Breach involved ?

Are vehicles involved ?

Are emergency vehicles at the scene ?

3. PLAN YOUR RESPONSE

Refer to the pre-planned responses.

Assist emergency personnel.

4. SECURE THE FACILITY AND PIPELINES

5. REPORT ON CONDITIONS

6. WATER DIVISION DOC LOCATION

City Corporate Yard

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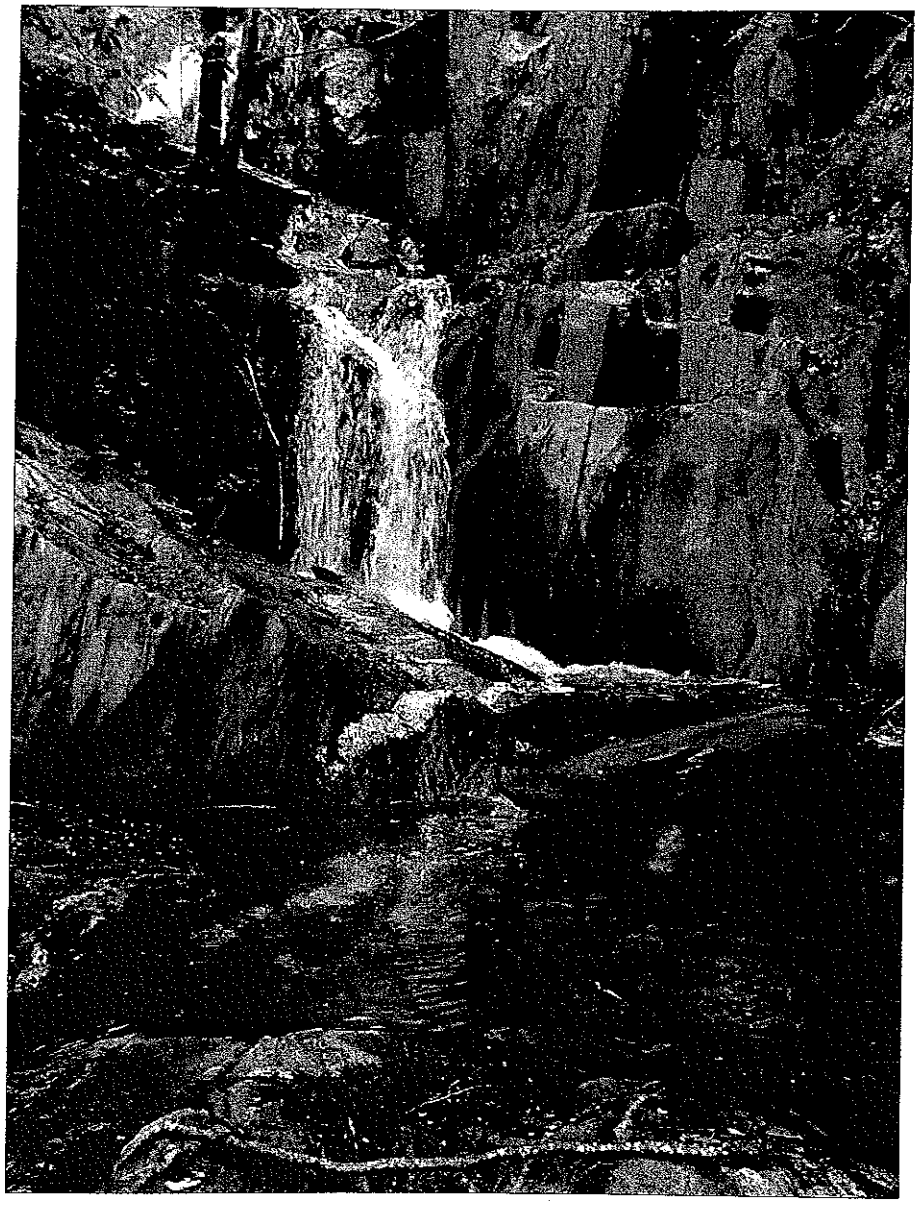
ROSEVILLE EMERGENCY RESPONSE PLAN DISTRIBUTION LIST

Copies of the Roseville Emergency Response Plan have been distributed to:	
City Council	
Mayor	
Mayor Pro Tem	
City Council Member	
City Council Member	
City Council Member	
City Department/Divisions	
City Manager	
Assistant City Manager	
Deputy City Manager	
Public Information Officer	
Risk Manager	
City Attorney	
City Clerk	
Fire Chief	
Fire Division Chief-Administration	
Five Division Chief-Operations	
Fire Marshal	
Fire Battalion Chiefs	
Fire Battalion Vehicle	
Human Resources Director	
Chief of Police	
Police Communications Center	
Public Works Director	
City Engineer	
Utilities Director	
Safety Coordinator	
Water Utility Manager	
Water Operations Manager	
Water Treatment Plant	
Water Distribution Supervisor	
Departmental Operations Center DOC Desks	

APPENDIX D

Groundwater Management Plan

West Placer Groundwater Management Plan



PLACER COUNTY WATER AGENCY

ADOPTED: October 6, 1998

UPDATED: November 6, 2003

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EXECUTIVE SUMMARY

During 1996, Agency staff conducted a preliminary study which identified the need to develop an AB3030 type groundwater management plan (Plan) for west Placer area. This study identified that the groundwater levels in west Placer is declining at a precipitous rate, approximately 1½ feet per year, due primarily to the heavy amount of groundwater extractions in north Sacramento County. On November 7, 1996 the Water Agency Board of Directors adopted a Resolution of Intention to draft an AB3030 type groundwater management plan for the west Placer area.

The Water Agency is acting as the lead agency in the development of the Plan and is in a partnership with the County of Placer and the cities of Roseville and Rocklin. The Plan area includes the cities of Roseville, Rocklin, and the unincorporated portion of west Placer County that is essentially west of Highway 65. The goal of the Plan is to manage the groundwater resources to the benefit of Placer County through a coordinated effort with all stakeholders in the Plan area and in a fashion consistent with the other groundwater management planning efforts in the region.

The primary objective of the Plan is to facilitate studies and actions needed to restore and maintain the quantity and quality of the groundwater in the basin. The Plan consists of the following components:

1. monitoring of groundwater levels and groundwater quality,
2. identifying groundwater recharge opportunities, with particular emphasis on the area adjacent to the Placer/Sacramento County line,
3. identifying conjunctive use opportunities for non-residential uses in the area north of Pleasant Grove Creek,
4. an evaluation of the safe yield,
5. maximizing groundwater management coordination with all jurisdictions, landowners, and the general public within west Placer County, with those jurisdictions in north Sacramento County portions of the basin, and with the appropriate State and Federal agencies.

The Plan recognizes the importance of stabilizing the decline of the groundwater level in the basin; however, projects of this nature will be conducted in a coordinated but separate fashion from the Plan implementation. At this time, the Plan does not recommend the use of powers granted by AB3030 relevant to the levying of assessments based upon groundwater pumping. Implementation of the Plan will not affect wells supplying individual residences. It is not the intent of the Agency to become the regulator of groundwater extraction nor is it implied that there is a near term need to regulate groundwater extractions in the Plan area.

West Placer Groundwater Management Plan Update

On October 6th, 1998, the Placer County Water Agency adopted the West Placer Groundwater Management Plan as provided for by AB 3030 which was approved by the Legislature in 1992. On September 15, 2002, the Governor signed into law SB 1938 that is similar to AB 3030 except that State funds could be made available for groundwater projects to those agencies that have a current groundwater management plan that complies with the requirements of SB 1938. for the most part, the existing plan meets the new requirements. Updates are provided for in the current plan through a public hearing process. In order to bring the existing plan into full compliance with SB 1938, the following elements will be considered as an integral part of the West Placer Groundwater Management Plan upon the completion of a public hearing for this purpose and approval by the Placer County Water Agency.

A] Notice of Participation. SB 1938 requires a written statement outlining how interested parties may be allowed to participate in the groundwater management plan. It is the intent of PCWA to form a mutli-jurisdictional committee including Roseville, Rocklin, Lincoln, Placer County, Cal-American Water, and PCWA to meet and confer on issues, potential projects, grant requests, and other matters related to the common groundwater basin.

B] Basin Management Objective

The primary objective identified in the AB 3030 plan was to "facilitate studies and actions needed to restore and maintain the quantity and quality of the groundwater in the basin". That objective is hereby expanded to include:

- Stabilize and/or increase the groundwater level
- Maintain and/or increase the groundwater quality
- Evaluate a conjunctive use program that could provide a water supply in times of drought
- Evaluate a groundwater recharge program using excess surface water and reclaimed wastewater
- Evaluate and if feasible implement a program to use reclaimed wastewater to irrigate crops and/or pasture
- Continue to monitor groundwater levels and quality using all available data sources
- Determine safe yield of basin
- Identify impact of adjacent jurisdictions drawing groundwater from the West Placer Basin.

Everything in the existing plan not in conflict with this update will remain in effect.

C] Groundwater Basin Map and Description

The 1998 Plan contains a description of the Groundwater Management Plan Area based on information provided by the State Department of Water Resources in Bulletin 118 as of 1980. Since that time, much better information is available thru Bulletin 118 and an up to date map of the North American Subbasin of the SacramentoValley Groundwater Basin is included in this update as the map of the basin of concern by PCWA. Bulletin 112 also provided a text of the properties of the North American Subbasin and that text is included as part of this management plan update

Sacramento Valley Groundwater Basin, North American Subbasin

- Groundwater Basin Number: 5-21.64
- County: Sutter, Placer, Sacramento
- Surface Area: 351,000 acres (548 square miles)

Basin Boundaries and Hydrology

The North American subbasin lies in the eastern central portion of the Sacramento Groundwater Basin. The Bear River is its northern boundary, the Feather River is its western boundary, and the Sacramento River is its southern boundary. The eastern boundary is a north-south line extending from the Bear River south to Folsom Lake, which passes about 2 miles east of the town of Lincoln. The eastern boundary represents the approximate edge of the alluvial basin, where little or no groundwater flows into or out of the groundwater basin from the rock of the Sierra Nevada (DWR, 1997). The eastern portion of the study area is characterized by low rolling dissected uplands. The western portion is nearly a flat flood basin for the Bear, Feather, Sacramento and American rivers, and several small east side tributaries. The general direction of drainage is west-southwest at an average grade of about 5 percent.

Precipitation ranges from 18-20 inches in the western half of subbasin to 20-24 inches in the eastern half of subbasin.

Hydrogeologic Information

The following geologic references are presented in California Department of Water Resources. Feasibility Report, American Basin Conjunctive Use Project. June 1997.

Water Bearing Formations

The water-bearing materials of the North American groundwater subbasin are dominated by unconsolidated continental deposits of Late Tertiary and Quaternary age. Deposits include Miocene/Pliocene volcanics, older alluvium, and younger alluvium. The alluvium can be characterized as comprising the upper aquifer system, occupying the upper 200 to 300 feet of the aquifer system; the Mehrten and older geologic units can be characterized as comprising the lower aquifer system, occurring generally deeper than 300 feet towards the west. The cumulative thickness of these deposits increases from a few hundred feet near the Sierra Nevada foothills on the east to over 2,000 feet along the western margin of the subbasin. Most of the groundwater is produced in the northern portion of the subbasin. The aquifer zones in the upper 200 to 300 feet of this portion of the subbasin, appear to be unconfined and behave similarly to stresses imposed on them. Conversely, deeper zones show a delayed response to stresses in the upper zone, indicating possibly limited interconnection with the shallower zones. (DWR, 1997).

Younger Alluvium. These deposits include flood basin deposits and recent stream channel deposits. The flood basin deposits occur along the western margin of the subbasin adjacent to the Sacramento River. The flood basin

deposits consist primarily of silts and clays, although they may be locally interbedded with stream channel deposits of the Sacramento River. Thickness of the unit ranges from 0 to 100 feet. Because of their fine-grained nature, the flood basin deposits have low permeability and generally yield low quantities of water to wells. Brackish water is often encountered in these deposits.

The stream channel deposits include sediments deposited in the channels of active streams as well as overbank deposits of those streams, terraces, and local dredge tailings. These deposits occur predominantly along the Sacramento and American Rivers and their major tributaries, and consist primarily of unconsolidated silt, fine- to medium-grained sand, and gravel. Thickness of the unit ranges from 0 to about 100 feet. Sand and gravel zones in the younger alluvium are highly permeable and yield significant quantities of water to wells.

Older Alluvium. These deposits consist of loosely to moderately compacted sand, silt and gravel deposited in alluvial fans during the Pliocene and Pleistocene. A number of formational names have been assigned to the older alluvium, including the Modesto, Riverbank, and Turlock Lake Formations (Helley and Harwood, 1985), Victor and Laguna Formations (Olmstead and Davis, 1961), and Arroyo Seco Gravels, South Fork Gravels, and Fair Oaks Formation (DWR, 1974). The older alluvial units are widely exposed between the Sierra Nevada foothills and overlying younger alluvial units near the axis of the Sacramento Valley. Thickness of the older alluvium ranges between 100 to 650 feet. It is moderately permeable.

Miocene/Pliocene Volcanics. These deposits consist of the Mehrten Formation, a sequence of fragmental volcanic rocks. The Mehrten Formation is exposed along the eastern margin of the subbasin between the towns of Lincoln and Folsom. It is composed of intervals of "black sands," stream gravels, silt, and clay interbedded with intervals of dense tuff breccia. The sand and gravel intervals are highly permeable and wells completed in them can have high yields. The tuff breccia intervals act as confining layers. Thickness of the unit is between 200 and 1,200 feet.

Groundwater Level Trends

Groundwater levels in southwestern Placer County and northern Sacramento County have generally decreased, with many wells experiencing declines at a rate of about one and one-half feet per year for the last 40 years or more (PCWA,1999). Some of the largest decreases have occurred in the area of McClellan AFB. Groundwater levels in Sutter and northern Placer Counties generally have remained stable, although some wells in southern Sutter County have experienced declines (DWR, 1997).

Groundwater Storage

Groundwater Storage Capacity. DWR American Basin Conjunctive Use Project Feasibility Report (1997) assumed a specific yield of 7% and an aquifer thickness of 200 feet for 200,000 acres within North American groundwater subbasin. Storage capacity can be estimated for the North American subbasin by applying the same assumptions as the DWR American

Basin Conjunctive Use Project Feasibility Report, specific yield of 7% and an assumed thickness of 200 feet over the entire 351,000 acre subbasin.

Groundwater in Storage. There are no published reports, which discuss groundwater in storage.

Groundwater Budget (Type B)

As part of its water planning process, DWR estimated the following components of the groundwater budget. The calculations are for a 1990 level of development. Estimated inflows include natural recharge at 83,800 acre-feet and applied water recharge at 29,800 acre-feet. There was no artificial recharge. Estimated outflows include urban extraction at 109,900 acre-feet and agricultural extraction at 289,100 acre-feet.

Groundwater Quality

Characterization. The chemistry and quality of groundwater has been assessed for the American Basin. Many areas of good quality groundwater exist in the North American subbasin. In some portions of the basin ground water quality is marginal. The three major groundwater types are: magnesium calcium bicarbonate or calcium magnesium bicarbonate; magnesium sodium bicarbonate or sodium magnesium bicarbonate; and sodium calcium bicarbonate or calcium sodium bicarbonate (DWR, 1997).

Comparison of groundwater quality data with applicable water quality standards and guidelines for drinking and irrigation indicate elevated levels of TDS/specific conductance, chloride, sodium, bicarbonate, boron, fluoride, nitrate, iron manganese, and arsenic may be of concern in some locations within the subbasin (DWR, 1997).

High TDS levels exist in an area along the Sacramento River extending from Sacramento Metro Airport northward to the Bear River. The highest levels of TDS could be found in an area extending just south of Nicholas to Verona, between Reclamation District 1001 and the Sutter Bypass. Some wells in this area have had TDS exceeding 1,000 mg/L.

This same area along the Sacramento River extending from Sacramento Metro Airport northward to the Bear River also contains high levels of chloride, sodium, bicarbonate, manganese, and arsenic. The groundwater in the southern part of the basin is generally characterized as good quality, low in disinfection by-product precursor materials and moderate in mineral content, although some localized contamination issues do exist.

Impairments. There are three sites within the subbasin with significant groundwater contamination issues: McClellan AFB, United Pacific Roseville Rail Yard and the Aerojet Superfund Site. Although the Aerojet site lies south of the North American sub basin, a contaminant plume (including TCE and PCE) extends north from Aerojet, under the American River and into the North American subbasin (Montgomery Watson, 2000). Other localized areas of contamination exist throughout the basin and are generally smaller in scope and extent of contamination.

Comparison of groundwater quality data with applicable water quality standards and guidelines for drinking and irrigation indicate elevated levels of TDS/specific conductance, chloride, sodium, bicarbonate, boron, fluoride, nitrate, iron manganese, and arsenic may be of concern in some locations within the subbasin (DWR, 1997)

Water Quality in Public Supply Wells

Constituent Group[1]	Number of wells sampled[2]	Number of wells with a concentration above an MCL[3]
Inorganics – Primary	265	7
Radiological	254	2
Nitrates	276	0
Pesticides	268	0
VOCs and SOCs	267	6
Inorganics – Secondary	265	75

[1] A description of each member in the constituent groups and a generalized discussion of the relevance of these groups are included in *California's Groundwater – Bulletin 118* by DWR (2003).
[2] Represents distinct number of wells sampled as required under DHS Title 22 program from 1994 through 2000.
[3] Each well reported with a concentration above an MCL was confirmed with a second detection above an MCL. This information is intended as an indicator of the types of activities that cause contamination in a given basin. It represents the water quality at the sample location. It does not indicate the water quality delivered to the consumer. More detailed drinking water quality information can be obtained from the local water purveyor and its annual Consumer Confidence Report.

Well Characteristics

	Well yields (gal/min)	
Municipal/Irrigation	Range: 752-2,500	Average: 800 (DWR 1997)
	Total depths (ft)	
Domestic	Range: 50-1,750	Average: 190 (665 well completion reports)
Municipal/Irrigation	Range: 77-1,025	Average: 396 (105 well completion reports)

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
DWR	Groundwater levels	53 wells semi-annually, 7 monthly
Sacramento County		17 wells semi-annually
South Sutter WD		21 wells semi-annually, 1 monthly
Sutter County		22 wells semi-annually
DWR	Mineral, nutrient, & minor element	32 wells biennially
Department of Health Services (including co-operators)	Title 22	339 wells

Basin Management

Groundwater management:	In 1997, the American River Basin Cooperating Agencies (ARBCA) was formed by water purveyors in northern Sacramento County and southern Placer County. The primary objective of ARBCA is to develop a regional water resource management plan and conjunctive use program Sacramento North Area Groundwater Management Authority (SNAGMA), is a joint powers authority responsible for the protection of the regional groundwater basin. *Sacramento Metropolitan Water Authority is a joint powers authority and non-profit benefit association formed by 16 water supply agencies and utilities.* South Sutter WD adopted an AB3030 plan in1995. Placer County Water Agency adopted an AB3030 plan in 1998.
Water agencies	
Public	South Sutter WD, Camp Far West ID, Rio Linda WD, Citrus Heights WD, San Juan Suburban WD, Fair Oaks WD, Carmichael WD, Northridge Park County WD, Arcade WD, Western Placer ID, Placer County WA, Del Paso Manor WA, City of Sacramento WSA, City of Roseville WSA, Sacramento County Water Management District,
Private	Pleasant Grove – Verona MWC, Natomas Central MWC, Citizens Utility Company, Orangevale MWC

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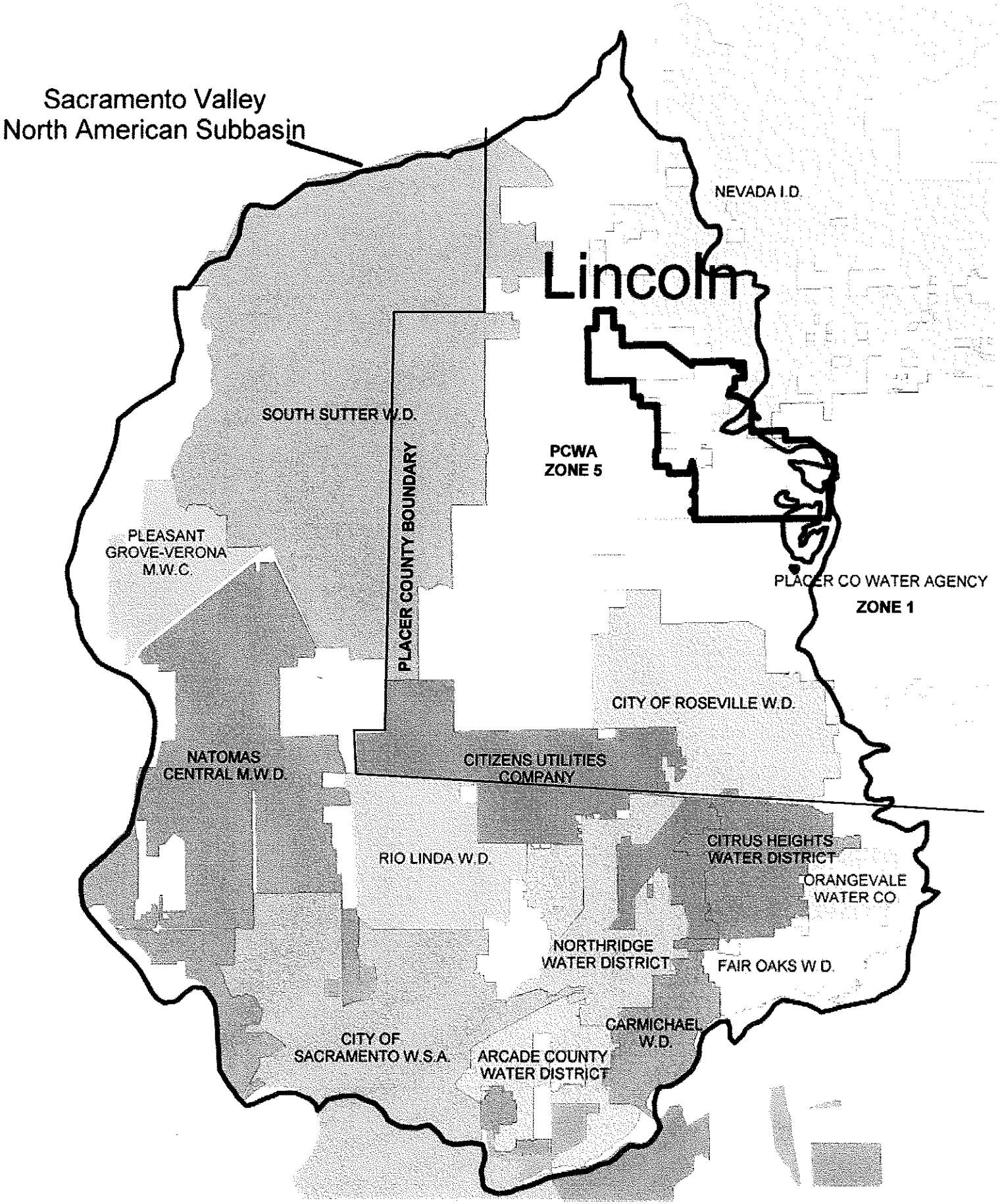


West Placer Groundwater Management Plan by Placer County Water Agency

RESOLUTION NO. 03 - 36 OF THE BOARD OF DIRECTORS
OF THE PLACER COUNTY WATER AGENCY
ADOPTING AN UPDATE TO THE
WEST PLACER GROUNDWATER MANAGEMENT PLAN

WHEREAS, on October 6, 1998, the Placer County Water Agency Board of Directors did adopt a Groundwater Management Plan for portions of West Placer County;

WHEREAS, Senate Bill 1938 was signed into law on September 15, 2002 and required that existing Groundwater Management Plans be updated in order to be eligible for State funds;

WHEREAS, the PCWA Plan from 1998 is already in compliance with new requirements in most respects and needed only minor changes to reflect Basin Management Objectives and the Groundwater Basin of concern;

WHEREAS, in July 2003 the Draft Update was authorized for circulation by this Board and a public hearing set to determine whether to adopt the proposed update and gave notice of that hearing as required by law;

WHEREAS, a hearing on the Draft Update was held on November 6, 2003, at which time all members of the public were permitted to submit written and oral comments or protests concerning the proposed update; and

WHEREAS, this Board has reviewed the proposed update and considered all of the comments and protests submitted to this Board concerning such plan.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Placer County Water Agency that this Board herby finds and determines that:

1. All of the above statements are true and correct;
2. The groundwater management plan update presented to this Board entitled "West Placer Groundwater Management Plan Update per Senate Bill 1938" dated May 9, 2003, is hereby adopted for the area described in that update; and
3. The Agency management and staff are hereby instructed to expeditiously prepare rules and regulations to implement and enforce this Plan Update and present them to this Board for its consideration.

The foregoing resolution was duly passed at a regular meeting of the Board of Directors of the Placer County Water Agency on November 6, 2003, by the following vote on roll call:

AYES DIRECTORS: Ferreira, Jarvis, Roccucci, Wollan and Chair Lee.
NOES DIRECTORS: None.
ABSENT DIRECTORS: None.

Signed and approved by me after its passage this 6th day of November 2003.

Chair, Board of Directors
Placer County Water Agency

ATTEST:

Clerk, Board of Directors
Placer County Water Agency

A. INTRODUCTION

AB3030

AB3030 was approved by the California Legislature in 1992 and is now codified in the California Water Code Sections 10750, et seq. This law allows certain local agencies whose service areas overlie a State designated groundwater basin to develop and implement groundwater management plans (GMP or the Plan). For the purposes of groundwater management plans, the Water Code defines a "local agency" as any local public agency that provides water service to all or a portion of its service area, and includes a joint powers authority formed by local public agencies that provide water service. Generally, a local agency may not manage groundwater pursuant to AB3030 within the service area of another local agency, water corporation, or mutual water company without the agreement of that entity.

The purpose of the GMP is to outline the role of the local agency in managing the local groundwater resources so as to maximize the water supply and to protect the quality of the supply. To facilitate the development of groundwater management, Water Code Section 10753.7 **Plan Components** cites the following:

> "A groundwater management plan may include components relating to all of the following:
>
> a) The control of saline water intrusion
> b) Identification and management of wellhead protection areas and recharge areas
> c) Regulation of the migration of contaminated groundwater
> d) The administration of a well abandonment and well destruction program
> e) Mitigation of conditions of overdraft
> f) Replenishment of groundwater extracted by water producers
> g) Monitoring of groundwater levels and storage
> h) Facilitating conjunctive use operations
> i) Identification of well construction policies
> j) The construction and operation by the local agency of groundwater contamination cleanup, recharge, storage, conservation, water recycling, and extraction projects
> k) The development of relationships with state and federal regulatory agencies

l) The review of land use plans and coordination with land use planning agencies to assess activities which create a reasonable risk of groundwater contamination"

Water Code Section 107554.2 states that a local agency that adopts a groundwater management plan may impose annual fees and assessments based upon the amount of groundwater pumped to pay for costs incurred by the local agency. These costs must be associated with the acquisition of replenishment water, administrative and operating costs, and with capital projects necessary to implement the GMP.

Water Code Section 10754.3 further states that the local agency must hold an election on the proposition of whether the local agency shall be authorized to levy a groundwater management assessment or fix and collect fees for the replenishment or extraction of groundwater. As a result, the Water Agency would be required to present the proposition in a County general or special election. The election must be conducted only in that portion of the local agency's jurisdiction subject to the proposition. The local agency is so authorized if a majority of the votes cast at the election is in favor of the proposition.

There are several steps required by AB3030 before a GMP can actually be implemented, the first two of which the Water Agency accomplished in November 7, 1996:

1. Conduct a noticed public hearing to adopt a Resolution of Intention to prepare a Draft GMP
2. Write and publish the Resolution of Intention to prepare a Draft GMP
3. Prepare a Draft GMP within two years of the date of the adoption of the Resolution of Intention. If the Draft GMP is not adopted for implementation within two years, the entire process must be restarted
4. Conduct a second noticed public hearing to determine whether to adopt the plan
5. Within 35 days after the conclusion of the second hearing, the Board may adopt the proposed plan unless protests have been filed by the owners of more than 50% of the assessed valuation of the land subject to the plan.

Placer County Water Agency

The Placer County Water Agency was created in 1957 by a special Act of the State Legislature, entitled "Placer County Water Agency Act." This Act gives the Water Agency very special County-wide authority, with broad Agency-wide powers associated

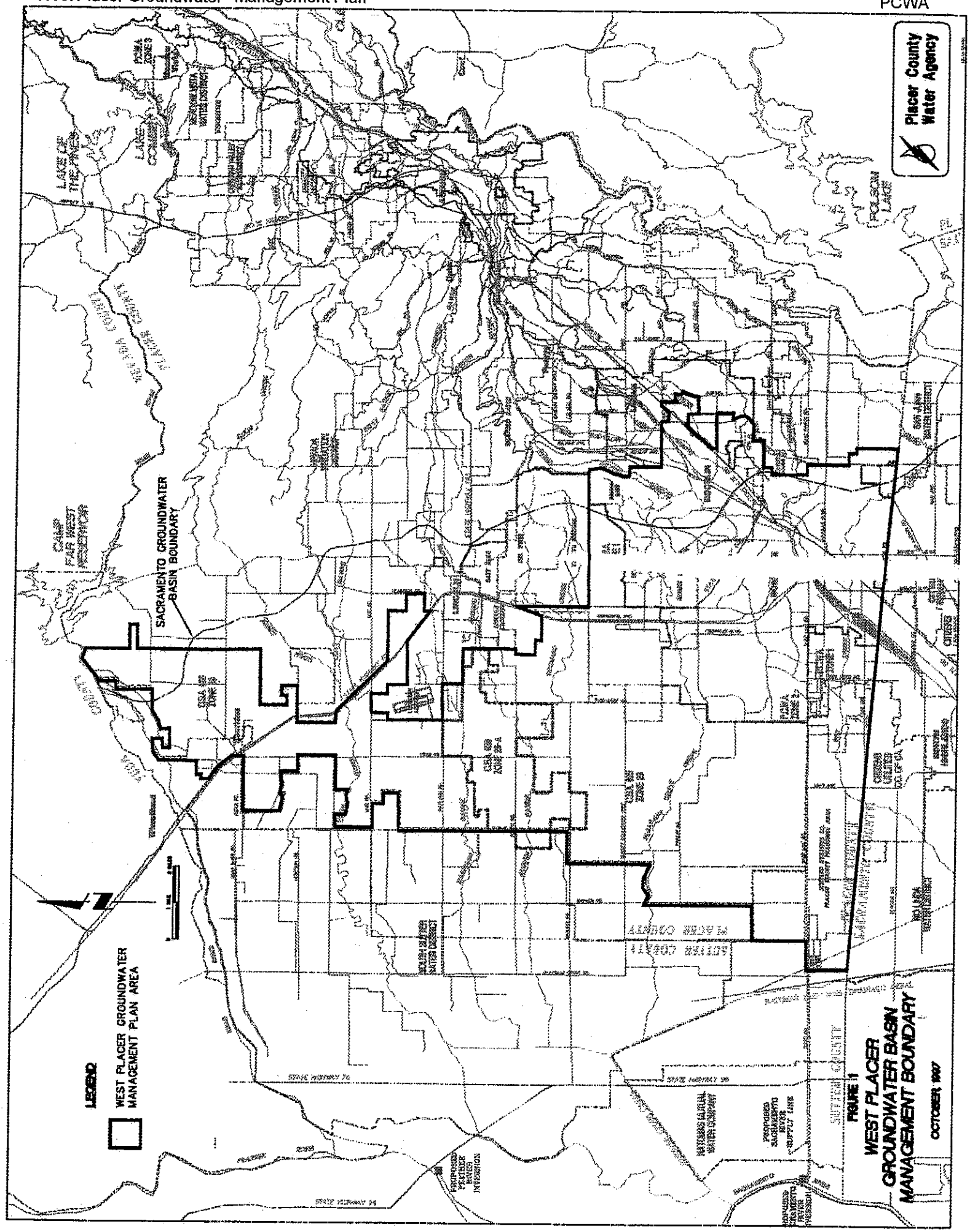
with water. The boundary of the Water Agency encompasses over 1,400 square miles and is identical in territory to the County of Placer. The Water Agency is also designated as a local agency and an independent "special district" encompassing all of Placer County. The Water Agency is governed by an independently elected five-member Board of Directors.

On a County-wide basis, one of PCWA's Agency-wide services is close liaison and collaboration with Placer County land use authorities, including City and County officials. The Water Agency is actively involved in many water resource issues on a county, regional and statewide basis. The Agency advises city and county officials on proposed actions and pending issues in order that Placer County's water will be available for present and future beneficial uses in this County. The Water Agency's involvement is in an overview capacity to look ahead for ways for matching Placer County's resources to its ultimate water demands as linked to the ultimate land use needs, adopted General Plans, and economic development plans of the County and the six incorporated cities in Placer County.

Groundwater Management Plan Area

The California Department of Water Resources (DWR) first published Bulletin 118 on the subject of groundwater basins in California in September 1975 and updated in 1980. This document established Basin No. 5-21 to encompass the Sacramento Valley in Butte, Colusa, Glenn, Placer, Sacramento, Solano, Sutter, Tehama, Yolo and Yuba Counties. This state designated basin covers 5,000 square miles.

The most recent amendment of this publication is dated January 1980. Bulletin 118-80 designates two official groundwater basins within Placer and Sacramento Counties. The first is a special area called the Sacramento County Basin which consists of the portion of Sacramento County that is north of the American River. DWR has declared this basin as having "evidence of overdraft". Overdraft is a condition that occurs in a groundwater basin when groundwater pumping exceeds recharge over a long period of time. The State acknowledges that the continuation of those water management practices which cause an overdraft condition will result in significant negative impacts upon environment, social, or economic conditions at the local and regional level. The second designated basin is the remaining area in the Sacramento Valley which includes west Placer County. The basin underlying Placer County was not identified as having evidence of overdraft.


Placer County Water Agency
LEGEND
WEST PLACER GROUNDWATER MANAGEMENT PLAN AREA
SACRAMENTO GROUNDWATER BASIN BOUNDARY
LAKE OF THE PINES
LAKE COMMANDER
CAMP FAR WEST RESERVOIR
PROCTOR LAKE
SAN JUAN WATER DISTRICT
PLACER COUNTY
SUTTER COUNTY
STATE HIGHWAY 70
STATE HIGHWAY 99
STATE HIGHWAY 65
PROPOSED SACRAMENTO RIVER SUPPLY LINES
PROPOSED PLACER RIVER WATER INTERCONNECTIONS
PROPOSED SACRAMENTO RIVER INTERCONNECTIONS
FIGURE 1
WEST PLACER GROUNDWATER BASIN MANAGEMENT BOUNDARY
OCTOBER 1997

The groundwater sub-basin bounded by the Bear, Sacramento, and American Rivers acts as an isolated hydrologic unit, within limits. This sub-basin is called the North American River groundwater sub-basin and underlies north Sacramento, south Sutter, and west Placer Counties. This area includes the DWR designated Sacramento County Basin and a portion of the Sacramento Valley Basin.

The West Placer Groundwater Management Plan area is shown on Figure 1. The Plan area includes the cities of Roseville, Rocklin, and the unincorporated portion of west Placer County that is bounded by the following: on the east by the Nevada Irrigation District boundary and the western boundary of the City of Lincoln; on the north by the Bear River; on the west by the South Sutter Water District boundary and the Placer County / Sutter County line; and on the south by the Placer County / Sacramento County line.

PCWA Preliminary Study

A preliminary study was conducted by the Agency in 1996, the results of which were used by the Agency's Board of Directors to authorize staff to develop a GMP for the west Placer area. The findings of the preliminary study included:

- West Placer County, roughly bounded on the east by Highway 65, overlies a portion of a State designated groundwater basin.

- The Water Agency has a service area overlying part of the aquifer and is qualified under the law to develop an AB3030 plan.

- The Agency received the support and endorsement of the cities of Roseville, Rocklin and Lincoln and the County of Placer to serve as the lead agency in developing a GMP for the west Placer area. In 1994 Roseville filed a notice of intent to develop an AB3030 type GMP. On May 5,1996 City of Roseville endorsed the approach of having the Agency serve as the lead agency in developing a Plan for west Placer, including Roseville.

- Citizens Utilities, the county authorized water purveyor in the area roughly east of Roseville and south of Baseline Road, submitted a letter of support for the Plan development. The San Juan Water District, which provides treated water service in the Granite Bay portion of Placer County and in north Sacramento County, supports the development of the Plan.

- Both the South Sutter Water District (SSWD), which encompasses portions of south Sutter and west Placer counties, and the Sacramento Metropolitan Water Authority (SMWA) in neighboring northern Sacramento County overlie portions of the same State designated groundwater basin and have adopted AB3030 plans. The Agency received the support of the South Sutter Water District for developing a GMP. SMWA and the water purveyor community in north Sacramento County did not make a representation on this issue.

- The need for the West Placer GMP has been demonstrated by a concern that the groundwater levels in west Placer County adjacent to the Sacramento County line are declining at an alarming rate, and that while groundwater quality in the west portion of the County is generally good, areas of groundwater contamination exist.

- The development of the West Placer GMP would have goals consistent with the existing SSWD and SWMA AB3030 plans, namely to manage the groundwater resources in the basin in a coordinated effort and to restore and maintain the quantity and quality of the groundwater resource. The SSWD plan calls for the continuation of their conjunctive use program. The first phase of the SMWA plan provides for a study to confirm the groundwater basin needs. The second phase will contain the yet to be determined action program.

Following the public hearing process to allow for stakeholder comments, the Board of Directors of the Placer County Water Agency adopted Resolution 96-44 on November 7, 1996, declaring its intention to prepare a GMP for the Placer County Water Agency groundwater management area of west Placer.

Governance As Related To Water Use In West Placer County

There are a number of jurisdictions in the Water Agency's Groundwater Management Plan area in west Placer County that are, or could be, involved in water resource management.

The County of Placer established County Service Area (CSA) #28, Zone 29 for the purpose of enhancing the water supply to existing commercial agriculture in that area. With the exception of the community of Sheridan, the Zone 29 area is designated in the Placer County General Plan to remain in agriculture. All of Zone 29 is included in the

Agency's proposed Groundwater Management Plan Area. Zone 29A, a sub area of Zone 29, was established later to facilitate surplus surface water sales of 10,000 to 12,000 acre feet annually from the Water Agency to existing commercial agricultural customers accessible from the Auburn Ravine. The remainder of the Zone 29 area is dependent upon groundwater from individually owned wells to meet the existing agricultural demands of approximately 60,000 acre feet annually. The Water Agency is currently considering the establishment of PCWA agricultural Zone number 5, to encompass most of what is now CSA 28, Zone 29, for the purpose of providing governance to this area. This effort would be done cooperatively with the County and the local landowners.

Within the boundaries of Zone 29, the County also established Zone 6 to provide water, sewer, and other services to the town of Sheridan. The domestic water supply for the community of Sheridan is groundwater.

The City of Roseville is located within the Plan area. Roseville's current water supply comes predominately from surface water diverted from the American River at Folsom Reservoir. However, Roseville also maintains several domestic municipal wells, in the central portion of the City, for backup emergency use. Roseville's future plans call for expanded use of groundwater during periods of drought when surface supplies from the American River may not be sufficient to meet the city's needs and during periods of peak water demand.

The City of Rocklin does not currently supply water. The City is entirely within the Water Agency's Zone number 1 and residents of Rocklin are customers of the Water Agency. The water supply for residents of the City of Rocklin is surface water. Only the extreme western edge of Rocklin overlies the designated groundwater basin. The Water Agency maintains a domestic well in the Sunset Industrial area, just west of the city limits, for backup emergency use, which can serve portions of Rocklin.

Most, but not all, of the City of Lincoln is within the Water Agency's Zone 1. The City uses both surface and groundwater to serve its customers. The Water Agency wholesales treated water to Lincoln, which is the primary supply for the City core and developing areas east of Highway 65. The primary water source for the developing area around the Lincoln Airport is groundwater, provided by several domestic municipal wells owned by the City. Subsequent to the Agency Board of Directors action to authorize the preparation of the Plan, the City of Lincoln informed Agency staff that Lincoln will be preparing its own groundwater management plan. Lincoln staff has

recognized that there are important groundwater issues within their city boundaries that warrant Lincoln to prepare its own GMP.

The Water Agency also operates the water system which supplies the Bianchi Estates subdivision, 24 connections in the County's Dry Creek West Placer Community Plan area west of Roseville. Service to this area, designated PCWA Zone 2, is provided by groundwater from two domestic municipal wells.

The County of Placer has issued a franchise to the Citizens Utilities Company of California (Citizens) to operate a water utility for the remainder of the County's Dry Creek West Placer Community Plan area. Citizens currently supplies groundwater to the Sabre City subdivision in this area from its domestic municipal wells. The franchise agreement requires that Citizens must use surface water, most likely provided by the Water Agency's Zone 1 system, to supply new growth.

Purpose of the West Placer Groundwater Management Plan

The Water Agency serves as the lead agency in the preparation of the West Placer GMP and is working closely with its GMP preparation partners, namely the County of Placer, City of Roseville, and the City of Rocklin. The goal of the West Placer GMP is to manage the groundwater resources in West Placer County in a coordinated effort with the County, cities, water purveyors, landowners, and the general public. Coordination of the West Placer GMP implementation will also include the appropriate jurisdictions in Sacramento and Sutter County which overlie the common groundwater basin.

The Plan acknowledges that the groundwater levels near the Sacramento County line are declining at an alarming rate. The primary objective of the Plan is to facilitate studies and actions needed to restore and maintain the quantity and quality of the groundwater in the basin. However, the actual implementation of projects will be conducted in a separate and coordinated fashion with the Plan.

At this time, the Plan does not recommend the use of powers granted by AB3030 relevant to the levying of assessments based upon groundwater pumping. If the Agency identifies the need for levying an assessment and has received the support from the stakeholders in the area of benefit, the Agency Board of Directors will consider such an action via the required public notification and hearing process. It is also not the

intent of the Plan to consider the placement of meters on wells serving individual residences.

B. GROUNDWATER STABILIZATION EFFORTS

Groundwater Level Trends

Under natural or predevelopment conditions, groundwater in the region tended to flow in a general southwest direction, from the foothills toward the center of the Central Valley. Data gathered by the Department of Water Resources (DWR) indicates that from the late 1920s to the early 1940s water levels fluctuated in response to changing precipitation trends. The basin was frequently full, with water levels rising above the ground to form a seasonal lake in the Natomas area of Sacramento County. As groundwater usage increased, primarily due to agricultural development in south Sutter and west Placer counties in the late 1940s and through the 1950s, groundwater levels in the northern part of the basin declined rapidly. As groundwater levels declined, the direction of flow in the groundwater basin changed such that inflow to the basin from the surrounding rivers was increased. The DWR map of the groundwater contours of spring 1950 are shown on Figure 2 .

In the 1960s South Sutter Water District developed its Camp Far West Reservoir project and entered into a surplus water purchase agreement with the Nevada Irrigation District. Together these surface water sources continue to provide about 40% of South Sutter Water District irrigation needs. These surface water deliveries resulted in a 10 foot recovery of groundwater levels throughout most of South Sutter Water District. Table 1 summarizes this District's current water usage from the various sources.

Table 1
South Sutter Water District Water Supply Sources

Source	Current Usage (Acre-feet per year)
Camp Far West Reservoir Project water	88,000
Surplus water from NID	15,000
Groundwater	160,000
Total water usage	263,000

However, while South Sutter WD was decreasing its dependence upon groundwater to meet its needs, in northern Sacramento County the use of groundwater was increasing to meet the growing needs of urban development. The pumping depression in north Sacramento County continued to expand and deepen during this period. Figure 3 shows the groundwater contours in the spring of 1970.

As the groundwater level has dropped, the rate of induced recharge from surrounding rivers has increased. But as the recharge rate has increased so has the groundwater pumping rate resulting from increasing urban development in northern Sacramento County. Groundwater levels continued to decline at a relatively steady rate through the droughts of 1976-1977 and 1987-1992. The effect of the 1987-1992 drought on groundwater levels in most of the basin were relatively minor, with 1990 groundwater levels about 5 to 10 feet lower than the 1985 conditions. However, the Pleasant Grove/ northern Sacramento County pumping depression continued to expand and deepen in dramatic fashion. Figures 4 shows the groundwater contours in the spring of 1990 and highlights the worsening cone of depression near McClellan Air Force Base.

The groundwater level trend along the Sacramento/Placer County line has been in a steady decline of 1 to 11/2 feet per year since the 1950s. This is evidenced in Figure 5 which summarizes the DWR monitoring of the groundwater elevations in a well located within the City of Roseville. Figure 6 shows a computer simulation of the current groundwater flow directions in the basin which is consistent with the DWR monitoring of the groundwater elevations in the wells.

There have been several impacts recognized as a result of the steep decline in the groundwater levels in the south part of the basin, including:

- Pumping costs have increased. While affecting all groundwater users, pumping costs have the most dramatic effect on agricultural users. For agriculture, water is generally the most expensive part of the crop production process. Relatively small increases in pumping costs per acre foot can have significant financial impacts on the agriculture industry.

- Groundwater quality has degraded. Many of the municipal groundwater purveyors in northern Sacramento County have reported increasing contaminant levels. Some have taken wells out of production, others blend water to stay under State mandated maximum contaminant levels and while still others have gone to expensive treatment processes. Unfortunately, most individual domestic well owners cannot afford the option of treating their groundwater.

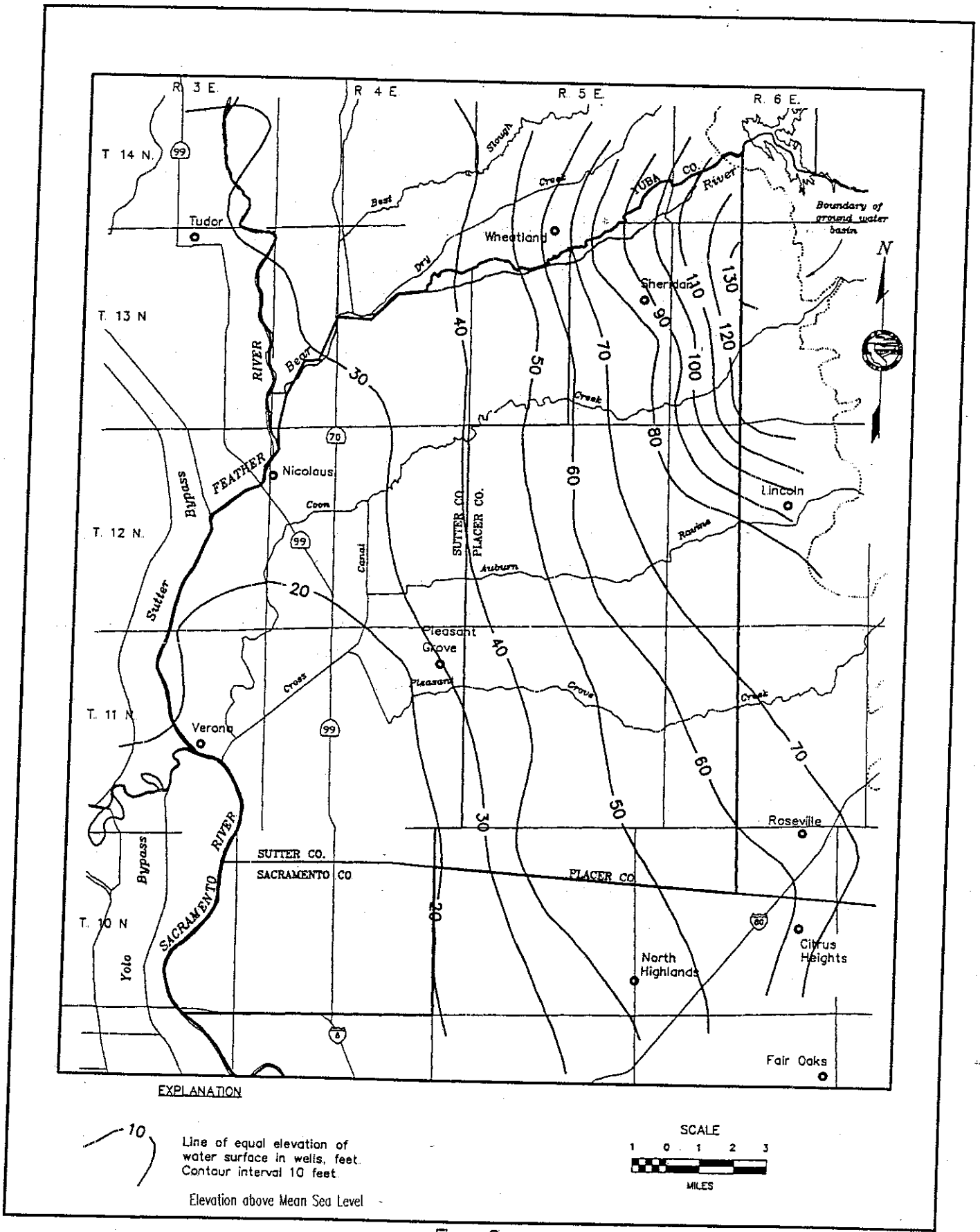


Figure 2
LINES OF EQUAL ELEVATION OF WATER IN WELLS, SPRING 1950

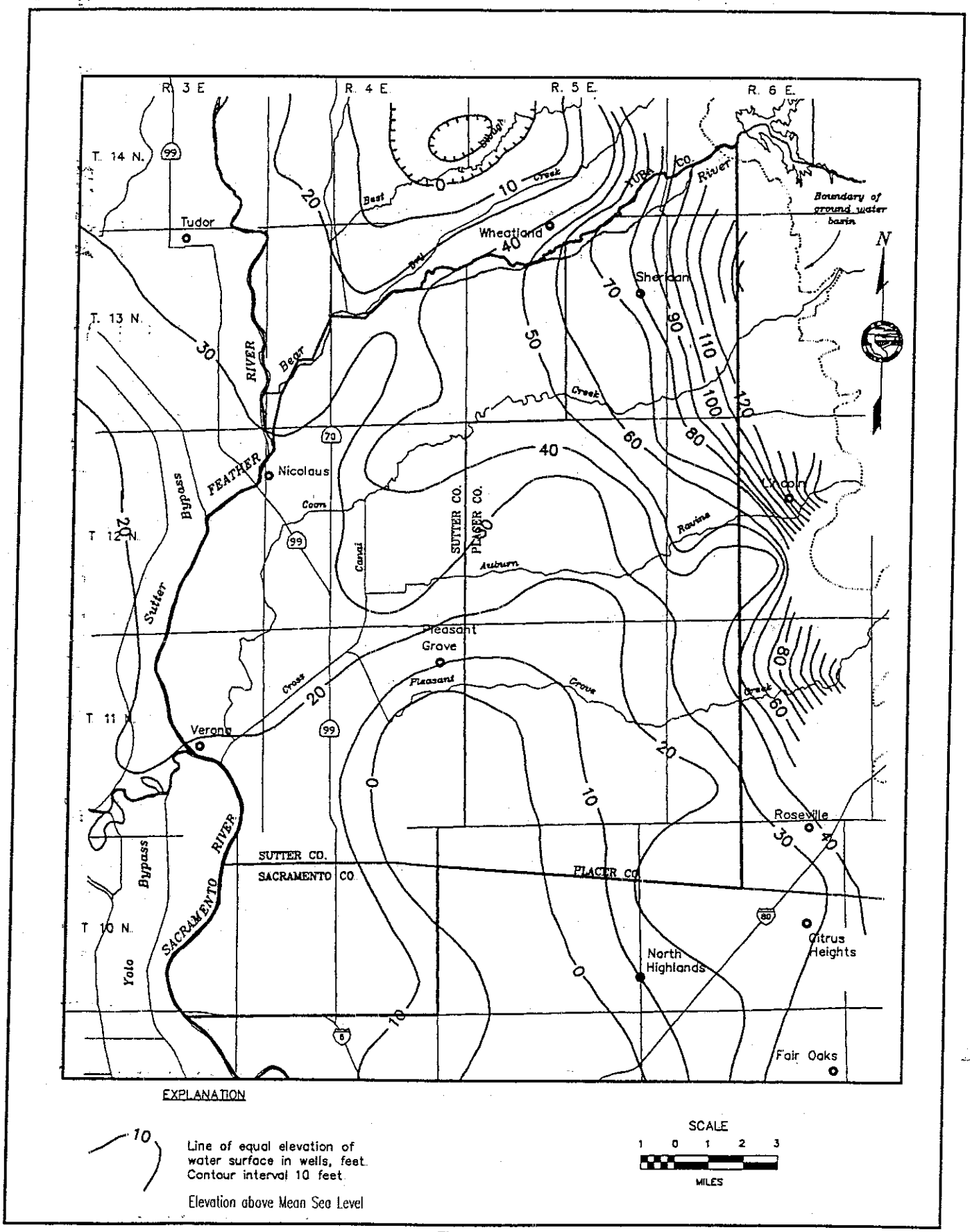


Figure 3
LINES OF EQUAL ELEVATION OF WATER IN WELLS, SPRING 1970

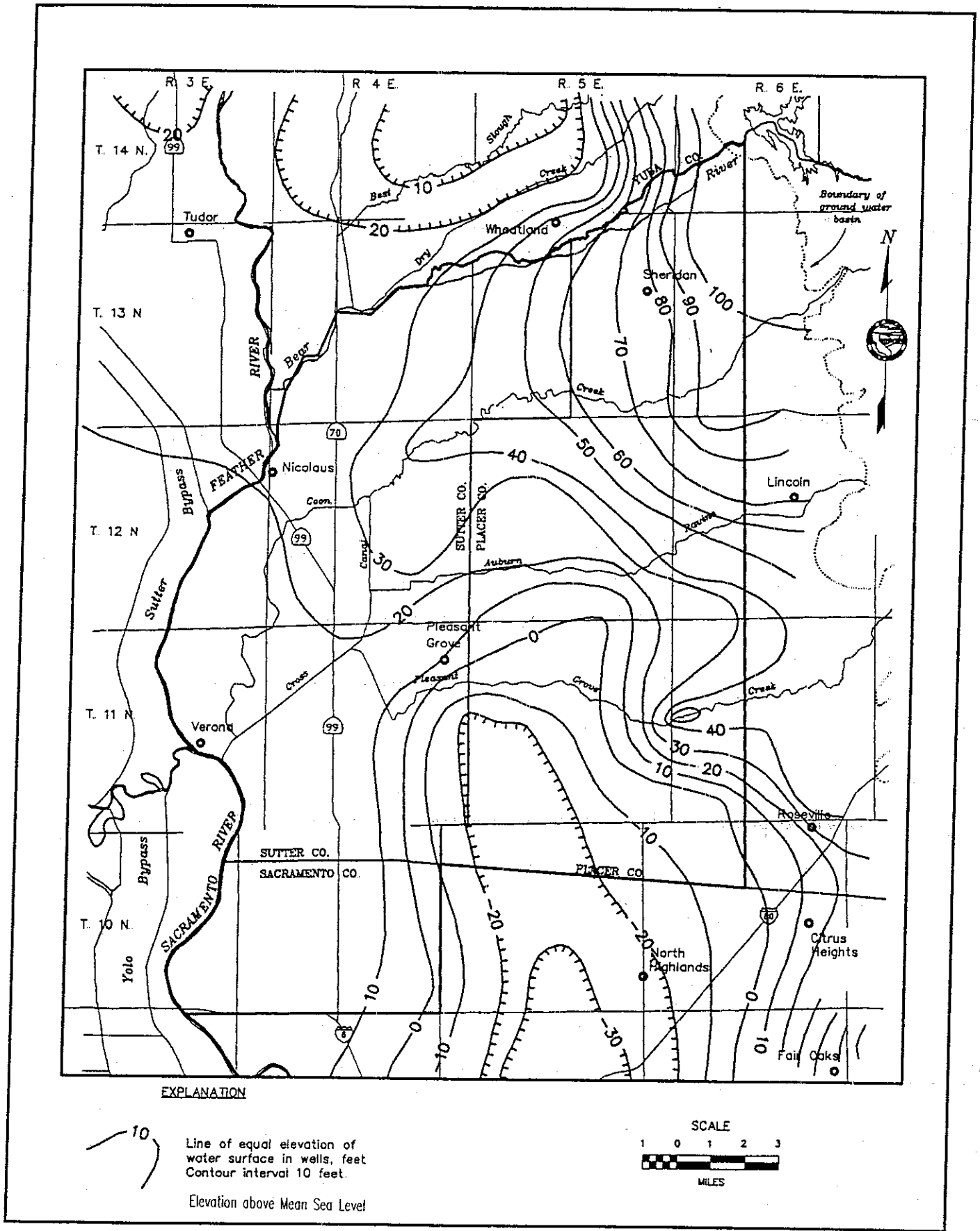
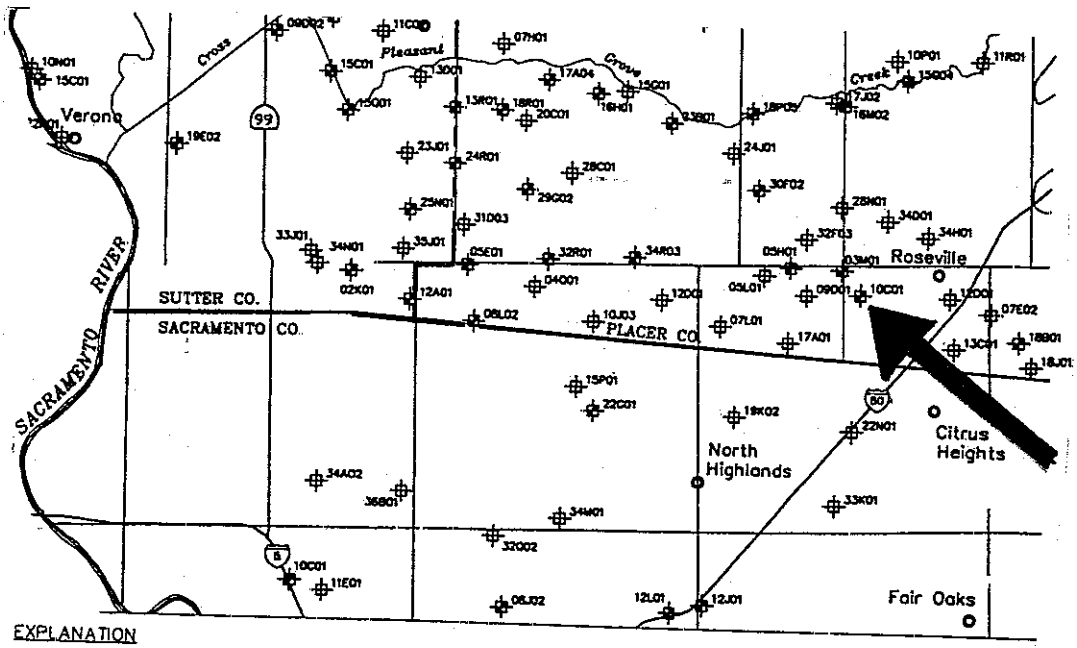


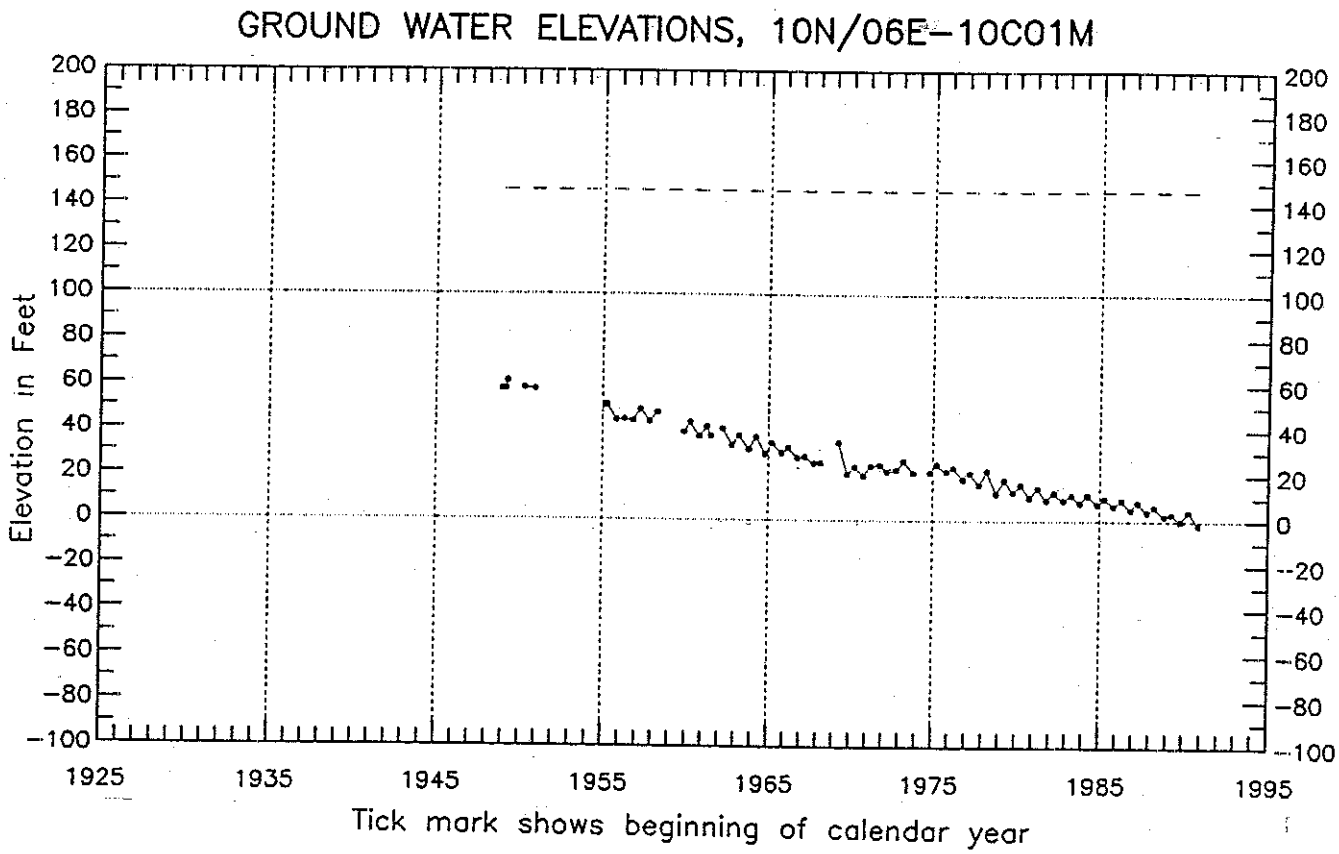
Figure 4
LINES OF EQUAL ELEVATION OF WATER IN WELLS, SPRING 1990



EXPLANATION

10C01 Location of groundwater level monitoring well, showing section tract and sequence number of the State Well Number. Combine with township and range to determine entire State Well Number.

SCALE 1 0 1 2 3 MILES



• • • • • Water surface elevation in well
o o o o o Questionable measurement
– – – Ground surface elevation at well
All elevations referenced to mean sea level

DEPARTMENT OF WATER RESOURCES, CENTRAL DISTRICT

Figure 5

Groundwater Elevation Trend of a West Placer Well

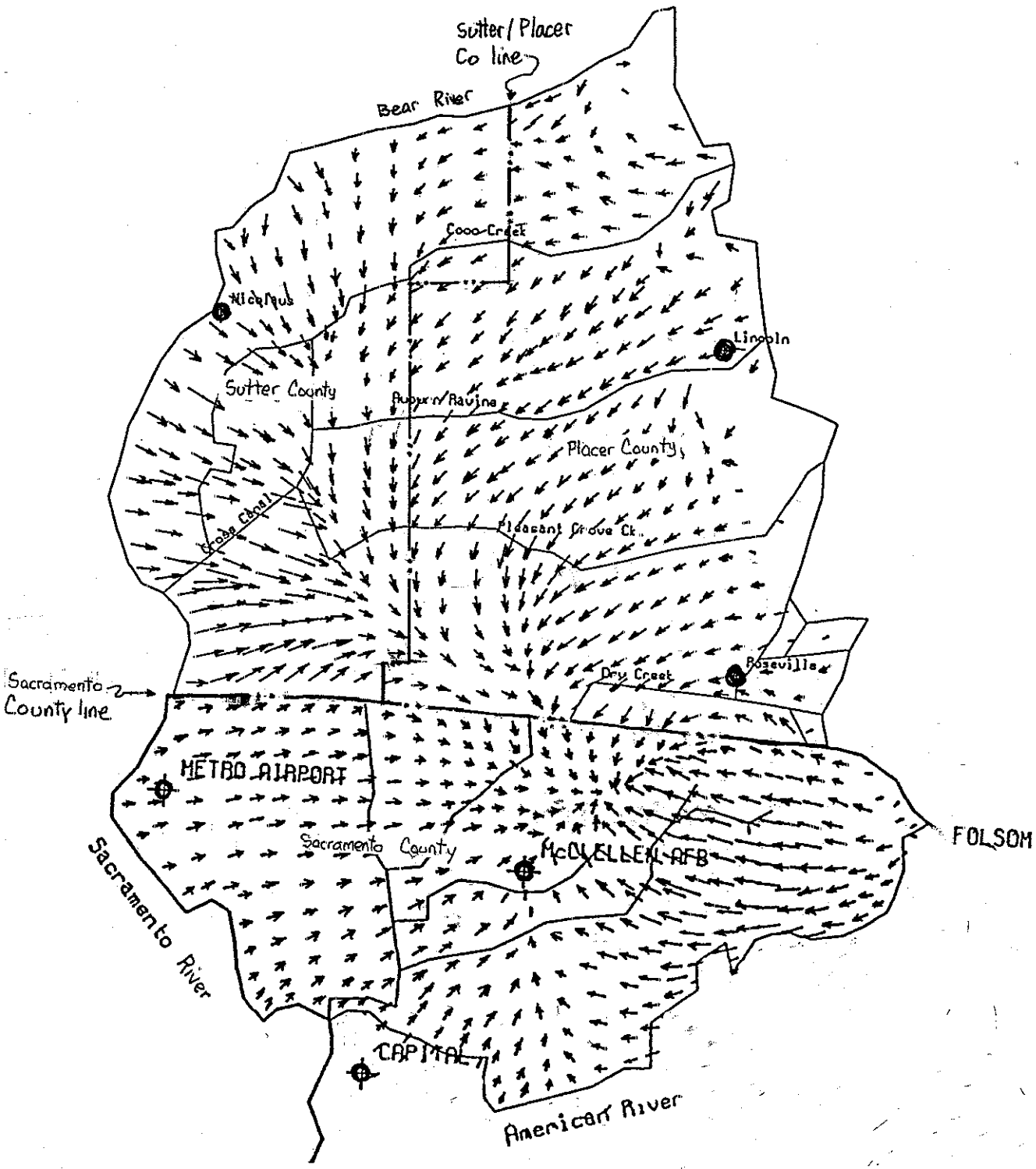


Figure 6

Simulated Groundwater Flow Direction, 1990

- Lowering the groundwater level increases the gradient from the rivers and the foothill formation towards the cone of depression and the rate of lateral groundwater movement. This increased rate of lateral movement of groundwater can cause contamination plumes, such as the ones under McClellan AFB and the Union Pacific's Roseville rail yard, to move. Migration of these contamination plumes threatens to put the surrounding down gradient wells out of production.

- In numerous cases the declining groundwater levels have left public and private wells dry. Lowering these wells is expensive.

- Land subsidence may also a potential problem. The Department of Water Resources has evaluated this issue and has concluded that local subsidence is not expected to occur in the basin unless historical low groundwater levels are exceeded.

Land Use Trends

Placer County has been experiencing considerable growth since the mid 1980s. Roseville, Rocklin and Lincoln have developed General Plans to allow for growth while maintaining a good level of services, open space, and recreational opportunities. The County of Placer updated its General Plan in November 1994, which allows for new development in the incorporated areas while balancing that growth with a strong policy statement of maintaining a viable commercial agriculture industry.

The County General Plan Update establishes Policy 4.C.2 Water Supply and Delivery which states:

> " The County shall approve new development based upon the following guidelines for water supply:
>
> a. Urban and suburban development should rely on public water systems using surface supply.
> b. Rural communities should rely on public water systems. In cases where parcels are larger than those defined as suburban and no public water system exists or can be extended to the property, individual wells are acceptable.
> c. Agricultural areas should rely on public water systems where available, otherwise individual wells are acceptable."

North Sacramento County (north area) has experienced strong growth since the 1950s. The north area's current population is more than 440,000 and would grow 46 percent to reach 645,000 by year 2020, according to the Sacramento Area Council of Governments. Major new development is now planned for the Rio Linda, Elverta and Metro Airport areas. To date, groundwater supplies have been relied upon heavily to meet the needs of this growth. There are an estimated 279 municipal wells, 28 agricultural wells, and 1399 private domestic wells in service in north Sacramento County.

Currently, the north area uses about 283,712 acre-feet of water, including 131,000 acre-feet of groundwater and 152,000 acre-feet of surface water. By the year 2030, it has been estimated by Sacramento City-County Office Of Water Planning that, with water conservation measures being implemented, the total demand would grow by 12 percent to 317,516 acre-feet. This also assumes that the north area would be successful in limiting the groundwater pumping to the 1990 pumping amount of 131,000 acre-feet.

The problem of groundwater overdraft as a product of urban growth in Sacramento County has been acknowledged in numerous official policies and documents since the mid 1970s. In February 1978, the Sacramento County Board of Supervisors adopted a County Water Plan Policy Report that, in part, required groundwater overdraft be eliminated no later than year 2000 and that a water management and supply plan to accomplish this purpose in the northeast portion of the county be submitted to the Supervisors before July 1980. In February 1985, the Board of Supervisors approved the Antelope Community Plan which required the use of surface water if available and limited the development which could occur with only groundwater as a source. In spite of those requirements, surface water supplies have not yet been developed and currently the entire Antelope area is nearly built out and is fully reliant upon groundwater supplies while the groundwater level continues to decline.

In the Sacramento County General Plan Update EIR in June 1993, again it was acknowledged that groundwater levels were declining as a result of the exclusive reliance of new development on groundwater and the need for surface water supplies to arrest the situation. However, conflicting signals come from Sacramento County from time to time. For example, the draft EIR of the Rio Linda and Elverta Community Plan, released in November 1996, concluded that "adequate groundwater supplies exist in the area to serve future development under all project scenarios, therefore impacts are considered less than significant." Now, as the result of comments made by the

Water Agency, the County of Placer and the City of Roseville, it appears that the Rio Linda and Elverta Community Plan area will be required to use supplementary water supplies (i.e. surface or reclaimed water) such that there is no net increase in groundwater pumping from the proposed development.

The Water Forum has emerged over the past four years as a significant factor in the struggle to reach decisions that will lead to stabilization of the groundwater basin. The Water Forum involves a wide array of stakeholders in Sacramento County, including city and county officials and most of the water purveyors in the region, and the water managers in Placer and El Dorado Counties. The draft Water Forum Agreement consists of a package of actions designed to achieve two co-equal objectives: providing a reliable and safe water supply for the region's economic health and planned development through the year 2030; and, preserving the fishery, wildlife, recreational, and aesthetic values of the Lower American River. The draft Water Forum recommendations include establishment of an average annual sustainable yield of 131,000 acre-feet in northern Sacramento County to provide a stable resource for future droughts. This sustainable yield represents the year 1990 pumping amount.

The draft Water Forum Agreement proposes the creation of a groundwater management council to achieve the sustainable yield goal. Although the Water Forum Agreement has not been finalized to date, twelve water districts and four local governments in northern Sacramento County are in the process of forming the Sacramento North Area Groundwater Management Council (SNAGMA). The Water Agency will be tracking the development of this Council and will be consider becoming a member of the Council through a MOU or similar relationship. It is hoped that this Council will be an effective vehicle to enhance the coordination of Sacramento and Placer efforts in managing groundwater within the basin.

In parallel with SNAGMA's efforts, water agencies in north Sacramento County are in the initial phase of developing the "Regional Water Master Plan". This plan will be identifying opportunities for both surface water purveyors and groundwater purveyors to share existing or new facilities and operational strategies to ensure a dependable water supply for their customers. Both types of purveyors need a healthy groundwater basin. The Water Agency and the City of Roseville are planning to be active participants in the development of this regional water plan.

Water Needs and Availability

The current economic strength and future vitality of the residential, commercial, industrial, and agricultural sectors in west Placer County is linked to the coordinated use of both surface and groundwater resources.

Surface water entitlements available to west Placer include Roseville and San Juan Water District contracts with the U.S. Bureau of Reclamation (USBR) for American River water and contracts with PCWA. PCWA contracts with PG&E for Yuba/Bear River water and with the USBR for American River water. The Water Agency also has water rights on the American River as a result of its "Middle Fork Project." PCWA water right and Central Valley Project (CVP) contract water from the American River can be diverted for use in the County at Folsom Dam and near Auburn. The Water Agency's withdrawal of American River water at the Auburn diversion point is currently limited due to the seasonal installation/removal of a temporary pump station by USBR forces. The Agency is working closely with the USBR and others to remedy this situation with the design and installation of a year-round, all-weather pump station, planned for completion in year 2000.

Table 1 provides a vision of the allocation of surface and groundwater resources to meet the west Placer needs in year 2030 in wet and normal years. The year 2030 water demand of west Placer County will be satisfied by the full use of PCWA's PG&E contract water and Middle Fork Project water right water, 35,000 acre-feet of the 117,000 acre-feet its CVP contract water, and full use of Roseville's CVP contract water. Also commercial agriculture in west Placer will continue using substantial quantities of groundwater and some reclaimed water through year 2030. This vision assumes the full contract amount of 29,000 acre-feet per year of surface water from PCWA will be delivered to the Northridge Water District to help arrest the declining groundwater levels. Groundwater is currently employed to satisfy a small portion of the regional M&I demand by the existing eight municipal wells shown in Table 2. The City of Lincoln regularly uses groundwater to meet the water demand in the western portion of their city.

The County of Placer and the cities of Auburn, Lincoln, Roseville, and the South Placer Municipal Utility District have cooperated to undertake an initial study to evaluate the viability of developing a regional sewage treatment facility for the west Placer area. The results of the study indicate that a regional plant would eliminate the need for five existing plants located in the City of Auburn, the north Auburn area, Newcastle, Granite

Table 2

Year 2030 Water Supply Allocation for West Placer County									
Type of Use	Area	Surface Water Entitlements	Total Usage	PCWA Surface Water Sources			Groundwater	Reclaimed	Roseville Source
				PG&E Zone 1	MFP	CVP			CVP
M&I									
	PCWA Zone 1	78,000	74,000	30,000	33,000	10,000	1,000		
	City of Roseville	62,000	55,000		23,000				32,000
	San Juan Water District	25,000	25,000		25,000				
	Subtotal	165,000	154,000	30,000	81,000	10,000	1,000		32,000
Agriculture									
	PCWA Zone 1	70,000	70,000	70,000					
	CSA 28, Zone 29	13,000	60,000			13,000	42,000	5,000	
	Zone 29-Addition from DWR exchange	10,000	10,000		10,000				
	Groundwater Stabilization-Northridge WD	29,000	29,000		29,000				
	Subtotal	122,000	169,000	70,000	39,000	13,000	42,000	5,000	
Total		287,000	323,000	100,000	120,000	23,000	43,000	5,000	32,000
	Total Contract Supply Entitlements	255,000		100,000	120,000	35,000			32,000

All quantities in terms of Acre Feet
Assumes allocation in a wet/normal year
Allocation assumes full Zone 1 and Middle Fork Project (MFP) Water Right, and 35,000 AF CVP contract suppply
Assumes total Zone 29 and Zone 1 Agricultural use will remain fixed at 1994 levels
PCWA Zone 1 M&I usage includes Lincoln, Rocklin, and remaining service area outside of the GMP area
Roseville entitlement consists of a 32,000 AF CVP contract and a 30,000 AF PCWA contract

Bay and Sheridan. Treated wastewater discharge to both the Auburn Ravine and Coon Creek watersheds would be eliminated, thus enhancing the environment of these streams. Implementation of this regional wastewater treatment proposal could result in the production of up to 30,000 acre-feet of reclaimed water for agricultural uses, golf course and park irrigation. This amount does not include reclaimed water produced at the new wastewater treatment plants for both Roseville and Lincoln. Table 2 projects year 2020 usage of reclaimed water at 5,000 acre-feet annually which is very conservative estimate.

Table 3
Municipal Wells in West Placer County

Owner	Location	Capacity	Operational Status
PCWA	PCWA Zone No.1, Sunset Industrial area	660 gpm	emergency M&I supply
PCWA	PCWA Zone No.2, Bianchi Estates, well #1 and #2	550 gpm each	primary domestic water supply for 24 connections
City of Roseville	Darling Way	1400 gpm	emergency M&I supply
City of Roseville	Oakmont	1575 gpm	emergency M&I supply
City of Lincoln	near Airport, well #1 and #2	385 gpm each	supplementary domestic water supply
County of Placer	Town of Sheridan, well #1	290 gpm	primary domestic water supply for 220 connections
County of Placer	Town of Sheridan, well #2	140 gpm	same as well #1
County of Placer	Town of Sheridan, well #3	240 gpm	fire flow purposes only

Agency Efforts to Stabilize Groundwater Levels

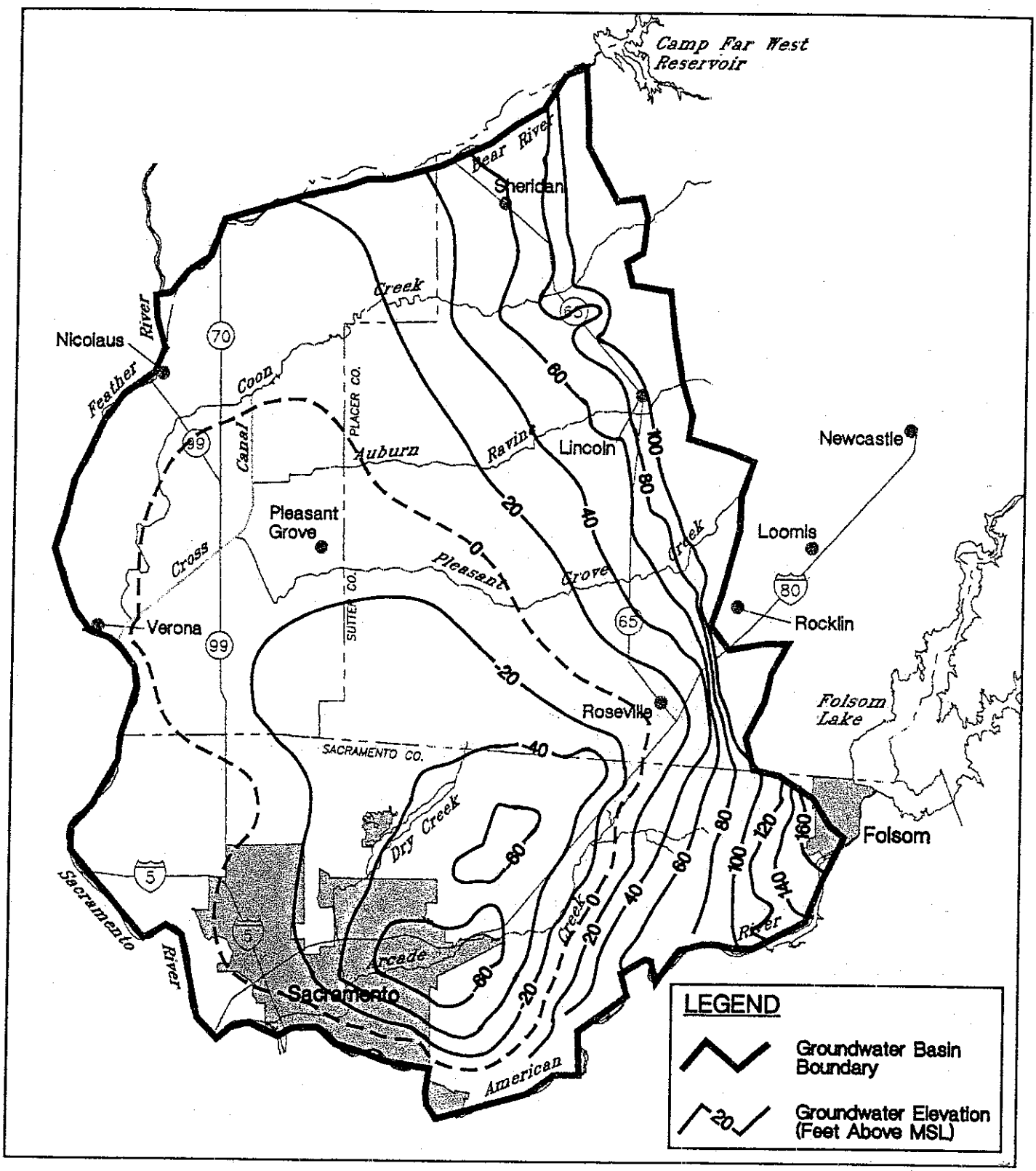
The Water Agency has taken a leadership role in the region to address the overdraft situation in the southern portion of the North American River groundwater sub-basin. The Agency has entered into a contract to supply up to 29,000 acre feet per year of surface water to the Northridge Water District in north Sacramento County. PCWA and

Northridge have been conducting a technical analysis of groundwater and surface water benefits and impacts which result from this project. Figures 7 and 8 present two groundwater contour maps of the North American River Groundwater sub-basin prepared by Montgomery Watson Engineers. These computer generated maps contrast the 1990 "existing condition" with a future "no project " condition in which growth in the region continues unchecked by water supply constraints and groundwater is the only available supply. Under the no project scenario the present cone of groundwater depression centered under McClellan AFB, 60+ feet below sea level, continues to move north into Placer County and drops to over 220 feet below sea level.

In this worst case scenario, portions of the aquifer in West Roseville and Lincoln, which are currently being counted upon to meet the drought reliability needs of those communities, are dewatered, while areas in Sacramento County, nearer the rivers, can continue to pump groundwater indefinitely.

The Agency is also involved in DWR's development of a project entitled "American Basin Conjunctive Use Project." The essence of this proposed project is that the State Water Contractors, through DWR, will supply South Sutter Water Agency, the Natomas Central Mutual Water Company, and the Pleasant Grove-Verona Mutual Water Company with Sacramento or Feather River water during wet and normal hydrologic years. This will allow those agencies to reduce groundwater pumping, inducing a rise in groundwater levels, during those periods. Then during critically dry years, these agencies will return water to the Sacramento River that was "banked" underground during the wet and normal years. If this project had been operated during 1922-1992, the use of the Sacramento River Index would indicate 30 years that were "above normal or wet" and 27 years that were "critically dry". The intent of this program is to have only the quantity equal or less than the "banked water" amount be extracted thus maintaining the integrity of the aquifer for use by the local landowners.

The Water Agency will not participate in this "banking" program directly. Rather, the Water Agency is proposing an exchange with the State Water Contractors and South Sutter Water District whereby an additional 10,000 acre feet of surface water from the Sacramento River in normal and above years is diverted for use by SSWD. SSWD will, in turn, divert 10,000 acre-feet from its Camp Far West Reservoir for use by commercial agriculture currently using groundwater in west Placer County. To complete the exchange, PCWA releases an equal amount from its Middle Fork Project to the confluence of the American and Sacramento River for State Water Contractor use downstream.



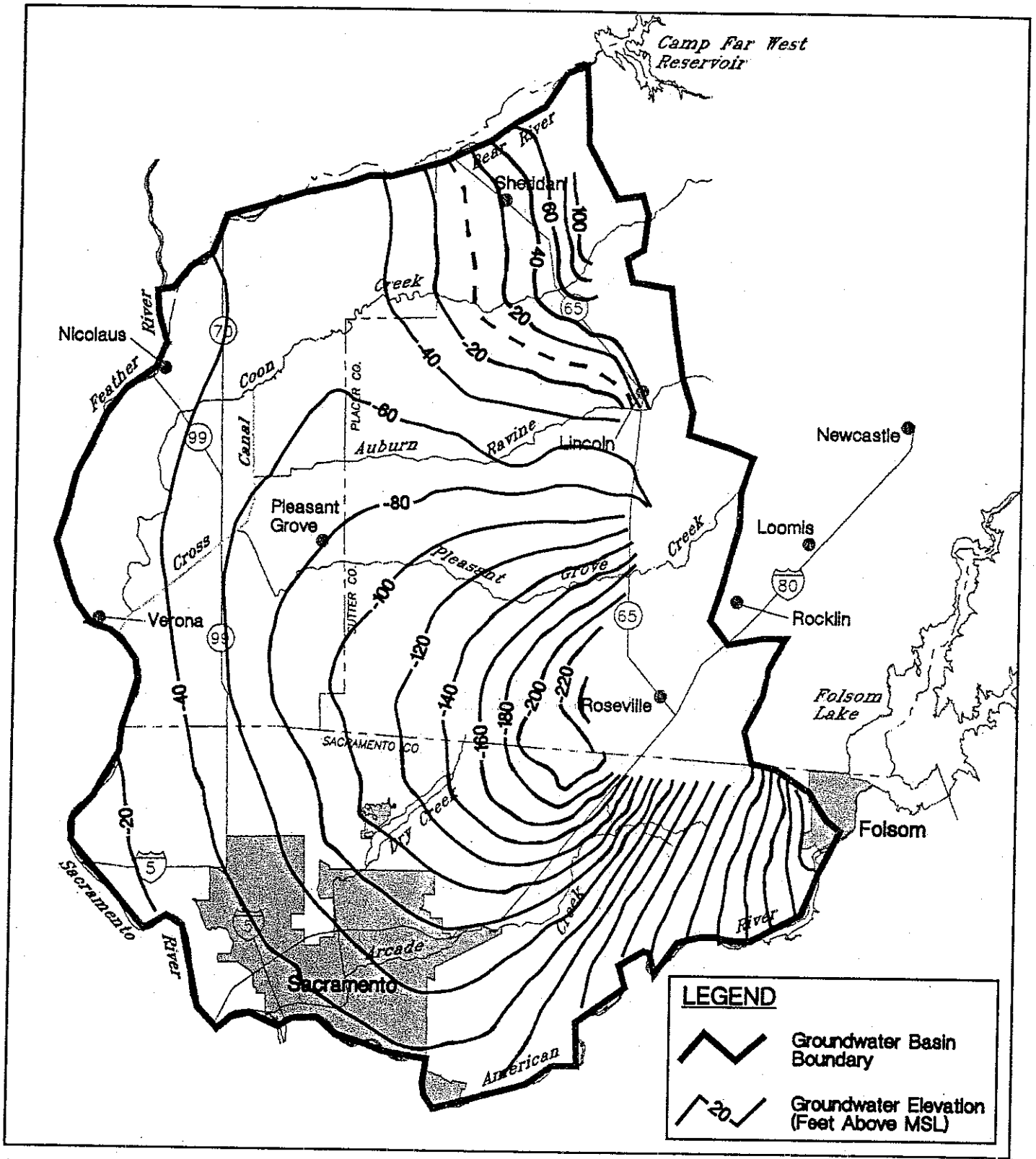
Northridge Water District
Conjunctive Use Study

Figure 7

Simulated Groundwater Contours

Fall 1990

MONTGOMERY WATSON
Sacramento, California



NOTES:

1. Water Levels at End of 1922-1991 Simulation Period for Layer 2
2. Preliminary Results Based on Annual Surface Water Supply Availability

Northridge Water District
Conjunctive Use Study

Figure 8

Future Groundwater Contours Assuming
Groundwater Use Only in North Sacramento County

MONTGOMERY WATSON
Sacramento, California

C. GMP COMPONENTS

C.1 MONITORING OF GROUNDWATER LEVELS, STORAGE, AND QUALITY, AND IDENTIFYING CONJUNCTIVE USE OPPORTUNITIES

Monitor Groundwater Levels

Groundwater levels in the region have been monitored on a regular basis since the late 1920s. In Placer County, DWR has been monitoring 56 wells on a semi-annual schedule. The South Sutter Water District monitors 2 wells in Placer County and 16 wells in Sutter County. This data is available in the form of published reports and on the Internet at the DWR address http:// wwwdwr.water.ca.gov.

Extensive groundwater modeling has been conducted in the North American River groundwater sub-basin. Montgomery-Watson Engineers has developed an Integrated Groundwater-Surface Water Model for use in two important studies of the region, namely the American River Water Resources Investigation and the Water Forum process. DWR has slightly refined this groundwater model for the basin for use in the American Basin Conjunctive Use Project.

The Water Agency will coordinate its effort with the existing state and local monitoring activities and will evaluate the need to establish the groundwater level database in other formats or made available in additional locations, in order to increase its accessibility to all stakeholders. Additional groundwater modeling will be used as the need arises.

Evaluate Groundwater Safe Yield

There is no official definition of the term groundwater "safe yield" that is used throughout California. Safe yield has been defined as the rate of extraction thought not to deplete the basin. Others prefer to use the term "sustainable yield" to represent that amount of groundwater which can be pumped from the basin over a long period of time without damaging the aquifer. The use of a damage criteria is problematic in that damage can be incrementally disastrous without a single "over the cliff" event.

Generally, the North American River Groundwater Sub-basin's response to changing groundwater pumping rates has been elastic. Within limits, the basin's groundwater

level will stabilize at any given pumping rate. As the pumping rate increases, the groundwater level falls and the induced recharge rate from the surrounding rivers increases to some degree until equilibrium is reached. Similarly, when groundwater pumping has decreased, equilibrium will be reached at correspondingly higher groundwater levels.

Damage could be determined by individual domestic wells going dry, then water quality problems developing where none existed before, or in some areas because groundwater costs are too high. Damage could be dependent upon location in the basin. Damage could be caused by remote activities, outside of the boundary and control of this Plan.

To date the safe yield of the groundwater basin in west Placer County has not been determined. The GMP will include an evaluation of the safe yield of the Placer portion of the groundwater basin. This evaluation will build off the existing computer modeling analyses that were a part of the Water Forum and the Northridge Water District water sale efforts. The cost of these additional work has not been determined to date. The Agency has budgeted start up funds as a part of its annual budget and may seek cost sharing partners once the scope of the needed work has been clarified.

The Agency will work collaboratively with the County, cities and other stakeholders during the course of the safe yield evaluation. In proceeding with this work, it is not the intent of the Agency to become the regulator of groundwater extraction nor is it implied that there is a near term need to regulate the amount of groundwater extracted in west Placer County.

Identify Groundwater Recharge and Conjunctive Use Opportunities

The steady decline in the groundwater level trend in the south portion of the basin along the Placer/Sacramento County line is a product of its close proximity to the groundwater cone of depression near McClellan AFB. The City of Roseville and residents dependent upon wells that are south of Baseline Road have been severely impacted by this decline.

The City of Roseville is currently looking at opportunities to provide conjunctive use of water through utilization of surface water to offset its groundwater use. Two methods are currently being investigated that is discussed in detail below:

1. Aquifer Storage and Recovery

Roseville is currently rehabilitating two water production wells within its service area. These wells require updating, inclusion of disinfection capability, and rehabilitating to produce an average withdrawal capability of 2000 gpm. As part of this project the wells will be designed to reintroduce treated water into the aquifer through the same well casing. A pilot study is being considered to quantify the amount of water that could be introduced into the aquifer then subsequently withdrawn if needed during times of high demand and /or surface water supply shortage. In addition, five wells are currently being planned for west Roseville and injection features will be added in these designs as well. In the event analysis and pilot tests prove beneficial, aquifer storage during years of adequate surface will be considered. Withdrawals would then be made during times of surface water shortage.

2. Groundwater Usage Replacement

Roseville currently relies on surface water for 100% supply. During low demand times of the year excess capacity exists within their system, as the system design is based on anticipated maximum daily demands. Utilization of this capacity to assist the jurisdictions in north Sacramento County in getting off groundwater at least part of the year will help to reduce the current groundwater overdraft of the basin. Through the Regional Water Master Plan activity, which is supported by Roseville and the Agency, opportunities to assist these adjacent jurisdictions will be evaluated. This will include the identification of infrastructure and agreements to allow this to occur.

The Plan will study the feasibility of groundwater recharge in the area of south of Baseline Road. Issues to be addressed include; an evaluation of the placement of new wells or the modification of existing wells to both extract and inject water, the determination of residence time of the injected water, a determination of who benefits from recharge, evaluation of the potential changes to groundwater levels and water quality. The Plan will also emphasize the coordination of any future groundwater recharge and replacement effort in the unincorporated portion of West Placer County with those in City of Roseville and north Sacramento County.

The rate of decline of the groundwater appears to lessen as the distance increases from the bottom of the cone of depression and, in particular, in a northerly direction within west Placer. While in the north portion of the basin where there is active conjunctive use of surface water and groundwater, groundwater levels are higher than historical levels and appear to fluctuate about a stable trend line.

The County of Placer has requested the Water Agency to include in the GMP a study to identify the opportunities for the conjunctive use of groundwater and surface water, for non-residential uses only, in the Plan area that is north of Pleasant Grove Creek. The study will also determine the extent, if any, that these opportunities could contribute to the maintenance of acceptable groundwater levels.

Monitor Groundwater Quality

The source of groundwater recharge for the aquifer underlying west Placer County is from the major rivers adjacent to the basin, the Sacramento and Bear Rivers, and the major streams that cross the valley floor, namely Coon Creek, Doty Ravine, Markham Ravine, Auburn Ravine, Orchard Creek, Pleasant Grove Creek, and Dry Creek. There is little vertical percolation on the valley floor due to the high clay content of the soil. In general the good quality of these waters has resulted in a groundwater quality that is suitable for most agricultural, municipal and industrial uses in west Placer County.

Groundwater quality data pertaining to west Placer County is currently being acquired and maintained by the following State and Federal agencies:

- California Department of Water Resources, Central District
- California Department of Pesticide Regulation
- California Department of Health Services, Office of Drinking Water
- U.S. Geological Survey, Water Resources Division

Groundwater quality monitoring is not being conducted in the same comprehensive manner as the measuring of groundwater levels. It also appears that the data base established by these agencies may not provide for easy access nor user friendly presentation. Work is needed to establish a comprehensive data base at the local level that ties into the existing State and Federal monitoring efforts while meeting the interests and needs of the jurisdictions and citizenry in the county.

California Department of Water Resources, Central District has recently completed a feasibility report entitled "American Basin Conjunctive Use Project" which in part

conducted a groundwater quality assessment of west Placer County. This report identified three areas where water quality may be of concern. In the northwest corner of the county, near Sheridan, elevated concentrations of boron, sodium and total dissolved solids (TDS) have been identified. These conditions may have an effect on certain crops. Elevated concentrations of TDS, chloride, sodium, and boron were also found in monitoring wells west of Lincoln. Arsenic was found at low to moderate levels in many wells in the south and west areas of the county; however, recorded concentrations remain significantly below the U.S. Environmental Protection Agency limit for drinking water.

Probably the greatest groundwater quality concern is the high levels of industrial organic chemicals in the vicinity of Roseville. The source of this contamination is thought to be the railroad maintenance yard in Roseville. A Federal Super Fund site was established and it is understood that while surface remediation is complete, sub-surface conditions for the site are still being evaluated and remediated. The groundwater contamination plume continues to move in a southwesterly direction which is in the predominant direction of the groundwater flow in the area. Several of Roseville's backup water supply wells near the railroad yard remain non-operational due to elevated organic chemical levels.

C.2 COORDINATION WITH OTHERS IN THE GROUNDWATER BASIN

As stated earlier, the Plan is being developed as a joint effort by the Agency, the County of Placer, City of Roseville, and the City of Rocklin. PCWA is acting as the lead agency in this effort. Within the County of Placer, the Agency will ensure that the Department of Health and Human Services, Environmental Health Division, and the Public Works Department, Engineering - Special Districts/Utilities Division are engaged in the implementation of the Plan. At least yearly workshops will be scheduled by the Agency to appraise and involve the key stakeholders in the region on groundwater management issues.

The Agency will also coordinate the implementation of the Plan with the other jurisdictions that overlie the groundwater basin in west Placer County, including the City of Lincoln, Nevada Irrigation District, South Sutter Water District, and Citizens Utility. Coordination with the groundwater management jurisdictions in North Sacramento County will be maintained in an effort to facilitate a regional solution to stabilize the steady decline of the groundwater level in the basin.

The Water Agency intends to maintain a working relationship with the State and Federal regulatory agencies on water resource issues that affect the County and the region. Two examples highlight the need for Agency attention in addition to groundwater monitoring that was mentioned earlier in this document. The Agency works collaboratively with DWR to ensure that the Placer County surface and groundwater resource availability and water demand is accurately depicted in DWR Bulletin 160, the "California Water Plan Update". With Congress passing the Safe Drinking Water Act Amendments of 1996, the Agency will be tracking, and commenting on as appropriate, the progress of the U.S. EPA and State Department of Health in their development of regulations of the Source Water (both surface and groundwater) Assessment Program.

D. EXCLUDED PLAN COMPONENTS

The Water Code Section 10750 *et seq.* authorizes the inclusion of various components within an AB3030 type GMP. However, the Water Code allows the local agency to decide which of the allowable components will be excluded in a particular GMP. The West Placer GMP excludes the following components for the reasons shown below:

- The control of saline water intrusion. Historical monitoring has not indicated the presence of saline water intrusion.
- Identification and management of wellhead protection areas and recharge areas. Adequate measures are in place for the management of these areas.
- Regulation of the migration of contaminated groundwater. There may be a need for this component in the future if the ongoing Super Fund remediation effort at the railroad yard in Roseville is not entirely successful.
- The administration of a well abandonment and well destruction program. These programs are conducted by the County and incorporated cities and appear adequate.
- Replenishment of groundwater extracted by water producers. The Water Agency may implement groundwater replenishment projects that are in the best interests of the Agency and the County, but in a parallel and coordinated fashion with the Plan.
- Identification of well construction policies. The well construction policies of the County and incorporated cities appear adequate.
- The construction and operation by the local agency of groundwater contamination cleanup, recharge, storage, conservation, water recycling and extraction projects. If required in the future, these projects will be developed in parallel and coordinated fashion with the Plan.

- The review of land use plans and coordination with land use planning agencies to assess activities which create a reasonable risk of groundwater contamination. The County and incorporated City land use planning departments are the lead agencies responsible for this issue. The collaboration between these departments and the appropriate water purveyors has proved adequate to date.

The Water Agency does not intend to utilize the powers granted by AB3030 regarding the levying of assessments based upon groundwater pumping. If such a need arises in the future, the Water Agency will closely involve all stakeholders on the issues and solution options and conduct a public hearing process prior to any consideration for Agency action.

E. PLAN UPDATING

The Water Agency may periodically update this Plan as conditions and information warrant. Information obtained through the groundwater monitoring program or the implementation of programs to bring in additional surface water to the Plan area are factors which may require modification of this Plan. The Water Agency will conduct public workshops, meetings with individuals or groups where appropriate or requested, and conduct a public hearing process per Water Code Section 10750 *et seq.* prior to any consideration for Agency action.

F. IMPLEMENTATION

Once the Plan gains the support of the County, incorporated cities, and other key stakeholders, and is adopted by the Agency Board of Directors, work will proceed on developing a water budget, developing the groundwater safe yield, and evaluating the conjunctive use opportunities. This effort will build upon the existing groundwater computer modeling in the Plan area. The Agency has budgeted startup funding for this work in 1998 and may seek cost sharing partners once the scope of the needed contract services has been identified. This work is anticipated to take two years to complete.

Concurrently, Agency staff will begin a collaborative effort to cost effectively bundle the individual groundwater monitoring efforts of the state, regional, and local jurisdictions with the ultimate goal of establishing a groundwater resource data base that is more accessible to all potential users. Consideration will also be given to identifying

additional local groundwater quality concerns and cost effective approaches for assessment.

G. RECOMMENDATIONS

Based upon the findings presented above, the following recommendations are provided to the PCWA Board of Directors for consideration:

- Conduct a noticed public hearing to consider a resolution to adopt this Groundwater Management Plan for the West Placer Area.

- Approve implementation of the GMP which consists of the following components:
  1. monitoring of groundwater levels and groundwater quality,
  2. identifying groundwater recharge opportunities, with particular emphasis on the area adjacent to the Placer/Sacramento County line.
  3. identifying conjunctive use opportunities for non-residential uses in the area north of Pleasant Grove Creek,
  4. an evaluation of the safe yield,
  5. maximizing groundwater management coordination with all jurisdictions, landowners, and the general public within west Placer County, and with those jurisdictions in north Sacramento County portion of the basin, and with the appropriate State and Federal agencies.

- Authorize staff to continue the effort to stabilize groundwater levels and that such projects be conducted in a coordinated but separate fashion from the GMP implementation.

H. REFERENCES

- Assembly Bill 3030, 1992, Part 2.75, Section 10750 *et seq.* of Division 6 of the California Water Code.

- California Water Code, 1957, Chapter 81, Placer County Water Agency Act.

- California Department of Water Resources, July 1974, Evaluation of Ground Water Resources, Sacramento County, Bulletin 118-3.

- California Department of Water Resources, September 1975, California's Ground Water, Bulletin No. 118.

- California Department of Water Resources, January 1980, Ground Water Basins in California, Bulletin No. 118-80.

- California Department of Water Resources, June 1991, California Well Standards, Bulletin 74-90, (Supplement to Bulletin 74-81).

- California Department of Water Resources, Central District, May 1991, Historical Ground Water Levels in Placer County.

- California Department of Water Resources, Central District, February 1992, Historical Ground Water Levels in Sutter County.

- California Department of Water Resources, 1994, California Water Plan Update, Bulletin 160-93.

- Department of Water Resources, Central District, June 1997, American Basin Conjunctive Use Project, Feasibility Report.

- United States Department of Agriculture, July 1980, Soil Survey of Placer County, California, Western Part.

- U. S. Geological Survey, Department of the Interior, 1985, Geological Map of the Late Cenozoic Deposits of the Sacramento Valley and Northern Sierran Foothills, California.

- U.S. Bureau of Reclamation, 1994, American River Water Resources Investigation, Phase I, Year 2030 Unrestricted Groundwater Pumping Baseline Study, Draft.

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- County of Placer, August 16, 1994, Placer County General Plan Update.

- County of Placer, July 19, 1990, Water Well Construction Ordinance.

- County of Placer, 1994, Ordinance 4609-B, Citizens Utilities Company of California Franchise, Article IV, Sections 486.1 through 486.14 of Chapter 22 of the Placer County Code.

- County of Placer, Office of Economic Development, January 8, 1998, Letter to PCWA, requesting the Agency to study alternative ways to provide water to businesses and industries in the Sunset Industrial Area.

- Placer County Water Agency, May 3, 1996, Placer County Ultimate Demand Study Update, Ultimate M&I Demand Projection for the Western and Central Regions.

- Sacramento City-County Office of Metropolitan Water Planning, January 1997, Draft Recommendations for the Water Forum Agreement, Section Two, Seven Major Elements of the Water Forum Agreement, Subsection VI, Groundwater Management Element.

- Sacramento City-County Office of Metropolitan Water Planning, December 1995, Northern American River Service Area Groundwater Model, Model Development and Basin Groundwater Management.

- Sacramento Metropolitan Water Authority, March 1994, Groundwater Management Plan, Initial Phase, Administrative Draft.

- South Sutter Water District, February 1995, Groundwater Management Plan.

- Montgomery Watson, September 3, 1996, Northridge Water District Conjunctive Use Study.

- PCWA letter to County of Sacramento, January 9,1997, providing comments to the draft EIR for the Rio Linda and Elverta Community Plan.

- City of Roseville letter to County of Sacramento, January 8,1997, providing comments to the draft EIR for the Rio Linda and Elverta Community Plan.

- County of Placer, Planning Department letter to County of Sacramento, December 30,1996, providing comments to the draft EIR for the Rio Linda and Elverta Community Plan.

- County of Sacramento, November 22, 1996, Draft Environmental Impact Report for the Rio Linda and Elverta Community Plan.

- County of Sacramento, June 11, 1993, Draft Sacramento County General Plan Update Subsequent Environmental Impact Report, Volume 1.

- County of Sacramento, Department of Public Works, June 20,1989, Report entitled "Report Back - Antelope Water Supply".

- Sacramento County Board of Supervisors, February 20,1985, Resolution No. 85-195, Resolution of the Board of Supervisors, State of California, Setting Forth Policies for Implementation of the Antelope Community Plan.

- County of Sacramento, February 14,1978, Sacramento County Water Plan Policy Report.

- County of Placer, Department of Health and Human Services, March 12,1996, letter indicating support for development of West Placer GMP.

- San Juan Water District, March 29, 1996, letter indicating support for West Placer GMP development.

- Building Industry Association of Superior California, April 16, 1996, letter indicating support for West Placer GMP development.

- City of Roseville, May 8, 1996, City Council action taken to support development of west Placer GMP and authorize staff to work with PCWA on the Plan.

- County of Placer Board of Supervisors, May 7, 1996, Resolution No. 96-108 indicating support of the development of the West Placer GMP.

- Citizens Utilities, May 31, 1996, letter indicating support for development of West Placer GMP.

- City of Lincoln, June 11,1996, Resolution 96-48 designating PCWA as the lead agent in the preparation of the West Placer GMP.

- City of Rocklin, June 27,1996, letter indicating support of the West Placer GMP development.

- South Sutter Water District, June 27, 1996, letter indicating support of the West Placer GMP development.

June 9, 1998

Placer County Water Agency
West Placer Groundwater Basin Management Area

Exhibit "A"

Portions of Township 10 North Range 5 East, Township 10 North Range 6 East, Township 10 North Range 7 East, Township 11 North Range 5 East, Township 11 North Range 6 East, Township 11 North Range 7 East, Township 12 North Range 5 East, Township 12 North Range 6 East, Township 13 North Range 5 East, Township 13 North Range 6 East, and Township 14 North Range 6 East, Mount Diablo Meridian, Placer County, California, described as follows:

Beginning at the southwest corner of Placer County; thence southeasterly along the southerly line of said county a distance of 14.5 miles, more or less, to the intersection of the said southerly line and the centerline of Section 16, T10N, R7E, said intersection also being the most southeasterly corner of the Roseville city limits; thence northwesterly along the Roseville city limits a distance of 4.5 miles, more or less, to the intersection of the Roseville city limits and the Rocklin city limits, said intersection being on the east line of Section 30, T11N, R7E; thence northerly along the Rocklin city limits a distance of 12 miles, more or less, to the intersection of the Rocklin city limits and the Lincoln city limits, said intersection being on the north line of Section 6, T11N, R7E; thence westerly, northwesterly, and easterly along the Lincoln city limits a distance of 19 miles, more or less, to the center of Section 10, T12N, R6E, being an angle point on the Nevada Irrigation District boundary; thence northwesterly and northerly along said boundary a distance of 21 miles, more or less, to the Placer/Yuba County line; thence southwesterly along said line a distance of 5 miles, more or less, to the west line of Section 2, T13N, R5E; thence south along the west lines of Sections 2, 11, and 14, T13N, R5E, a distance of 2 miles, more or less, to the west 1/4 corner of said Section 14, being a point on the South Sutter Irrigation District boundary; thence westerly and southerly along said boundary a distance of 26 miles, more or less, to the west line of Section 30, T11N, R5E, being a point on the Placer /Sutter County line; thence southwesterly along said county line a distance of 3.5 miles, more or less, to the point of beginning.

EXCEPT that portion within the Camp Far West Irrigation District.

EXCEPT that portion within County Service Area 28, Zone 6/A-1

EXCEPT that portion within South Sutter Irrigation District.

EXCEPT that portion within Nevada Irrigation District

END OF DESCRIPTION

LICENSED LAND SURVEYOR
JOHN P. WILLIAMS
Exp. 12.31.98
No. 7143
STATE OF CALIFORNIA

Page 1 of 1

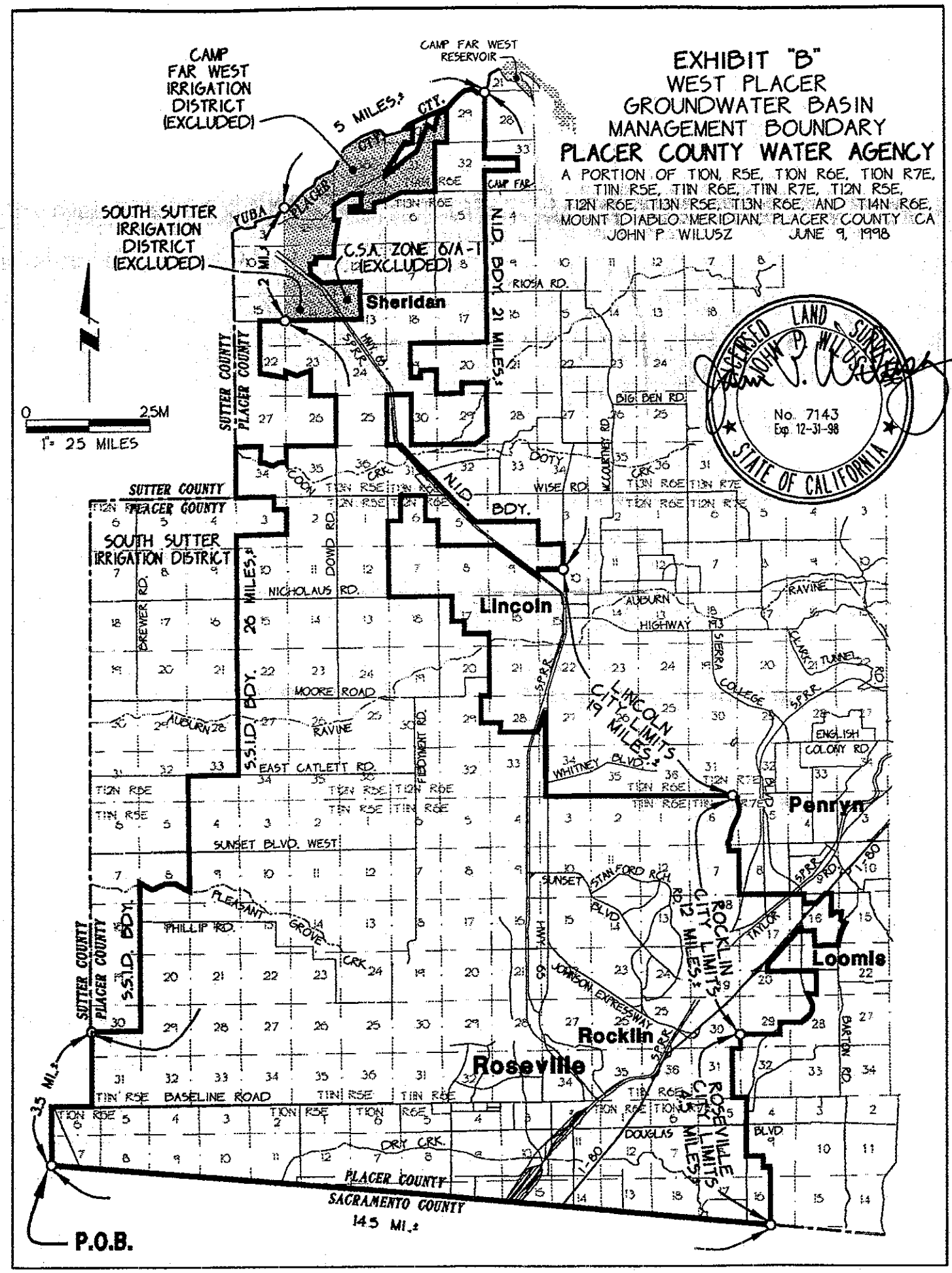
EXHIBIT "B"
WEST PLACER
GROUNDWATER BASIN
MANAGEMENT BOUNDARY
PLACER COUNTY WATER AGENCY
A PORTION OF T10N, R5E, T10N R6E, T10N R7E, T11N R5E, T11N R6E, T11N R7E, T12N R5E, T12N R6E, T13N R5E, T13N R6E, AND T14N R6E, MOUNT DIABLO MERIDIAN, PLACER COUNTY CA
JOHN P. WILUSZ JUNE 9, 1998
CAMP FAR WEST IRRIGATION DISTRICT (EXCLUDED)
CAMP FAR WEST RESERVOIR
SOUTH SUTTER IRRIGATION DISTRICT (EXCLUDED)
C.S.A. ZONE 6/A-1 (EXCLUDED)
5 MILES±
2 MI.±
21 MILES±
26 MILES±
19 MILES±
12 MILES±
35 MI.±
145 MI.±
Sheridan
Lincoln
Penryn
Loomis
Rocklin
Roseville
SUTTER COUNTY
PLACER COUNTY
SOUTH SUTTER IRRIGATION DISTRICT
N.I.D. BDY.
S.S.I.D. BDY.
LINCOLN CITY LIMITS
ROCKLIN CITY LIMITS
ROSEVILLE CITY LIMITS
PLACER COUNTY
SACRAMENTO COUNTY
P.O.B.
0 2.5M
1" = 2.5 MILES
LICENSED LAND SURVEYOR
JOHN P. WILUSZ
No. 7143
Exp. 12-31-98
STATE OF CALIFORNIA

RESOLUTION NO. 98-41 OF THE BOARD OF DIRECTORS OF THE PLACER COUNTY WATER AGENCY ADOPTING A GROUNDWATER MANAGEMENT PLAN FOR PORTIONS OF WEST PLACER COUNTY

WHEREAS, in 1992, the California Legislature adopted Assembly Bill 3030 (Statutes 1992, Chapter 947, California Water Code Sections 10750, *et seq.*) authorizing local agencies, such as the Placer County Water Agency, to prepare, adopt and implement groundwater management plans; and

WHEREAS, pursuant to the provisions of that statute this Board held a public hearing on November 7, 1996, after the publication of a notice as required by law, to determine whether or not to adopt a resolution of intention to draft a groundwater management plan for a portion of western Placer County overlying the groundwater basin in that area; and

WHEREAS, at the conclusion of that hearing this Board adopted Resolution No. 96-44 on November 7, 1996, expressing its intent to draft a plan for the management of groundwater resources lying within the area described in that resolution which included portions of the cities of Lincoln, Rocklin and Roseville, and portions of the unincorporated area in western Placer County; and

WHEREAS, subsequent to the adoption of Resolution No. 96-44, the City of Lincoln elected to be excluded from the area to be included in the proposed groundwater management plan and in accordance with the City's request and the provisions of law, the City of Lincoln was excluded from that area; and

WHEREAS, on August 4, 1998, the Agency staff presented to this Board its "Draft West Placer Groundwater Management Plan" dated June 23, 1998; and

WHEREAS, this Board set a public hearing to determine whether to adopt that plan and gave notice of that hearing as required by law; and

WHEREAS, hearings on the proposed groundwater management plan were held on August 4, 1998, September 1, 1998, ——— and October 6, 1998, at which time all members of the public were permitted to submit written and oral comments or protests concerning the proposed plan; and

WHEREAS, this Board has reviewed the proposed plan and considered all of the comments and protests submitted to this Board concerning such plan;

NOW THEREFORE, BE IT RESOLVED by the Board of Directors of the Placer County Water Agency that this Board hereby finds and determines that :

1. All of the above statements are true and correct;

2. The groundwater management plan presented to this Board entitled "Draft West Placer Groundwater Management Plan" dated June 23, 1998, is hereby adopted for the area described in that plan; and

3. The Agency management and staff is hereby instructed to expeditiously prepare rules and regulations to implement and enforce this groundwater management plan and present them to this Board for its consideration.

The foregoing resolution was duly passed at a regular meeting of the Board of Directors of the Placer County Water Agency held on October 6, 1998, by the following vote on roll call:

AYE DIRECTORS: Riolo, Lee, Jarvis and Fickewirth

NOE DIRECTORS: None

ABSENT DIRECTORS: Wollan

Signed and approved by me after its passage this 6th day of October, 1998.

Chairman, Board of Directors
Placer County Water Agency

ATTEST:

Clerk, Board of Directors
Placer County Water Agency

534310 1

RESOLUTION NO. 98-41 OF THE BOARD OF DIRECTORS OF THE PLACER COUNTY WATER AGENCY ADOPTING A GROUNDWATER MANAGEMENT PLAN FOR PORTIONS OF WEST PLACER COUNTY

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WHEREAS, subsequent to the adoption of Resolution No. 96-44, the City of Lincoln elected to be excluded from the area to be included in the proposed groundwater management plan and in accordance with the City's request and the provisions of law, the City of Lincoln was excluded from that area; and

WHEREAS, on August 4, 1998, the Agency staff presented to this Board its "Draft West Placer Groundwater Management Plan" dated June 23, 1998; and

WHEREAS, this Board set a public hearing to determine whether to adopt that plan and gave notice of that hearing as required by law; and

WHEREAS, hearings on the proposed groundwater management plan were held on August 4, 1998, September 1, 1998, ——— and October 6, 1998, at which time all members of the public were permitted to submit written and oral comments or protests concerning the proposed plan; and

WHEREAS, this Board has reviewed the proposed plan and considered all of the comments and protests submitted to this Board concerning such plan;

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Chairman, Board of Directors
Placer County Water Agency

ATTEST:

Clerk, Board of Directors
Placer County Water Agency

534310 1

APPENDIX E

Roseville Municipal Code 14.08 – Water

14.07.060 Low-income meter retrofit surcharge reduction.

A. Effective July 1, 2001, any household with total income no greater than that specified by the U.S. Department of Housing and Urban Development as "very low income" may apply for a fifty percent reduction in the water meter retrofit surcharge as charged under the provisions of Section 14.08.106. Applications for a reduced surcharge shall be on forms supplied by the City. All information required to be given on such forms shall be supplied by the applicant on behalf of the household under penalty of perjury.

B. A reduced surcharge shall be granted a qualifying household which files applications with the Finance Director. A change of address terminates the reduction provided in this section, but a new application at a new address may be made and the reduced surcharge rate shall be allowed, if the requirements set out in this section are satisfied.

C. For the purposes of this section, a "qualifying household" is defined as any household which owns and currently resides at the address for which application is made, with a verifiable gross household income no greater than that specified by the U.S. Department of Housing and Urban Development as "Very Low Income" for Placer County.

D. The reduced surcharge will apply to future utility bills for the premises occupied by the applicant at the time of application. The reduction will not be applied retroactively.

E. The reduction provided in this section may be allowed in addition to the senior citizen rate reduction provided under Section 14.08.120.

(Ord. 4001 § 2 (part), 2003.)

14.07.070 Prepayment of meter retrofit surcharge.

A. Effective with the inclusion of the meter retrofit surcharge on the monthly utility bill as provided in Section 14.08.106, the remaining meter retrofit surcharge due may be paid in full. The prepayment will be in accordance with a schedule discounting the monthly surcharge using a five and five tenths percent (5.5%) discount rate.

B. The prepayment will apply to the balance of the surcharge assigned to a premises. A change of address will not result in a credit for prior prepayment. If a surcharge has been assigned to the new premises, it will not be affected by a prepayment on a prior premises.

C. Prepayments may not be required as a result of sale or exchange of a residence.

D. Prepayments will be made to the utility billing office of the finance department.

(Ord. 4001 § 2 (part), 2003.)

Chapter 14.08

WATER

Sections:

14.08.010	**Liability for Services Rendered.**
14.08.020	**Service Connections—Application—Costs.**
14.08.025	**Water Connection Fees.**
14.08.026	**Standard Connection Fee.**
14.08.027	**Irrigation Connection Fee.**
14.08.028	**Fire Connection Fee.**
14.08.029	**Dwelling Unit Equivalents.**
14.08.030	**Connection Fee—Exception.**
14.08.031	**Special Area Water Connection Fee.**
14.08.040	**Service Connections—Refusal to Install.**
14.08.050	**Control of Water System.**
14.08.060	**Tampering with City Property—Bypassing Meters.**
14.08.070	**Tapping Distribution System.**
14.08.080	**Turning Water on Without Permit.**
14.08.090	**Service Charges for Metered Service.**

14.08.091 Service Charge Outside City Limits.
14.08.095 Water Rate Surcharge.
14.08.100 Flat Water Rates.
14.08.105 Installation of Water Meters.
14.08.120 Senior Citizen Rate Reductions.
14.08.130 Use of Water for Construction Purposes.
14.08.150 Maintenance and Repair.
14.08.160 Right of Entry.
14.08.170 Installation of Facilities in Subdivisions and Other Developments.
14.08.190 Siphons Prohibited.
14.08.200 Heating and Cooling Devices.
14.08.210 Resale of Water.

14.08.010 Liability for services rendered.

The owner of single and multi-family residential property served by the city shall be charged with, and shall be personally responsible for, the water bills incurred for water service to such property. The owner of non-residential property served by the city may assign responsibility for the water bills incurred for water service to such property to the owner's tenants or lessees. (Ord. 3994 § 1, 2003: Ord. 1418 § 1, 1978: prior code § 27.1.)

14.08.020 Service connections—Application—Costs.

A. The water division shall install service connections and lay service pipes up to the coterminous of the public easement or interest in land and the property of the applicant, except in the case of improvements installed pursuant to the subdivision regulations, all of which improvements shall be the sole responsibility of the developer. Ordinarily, such service pipes shall terminate within two feet in back of a sidewalk. Where there is no sidewalk, the location of the terminal of the service pipes shall be determined by the Environmental Utilities Director based upon where a sidewalk would ordinarily be located. The responsibility of the city with respect to maintenance of such service connections and service pipes shall not extend, in any case, beyond the terminal of the service pipes or located of the water meter if one is installed.

B. The size of such service connections and pipes shall be determined by the applicant by reference to the Uniform Plumbing Code. The Environmental Utilities Director is not responsible for verifying the calculations and is not responsible for any pressure problems related to improperly sized services.

C. Prior to the installation of such service connections and pipes, the applicant shall pay to the city the estimated costs of installation.

D. The cost of installation shall be established by the Environmental Utilities Director or his designee, based upon the estimated costs of labor, materials, equipment costs and rentals, and administrative costs. Upon the completion of an installation and approving inspection of any connection, the director or his designee shall refund any amounts collected with the application which exceed the actual costs.

(Ord. 4001 § 3 (part), 2003: Ord. 3834 § 2 (part), 2002: Ord. 3798 § 4 (part), 2002: Ord. 1387 § 1, 1978: prior code § 27.3.)

14.08.025 Water connection fees.

A. In order that appropriate provision be made for sharing the costs of the maintenance and expansion of the raw water supply, water treatment, storage, and distribution facilities of the City by those who receive the benefits thereof, there are established connection fees to such facilities, which fees shall be imposed in addition to the service connection costs charged pursuant to Section 14.08.020. Such additional water connection fees include a "Standard connection fee," "Irrigation connection fee," and "Fire connection fee." The fees shall be set so that they are equal to, but not greater than, the cost of service.

B. The water connection fees shall be based upon the applicable "Dwelling Unit Equivalent"

("DUE"). The fee for one DUE shall be three thousand four hundred and twenty-five dollars ($3,425.00).

C. The connection fee amount set forth above shall be adjusted annually on July 1st of each year by a percentage equal to the inflation rate for the prior year for construction costs as determined by the Environmental Utilities Director in the preceding June. The Director's determination shall be based upon the Engineering News Record, Construction Cost Index for the prior twelve months ending in June. The Environmental Utilities Director shall report the amount of the adjustment in percentage terms and the dollar amount due per DUE to the City council annually at the first regular meeting of the Council following his adjustment of the fee.

D. Except as otherwise provided, all water connection fees established by this chapter shall be payable upon issuance of a building permit. Connection fees will be determined using the amounts in effect on the date of building permit issuance.

(Ord. 3952 § 7 (part), 2003: Ord. 3309 § 2, 1998: Ord. 2981 § 2, 1996: Ord. 2953 § 2, 1996: Ord. 2090 § 1, 1988: Ord. 1387 § 2, 1978.)

14.08.026 Standard connection fee.

The standard connection fee for various types of service and applicable DUEs are based upon water service sizes required by the Uniform Plumbing Code and DUEs as shown in Section 14.08.029. Should a larger water service be installed than that required by the Uniform Plumbing Code, then the fee shall be not less than one DUE.

If, after construction of a "spec" or "shell" building, a tenant improvement building permit is requested, the standard connection fee for the entire building will be redetermined. If as a result of the tenant improvements a greater number of DUEs are applicable for the building then originally charged and paid for, then the applicant for the tenant improvement building permit must pay for the number of DUEs not previously paid. If the redetermination of fees results in less DUE's required, no refund will be given. If a building complex is divided into separate units, the standard connection fee shall likewise be redetermined and repaid based upon DUEs for all of the separate units. (Ord. 3834 § 2 (part), 2002: Ord. 2090 § 2 (part), 1988.)

14.08.027 Irrigation connection fee.

Separate connections for irrigation purposes will be charged a fee based upon service size of the connection and DUEs as shown in Section 14.08.029. Separate irrigation connections shall be required on all landscape areas other than single family dwelling units or duplexes. (Ord. 3834 § 2 (part), 2002: Ord. 2090 § 2 (part), 1988.)

14.08.028 Fire connection fee.

Separate connections for fire suppression purposes will be charged a fee equal to twenty-five percent of a fee based upon service size of the connection and DUEs as shown in Section 4.08.029. (Ord. 2090 § 2 (part), 1988.)

14.08.029 Dwelling unit equivalents.

DUEs for water connection fees are:

Service Size	DUEs
5/8 in.	0.7
3/4 in.	1.0
1.0 in.	1.7
1.5 in.	3.3
2.0 in.	5.3
3.0 in.	11.7
4.0 in.	20.0
6.0 in.	41.7
8.0 in.	60.0
10.0 in.	96.7
12.0 in.	143.3

(Ord. 2090 § 2 (part), 1988.)

14.08.030 Connection fee—Exception.

If a lot or other parcel of property has an existing connection to the public water system which was in use, and can be documented as an active account at any time preceding application for a building permit, the connection fee, as provided in Section 14.08.025, shall not be required upon issuance of the building permit; provided, however, that the permit is for a use that does not require additional system capacity.

The intent of this section is to exempt connection fees for new construction after demolition on the same site. (Ord. 3834 § 2 (part), 2002: Ord. 1472 § 1, 1980.)

14.08.031 Special area water connection fee.

A. A special area water connection fee (for example, but not limited to, water pressure zone, waterline reimbursement and water benefit fees) shall be charged for each water unit connected to the City-owned public water system for infrastructure for areas of special benefit as identified and in amounts as set forth by the City Council by resolution, from time to time.

B. The fee established by this chapter shall automatically be adjusted on July 1st of each year by a percentage equal to the inflation rate for the prior year for construction costs as determined by the Director in the preceding June. The Director's determination shall be based upon the Engineering News Record, Construction Cost Index for the prior twelve months ending in June.

(Ord. 3952 § 7 (part), 2003: Ord. 3334 § 2, 1999.)

14.08.040 Service connections—Refusal to install.

The city may refuse to install service when the Environmental Utilities Director determines that an adequate return on capital will not be made in the immediate future, or when the Environmental Utilities Director determines that service will not be taken in the immediate future. (Ord. 3798 § 4 (part), 2002: Ord. 1418 § 3, 1978: prior code § 27.5.)

14.08.050 Control of water system.

The distribution system, its valves, gates, reservoirs, and all appurtenances and appurtenant properties shall be under the control of the city at all times. (Ord. 1418 § 4, 1978: prior code § 27.7.)

14.08.060 Tampering with city property—Bypassing meters.

It is unlawful for any person not authorized by the City to do so to tamper with any gates, valves, service cocks, fire hydrants, meters, or any of the City's property accessory or appurtenant to the water distribution system, to break the seal on any water meter, or to cause water to bypass any water meter. (Ord. 2668 § 1 (part), 1993: Ord. 14.18 § 5, 1978: prior code § 27.8.)

14.08.070 Tapping distribution system.

It is unlawful for any person, unless authorized by the city, to tap any part of the water distribution system. The Environmental Utilities Director may authorize a person to tap a main or lateral of the distribution system by a permit issued in writing. (Ord. 3798 § 4 (part), 2002: Ord. 1418 § 6, 1978: prior code § 27.9.)

14.08.080 Turning water on without permit.

It is unlawful for any person to turn on or open water service for any building or premises without the prior approval of the Environmental Utilities Director. (Ord. 3798 § 4 (part), 2002: Ord. 1418 § 7, 1978: prior code § 27.10.)

14.08.090 Service charges for metered service.

There shall be due and payable the following monthly charges, upon submission of the bill by the City to the owner of the property supplied with service, for all treated water measured by meters for residential, commercial, industrial and manufacturing or other purposes:

A. Monthly Quantity Rates.

		Inside City	Outside City
1.	Residential Accounts		
	First 1,200 cu. ft.	0.24 per 100 cu. ft.	0.38 per 100 cu. ft.
	Next 3,800 cu. ft.	0.48 per 100 cu. ft.	0.77 per 100 cu. ft.
	Over 5,000 cu. ft.	0.72 per 100 cu. ft.	1.15 per 100 cu. ft.
2.	Non-residential Accounts		
	All water use	0.48 per 100 cu. ft.	0.77 per 100 cu. ft.

B. Monthly Service Charges.

Meter Size (Inches)	Peak Flow Rate (gallons per minute)	Inside City	Outside City
5/8	20	$ 11.30	$ 18.10
3/4	30	$ 11.30	$ 18.10
1	50	$ 18.25	$ 29.20
1-1/2	100	$ 35.15	$ 56.25
2	160	$ 55.55	$ 88.90
3	350	$ 103.25	$ 165.20
4	600	$ 171.90	$ 275.05
6	1250	$ 341.05	$ 545.70
8	1800	$ 546.20	$ 873.90
10	2900	$ 784.70	$1,255.50
12	4300	$1,465.45	$2,344.70

C. The total amount due and payable shall be the sum of the monthly service charge plus the quantity rate. The monthly service charge is due and payable regardless of whether water has been consumed. The service charge shall be the greater of the charge based on the meter size or flow rate. No service charge shall be made for fire service that has backflow prevention with detector check devices approved by the Environmental Utilities Director.

D. For purposes of charging for treated water measured by meters:

1. A residential account is defined as a single metered water service which serves three or less dwelling units.
2. A nonresidential account is defined as a single metered water service which serves more than three dwelling units, or serves commercial, industrial, manufacturing, irrigation or other nonresidential land uses.

(Ord. 4263 § 2 (part), 2005: Ord. 4001 § 3 (part), 2003: Ord. 3964 § 1 (part), 2003: Ord. 3756 § 1, 2001; Ord. 3687 § 1 (part), 2001: Ord. 3101 § 1 (part), 1997: Ord. 2708 § 1 (part), 1993: Ord. 1953 § 1, 1986: Ord. 1918 § 1 (part), 1985: Ord. 1418 § 8, 1978: Ord. 1239 § 1, 1974: prior code § 27.14.)

14.08.091 Service charge outside city limits.

Charges for water service delivered outside the corporate limits of the city will be at a rate 60% higher than the customers residing within City of Roseville City limits. (Ord. 4001 § 3 (part), 2003: Ord. 3834 § 1, 2002.)

14.08.095 Water rate surcharge.

Notwithstanding any provision of law to the contrary, all charges for water shall be subject to surcharges in the event of a customer exceeding a water allocation as provided by the Water Conservation and Drought Mitigation Ordinance, Roseville Municipal Code Chapter 14.09. (Ord. 3101 § 1 (part), 1997: Ord. 2414 § 1, 1991.)

14.08.100 Flat water rates.

The following service charges shall apply to flat rate consumers that the Environmental Utilities Director determines are not cost effective to assign metered rates. The Environmental Utilities Director shall conduct a water use study for consumers whom he determines may not be reasonably metered, and the Director shall assign such consumers to an appropriate service rate level as set forth be low. Water service rates for flat rate residential consumers shall be due and payable on a monthly basis according to the appropriate grouping set out in this section. Effective October 1, 2005, the flat rates on billings shall be as follows:

A. Mobile home parks maintaining their own distribution system and service, per living unit—$12.10;
B. Single-family lots under 4,900 square feet; each mobile home unit not within a park maintaining its own distribution system and service; each dwelling unit of duplexes, triplexes, fourplexes, unmetered apartments and other multiple living units; other detached living units; and offices and stores with less than peak use of 250 gallons per day—$13.05;
C. Single-family lots 4,901 to 8,900 square feet—$17.05;
D. Single-family lots 8,901 to 12,000 square feet—$21.20;
E. Single-family lots 12,001 to 15,000 square feet—$25.25;
F. Single-family lots existing before July 1, 1977, which are in excess of 15,000 square feet shall pay $24.90, and for each 1,000 square feet or portion over 15,000 square feet—$1.33. All those single-family lots over 15,000 square feet, created on or after July 1, 1977, shall be metered pursuant to Section 14.08.105.

(Ord. 4263 § 2 (part), 2005: Ord. 3964 § 1 (part), 2003: Ord. 3756, § 2, 2001; Ord. 3687 § 1 (part), 2001: Ord. 3101 § 1 (part), 1997: Ord. 2708 § 1 (part), 1993: Ord. 1918 § 1 (part), 1985: Ord. 1418 § 9, 1978: Ord. 1239 § 2, 1974: prior code § 27.15.)

14.08.105 Installation of water meters.

A. New Construction. A water meter shall be required for all residential dwelling units for which a building permit was issued after January 1, 1992.
B. Installation and Location.
   1. All water meters and metering equipment will be supplied and installed by the City upon the service premises at a location approved by the Environmental Utilities Director.
   2. The following charges for water meter installation shall be made:
      a. A seventy-five dollar ($75.00) labor charge for installation shall be paid by the applicant for service prior to installation. The labor charge shall be increased by the Finance Director as labor costs increase, as reflected in the adoption of the City's salary ordinances.
      b. A meter supply charge shall be paid by the applicant for service prior to installation. The meter supply charge shall be equal to the per meter amount of the most recent water meter bid awarded by the City.
      c. In addition to the direct meter supply charge, additional charges may apply for meter appurtenances as required by the Environmental Utilities Director. This includes, but is not limited to, features required to make meter ready for remote reading.
      d. A seventy-five dollar ($75.00) water quantity charge per unit for water use during construction of residential units shall be paid by the applicant prior to

meter installation. The water quantity charge shall be increased by the Environmental Utilities Director to reflect increases in water supply rates.

3. All water meters shall be safely accessible to authorized employees of the City at all times for inspection, testing and reading.
4. The City may require a customer to relocate a metering installation, at customer's expense, if any existing water meter location becomes inaccessible or for other operational needs.
5. Property owners of condominium and apartment complexes are liable for costs to install meters on their property upon receipt of bill for such services.

C. Rights of Access.
1. The City shall have the right of access to the customer's premises, at all reasonable hours for any purpose related to the furnishing of water service including, but not limited to meter reading, testing, inspection, construction, maintenance and repair of meter.
2. Service may be refused or disconnected if permanent safe accessibility is not provided by the customer.
3. Upon termination of service, the City shall have the right of access to the service premises to remove the water meter.

D. Customer Responsibilities. It shall be the duty of each customer upon whose premises the city has installed a water meter to ensure that such meters are not damaged, destroyed or interfered with and, in the case of any defect in any such meter, to notify the city. The customer is also responsible for keeping the meter box clear and accessible for reading and maintenance by keeping landscape and other improvements from covering or encroaching over the meter box.

E. Metered Water Rate. New services installed after January 1, 2002 will be placed on a metered water rate.

(Ord. 4001 § 3 (part), 2003: Ord. 3834 § 2 (part), 2002: Ord. 2668 § 1 (part), 1993: Ord. 2645 § 1, 1992: Ord. 1418 § 10, 1978.)

14.08.120 Senior citizen rate reductions.

A. Any person sixty-five (65) years of age or over who receives water services at his or her personal residence may apply for a twenty-five percent (25%) reduction in the flat rate water charges as set forth in Section 14.08.100 and a twenty-five percent (25%) reduction in the monthly service charge as set forth in Section 14.08.090. Applications for reduced rates shall be on forms supplied by the City. All information required to be given on such forms shall be supplied by the applicant under penalty of perjury.

B. Reduced rates shall be granted qualifying applicants who file their applications with the Director of Finance. A change of address terminates the special rate provided in this section, but a new application by such person at his or her new address may be made and the reduced rate shall be allowed, if the requirements set out in this section are satisfied.

C. For the purposes of this section, a "qualifying applicant" is defined as any household occupied by a person sixty-five years of age or older having a verifiable gross income of no greater than that specified by the U.S. Department of Housing and Urban Development as "Very Low Income" for Placer County.

D. Customers who have been granted discounts prior to June 1, 1988 shall continue to receive discounts notwithstanding the requirements of subsection C of this section.

E. The Director of Finance may adopt such rules and regulations, not inconsistent herewith, which he deems necessary to properly carry out the provisions of this section.

(Ord. 3102 § 2, 1997: Ord. 2734 § 1, 1993: Ord. 2123 § 1, 1988: Ord. 1327 § 2, 1976: Ord. 1289 § 2, 1975: prior code § 27.18.)

14.08.130 Use of water for construction purposes.

It shall be unlawful for any person to use the water service of another for construction purposes without first obtaining a permit from the Environmental Utilities Director and the consent of the other person. All water service for construction purposes shall be metered as provided by Section 14.08.090, unless the Environmental Utilities Director approves alternate measuring methods. All persons doing work on the public streets, public easements or rights-of-way, existing or proposed, shall apply for and be issued a permit prior to drawing water or obtaining service for construction purposes such as for the settling of earth, rock, gravel or dust. Service for such purposes shall be charged at a rate of forty (40¢) cents per one hundred (100) cubic feet of water and for a connection charge of one hundred ($100) dollars per connection to a fire hydrant. Each temporary connection shall be protected against potential cross connection and resulting contamination of the water distribution system. Water meters and backflow preventors are available from the water/sewer division with a five hundred ($500) dollar deposit and fifty ($50) dollar per month rental charge. The Environmental Utilities Director, in the Director's discretion, may establish related requirements for the use of all construction water and service. (Ord. 3834 § 2 (part), 2002: Ord. 3687 § 1 (part), 2001: Ord. 2770 § 1, 1994: Ord. 1418 § 12, 1978: prior code § 27.20.)

14.08.150 Maintenance and repair.

All consumers, whether owners or not, shall maintain and keep in good repair the water pipes on the interior and exterior of the property served. Such persons shall not allow faucets or water closets to leak. (Ord. 1418 § 14, 1978: prior code § 27.22.)

14.08.160 Right of entry.

Any authorized agent or employee of the city, with the consent of the owner, occupant, or consumer, or pursuant to court order, shall be allowed free access at any reasonable hour to any premises where water is served for the purpose of inspecting the conditions of the water pipes or service or for the purpose of establishing the rate to be charged under the provisions of this chapter. (Ord. 1418 § 15, 1978: prior code § 27.23.)

14.08.170 Installation of facilities in subdivisions and other developments.

A. Any person requesting the provision of water service from the mains of the city for subdivisions or any other improvement, whether residential, commercial, or industrial, in which mains, laterals or distribution systems have not heretofore been placed shall apply to the Environmental Utilities Director. Applications shall contain plans and specifications for the proposed distribution system which shall conform to the standards and requirements of the Environmental Utilities Director as to size, type and quality of materials and location of mains, including fire hydrants, service lines and valve boxes. If such plans and specifications are approved in writing by the Environmental Utilities Director, the applicant may cause the water distribution system to be installed. The city may install such facilities after the applicant has deposited the estimated cost of construction with the city. The estimated cost of construction shall include the estimated costs of labor, materials, equipment costs and rentals, and administrative costs. Should the cost of construction be less than the estimate, such difference between estimated and actual cost shall be refunded to the applicant.

B. The Environmental Utilities Director shall have the right to inspect all work performed and all work must be approved by the director before said mains, laterals or distribution system shall be connected to the water system of the city.

C. Upon acceptance of the mains, laterals or distribution system, it shall become the property of the city. The city may require, pursuant to the Subdivision Map Act and the subdivision regulations of the city, oversized capacity, in which case the city shall reimburse the applicant pursuant to the provisions of law then in effect for such oversized capacity,

based on the prevailing costs of materials and labors for such work.
(Ord. 3798 § 4 (part), 2002: Ord. 1418 § 21, 1978: prior code § 27.30.)

14.08.190 Siphons prohibited.

It shall be unlawful to employ a siphon of any type for any purpose connected to the water distribution system. (Ord. 1418 § 23, 1978.)

14.08.200 Heating and cooling devices.

It shall be unlawful for any heating or cooling device to use water that is not recirculated. The only water added to such systems shall be limited to the purpose of making up losses in the process. Under no circumstances shall water be returned to the distribution system of the city. This prohibition shall apply to all devices for heating or cooling whether used for residential, commercial, industrial, or manufacturing purposes. (Ord. 1418 § 24, 1978.)

14.08.210 Resale of water.

It is unlawful for any person to resell any water received from the system, except that a landlord may charge a tenant the amount which the landlord must pay for water. (Ord. 2668 § 2, 1993.)

Chapter 14.09

WATER CONSERVATION

Sections:

14.09.010 Short Title.
14.09.020 Enforcement Officer.
14.09.030 Definition of Water Waste.
14.09.040 Water Conservation and Drought Stages.
14.09.050 Determination of Drought Staging—Effect of Well Water.
14.09.060 Basic Stage Restrictions.
14.09.070 Stage One Drought Restrictions.
14.09.080 Stage Two Drought Restrictions.
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14.09.160 Water Waste Violation Unlawful.
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14.09.180 Remedies Cumulative.
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14.09.010 Short title.

This chapter may be cited as the Water Conservation and Drought Mitigation Ordinance. (Ord. 2413 § 2 (part), 1991.)

14.09.020 Enforcement officer.

The Director of Environmental Utilities ("the Director") shall enforce the provisions of this chapter. (Ord. 2413 § 2 (part), 1991.)

14.09.030 Definition of water waste.

Any of the following acts or omissions, whether willful or negligent shall constitute the waste of water:

A. Causing or permitting water to discharge, flow or run to waste into any gutter, sanitary sewer, water course or storm drain, or to any adjacent lot, from any tap, hose, faucet, pipe, sprinkler, or nozzle. In the case of irrigation, "discharge,"

APPENDIX F

Roseville Municipal Code 14.09 – Water Conservation

Chapter 14.09

WATER CONSERVATION

Sections:

14.09.010	**Short title.**
14.09.020	**Enforcement officer.**
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14.09.040	**Water conservation and drought stages.**
14.09.050	**Determination of drought staging--Effect of well water.**
14.09.060	**Basic Stage restrictions.**
14.09.070	**Stage One Drought restrictions.**
14.09.080	**Stage Two Drought restrictions.**
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14.09.110	**Stage Five restrictions.**
14.09.120	**Determination of drought tolerance.**
14.09.130	**Determination of landscape water consumption reductions.**
14.09.140	**Allocation of water; metering; and discontinuance of service.**
14.09.150	**Surcharge for exceeding allocation.**
14.09.160	**Water waste violation unlawful.**
14.09.170	**Violation declared a nuisance.**
14.09.180	**Remedies cumulative.**
14.09.190	**Chapter severable.**

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The Director of Environmental Utilities ("the Director") shall enforce the provisions of this chapter. (Ord. 2413 § 2 (part), 1991.)

Section 14.09.030 Definition of water waste.

Any of the following acts or omissions, whether willful or negligent shall constitute the waste of water:

A. Causing or permitting water to discharge, flow or run to waste into any gutter, sanitary sewer, water course or storm drain, or to any adjacent lot, from any tap, hose, faucet, pipe, sprinkler, or nozzle. In the case of irrigation, "discharge," "flow" or "run to waste" means that the earth intended to be irrigated has been saturated with water to the point that excess water flows over the earth to waste. In the case of washing, "discharge," "flow" or "run to waste" means that water in excess of that necessary to wash, wet or clean the dirty or dusty object, such as an automobile, sidewalk, or parking area, flows to waste.

B. Allowing water fixtures or heating or cooling devices to leak or discharge.

C. Maintaining ponds, waterways, decorative basins or swimming pools without water recirculation devices.

D. Backwashing so as to discharge to waste swimming pools, decorative basins or ponds in excess of the frequency necessary to maintain the clarity and cleanliness of the water as deter mined by the Director.
E. Operation of an irrigation system that applies water to an impervious surface or that is in disrepair.
F. Use of a water hose not equipped with a control nozzle capable of completely shutting off the flow of water except when positive pressure to leave the hose on is applied.
G. Irrigation of landscaping during rainfall.
H. Overfilling of any pond, pool or fountain which results in water discharging to waste. (Ord. 3834 § 3 (part), 2002: Ord. 2413 § 2 (part), 1991.)

Section 14.09.040 Water conservation and drought stages.

The following water conservation and drought stages are hereby established:

A. Basic Water Conservation Stage ("Basic Stage"). The Basic Stage shall exist when the City's water supply is adequate to meet all projected demands as determined by the Director.
B. Stage One Drought. A Stage One Drought shall exist when the City's water supply is adequate to meet 90% of projected demands as determined by the Director.
C. Stage Two Drought. A Stage Two Drought shall exist when the City's water supply is adequate to meet 80% of projected demands as determined by the Director.
D. Stage Three Drought. A Stage Three Drought shall exist when the City's water supply is adequate to meet 70% of projected demands as determined by the Director.
E. Stage Four Drought. A Stage Four Drought shall exist when the City's water supply is adequate to meet 60% of projected demands as determined by the Director.
F. Stage Five Drought. A Stage Five Drought shall exist when the City's water supply is adequate to meet 50% or less of projected demands as determined by the Director.

(Ord. 2413 § 2 (part), 1991.)

Section 14.09.050 Determination of drought staging--Effect of well water.

In determining the water conservation and drought stage in effect, the Director shall take into account only surface water available from the Bureau of Reclamation and the Placer County Water Agency. Well water shall not be considered. In the event that this would result in a Stage Three Drought or higher, water wells may be activated to mitigate the supply to a Stage Two Drought. However, in no case shall well water be used as an alternative to declaration of a Stage One or Stage Two Drought. (Ord. 2413 § 2 (part), 1991.)

Section 14.09.060 Basic Stage restrictions.

During the Basic Water Conservation Stage, the following restrictions shall be in force:

A. Landscaping:
   1. All landscaping installed in the City of Roseville shall comply with the Water Efficient Landscape Requirements adopted by resolution of the City Council.
   2. This section shall not apply to landscaping installed for single family homes, except for developer-installed landscaping, or to landscaping for cemeteries.
B. Water Reclamation:

All site reviews shall include an evaluation of water reclamation and recycling, and use of reclaimed water from the City shall be required if economically feasible. (Ord. 2672 § 1, 1993: Ord. 2413 § 2 (part), 1991.)

Section 14.09.070 Stage One Drought restrictions.

During a Stage One Drought, the following restrictions shall be enforced:

A. All Basic Stage restrictions required by Section 14.09.060 shall continue in place, except to the extent they are replaced by more restrictive conditions imposed by this section.

B. Outside Uses:

1. Washing of streets, parking lots, driveways, and sidewalks is prohibited. The Director may grant an exception where necessary for the public health or safety.
2. Washing of vehicles or boats is prohibited except:
   a. When washed using a bucket, or
   b. When washed over an area which is landscaped and normally irrigated, provided that any hose used must be equipped with a control nozzle capable of completely shutting off the flow of water except when positive action or pressure to keep the hose on is applied, or
   c. When washed in either an automatic or manual commercial car wash. This exemption does not apply to temporary car washes, held for fund raising purposes, or to any car wash in which the water is applied via a hand held garden type (non-high pressure) hose.

C. Restaurants:

Water shall not be served at restaurants except by request.

(Ord. 2817 § 1 (part), 1994: Ord. 2636 § 1, 1992: Ord. 2413 § 2 (part), 1991.)

Section 14.09.080 Stage Two Drought restrictions.

During a Stage Two Drought, the following restrictions shall be enforced:

A. All Basic Stage or Stage One restrictions required by Section 14.09.060 or 14.09.070 shall continue in place, except to the extent they are replaced by more restrictive conditions imposed by this section.

B. Landscaping:

1. Irrigation of landscaping is restricted to the periods between 4:00 a.m. to 9:00 a.m. and between 7:00 p.m. to 10:00 p.m. Provided, however, that the Director may grant an exception to the watering hours restriction where necessitated by water system capacity or the public health and safety.
2. Nonresidential (including without limitation, commercial, industrial, church and publicly owned) customers shall reduce irrigation by 30% for existing landscaping.

(Ord. 2611 § 1, 1992.)

Section 14.09.090 Stage Three Drought restrictions.

During a Stage Three Drought, the following restrictions shall be enforced:

A. All Basic Stage, Stage One, or Stage Two restrictions required by Sections 14.09.060, 14.09.070 and 14.09.080 shall continue in place, except to the extent they are replaced by more restrictive conditions imposed by this section.

B. Landscaping:

1. New or expanded landscaping is limited to drought tolerant trees, shrubs, and ground cover. No new turf or grass shall be planted, hydroseeded, or laid.
2. Nonresidential (including without limitation, commercial, industrial, church, and publicly owned) customers shall reduce irrigation by 50% for existing landscaping.
3. Trees and shrubs shall be watered only by drip irrigation system or by handheld hose. If a hose is used, it shall be equipped with a control nozzle capable of completely shutting off the flow of water, except when positive action or pressure to keep the hose on is applied.
4. Except where reclaimed water is used, golf course fairways shall not be watered. One- half of the turf areas in all City parks and median strips shall not be watered.
5. All decorative fountains, decorative (i.e., non-swimming) pools, and decorative waterways shall be

drained and made dry. Such fountains, pools, and waterways shall not be refilled until the City has returned to the basic water conservation stage.

C. Construction Water:
Except where reclaimed water is used, use of water for dust control shall be augmented by hardened, temporary travel routes. Nonpotable water shall be used to the greatest extent possible.

D. Swimming Pools:
All swimming pools and spas shall be covered when not in use, so as to eliminate evaporation, or shall be drained and made dry. If drained, such swimming pools shall not be refilled until the City has returned to the Basic Water Conservation Stage.

(Ord. 2413 § 2 (part), 1991.)

Section 14.09.100 Stage Four Drought restrictions.

During a Stage Four drought, the following restrictions shall be enforced:

A. All Basic Stage, Stage One, Stage Two, or Stage Three restrictions required by Sections 14.09.060, 14.09.070, 14.09.080 or 14.09.090 shall continue in place, except to the extent they are replaced by more restrictive conditions imposed by this section.

B. Landscaping:
1. All nonresidential (including without limitation, commercial, industrial, church, and publicly owned) customers shall reduce irrigation by 75% for existing landscaping.
2. All residential landscape irrigation shall be by handheld hose only. The hose must be equipped with a control nozzle capable of completely shutting off the flow of water except when positive action or pressure to keep the hose on is applied.
3. Except where reclaimed water is used, no turf in City parks or medians shall be irrigated.

C. Construction water:
Except where reclaimed or other nonpotable water is used, use of water for dust control is prohibited.

D. Swimming pools:
Backwashing of filters or filling pools and spas is prohibited.

(Ord. 2413 § 2 (part), 1991.)

Section 14.09.110 Stage Five restrictions.

During a Stage Five Drought, the following restrictions shall be in force:

A. All Basic Stage, or Stage One, Stage Two, Stage Three or Stage Four restrictions required by Sections 14.09.060, 14.09.070, 14.09.080, 14.09.090 or 14.09.100 shall continue in place, except to the extent they are replaced by more restrictive conditions imposed by this section.

B. Landscaping:
1. Except where reclaimed water is used, turf or grass shall not be irrigated.
2. No persons shall irrigate any landscaping except a tree, shrub, or drought tolerant ground cover. No irrigation shall be done except by handheld hose equipped with a nozzle capable of completely shutting off the flow of water except when positive action or pressure to keep the hose on is applied.

(Ord. 2413 § 2 (part), 1991.)

Section 14.09.120 Determination of drought tolerance.

Where this chapter permits or prohibits acts based upon whether or not a planting, tree, shrub, or groundcover is "drought tolerant" the determination shall be made based upon Sunset's "The Western Garden Book" (July 1987), Lane Publishing Co., Robert Perry, "Trees and Shrubs for Dry California Landscapes," or EBMUD, "Water Wise

Gardening." Where this chapter permits or prohibits acts based upon whether a form of irrigation is "drip irrigation" the determination shall be made by the Director of Parks & Recreation, whose determination shall be final. (Ord. 2413 § 2 (part), 1991.)

Section 14.09.130 Determination of landscape water consumption reductions.

Whenever this chapter requires a reduction in consumption of water for irrigation purposes, the base year for measurement shall be the last year that the basic water conservation stage was in effect. The Director may elect to base a reduction on the base year or on a landscape water consumption calculation if use was, in the Director's sole opinion, either excessive or extraordinarily low. For landscaping installed subsequent to the base year, the calculations shall be based on landscape water consumption calculations submitted with the landscape plan, or water consumption the previous year, which ever is less. (Ord. 2817 § 1 (part), 1994: Ord. 2413 § 2 (part), 1991.)

Section 14.09.140 Allocation of water; metering; and discontinuance of service.

The Director shall issue warnings (a "notice of water waste") to customers determined by him to be violating provisions of this chapter. The Director may either allocate a particular amount of water to a given customer, require an unmetered customer to immediately be metered at the customer' s cost, and transitioned to the metered rate, require installation of a flow restriction device, or discontinue water service, or any combination thereof, in the Director' s discretion, as provided in this section:

A. Upon issuance of the third notice of water waste during either the Basic Stage or Stage One Drought.

B. Upon issuance of the second notice of water waste during either a Stage Two or Stage Three Drought.

C. Immediately and without any prior notice of water waste during either a Stage Four or Stage Five Drought, or during any stage when water waste is intentional or flagrant.

Allocations for nonresidential customers shall be in amounts determined by the Director. Allocations for residential customers shall be 300 gallons per day per dwelling unit. If water service is discontinued due to violations of this chapter, a reconnection fee of one hundred ($100) dollars per event will be charged. (Ord. 3834 § 3 (part), 2002: Ord. 2413 § 2 (part), 1991.)

Section 14.09.150 Surcharge for exceeding allocation.

Where an allocation of water has been established pursuant to this chapter, a customer exceeding the allocation shall pay a surcharge, in addition to any other water rate applicable, as follows:

A. One dollar ($1.00) per 100 cubic-feet for any amount exceeding the water allocation up to 120% of the allocation.

B. Two dollars ($2.00) per 100 cubic-feet for any amount of water exceeding 120% of the allocation up to 140% of the allocation.

C. Five dollars ($5.00) per 100 cubic-feet for any amount in excess of 140% of the allocation.

(Ord. 3034 § 3 (part), 2002: Ord. 2817 § 1 (part), 1994: Ord. 2413 § 2 (part), 1991.)

Section 14.09.160 Water waste violation unlawful.

It is unlawful for any person to waste water or to violate any provision of this chapter. Such violation may be charged as an infraction or a misdemeanor in the discretion of the City Attorney. (Ord. 2413 § 2 (part), 1991.)

Section 14.09.170 Violation declared a nuisance.

Violation of any provision of this chapter adversely and seriously affects the public health, safety and welfare, and is hereby declared to be a public nuisance which may be abated. (Ord. 2413 § 2 (part), 1991.)

Section 14.09.180 Remedies cumulative.

All remedies provided by this chapter for violations, whether criminal, civil or administrative, are cumulative, and are in addition to both each other and to any other remedy provided by law. (Ord. 2413 § 2 (part), 1991.)

Section 14.09.190 Chapter severable.

The provisions of this chapter are severable. The City Council declares that it would have adopted the remainder of this chapter even if any of its provisions are declared unlawful or unenforceable. (Ord. 2413 § 2 (part), 1991.)

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