San Jose Municipal Water System

2010 Urban Water Management Plan

Final – June 2011

Prepared for

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1
Plan Preparation

1.1 INTRODUCTION

The 1983 California Urban Water Management Act (Act), also referred to as Assembly Bill 797, requires all urban water suppliers who directly serve 3,000 or more customers or who provide 3,000 or more acre feet of water per year to prepare an Urban Water Management Plan (Plan). The purpose of the Act is to ensure that water suppliers plan for the long-term conservation and efficient use of the State's limited urban water supplies. The City of San José (City) submitted its first Plan in 1985 in compliance with the Act. Updates to the Plan are required every five years. The City prepared updates to the Plan in 1990, 1995, 2000, and 2005. The normal cycle requires that the Plan be submitted in December of years ending in five and zero. Recent changes in the Plan requirements have necessitated the need for State law to extend the 2010 deadline to July 1, 2011. However, this Plan is referred to as the 2010 Plan to retain consistency with the five-year submittal cycle.

Current Plan requirements incorporate State legislative mandates that have been enacted, in particular Senate Bill (SB) X7-7 Water Conservation Bill of 2009 and Assembly Bill (AB) 1420 Water Demand Management Measures, to ensure 20% water use reduction per capita by 2020. Specific requirements include identifying the base daily per capita water use (baseline), urban water use target, interim water use target, and compliance daily per capita water use.

The 2010 Plan must also include water deliveries and uses; water supply source; efficient water uses; and demand management measures, including implementation strategy and schedule. The California State Department of Water Resources (DWR) has the responsibility for the review and certification process of the Plan pursuant to the Act. A current Plan is required in order to be eligible for a water management grant or loan administered by DWR, the State Water Resources Control Board, or the Delta Stewardship Council.

Many methods are being practiced by the City to maximize water resources while minimizing the need to import supplies. The City has demonstrated its commitment to water conservation with the many programs that have been implemented and by the recognition that water conservation is a permanent and ongoing activity. Through its conservation activities, the City has managed to reduce demand and increase water supply reliability. By supplying the City's customers with water supplies from several different sources, the City achieves greater flexibility to monitor each source and ensure that high quality water is being delivered to customers. Additionally, the reuse of treated wastewater through the South Bay Water Recycling Program has also helped the City to conserve fresh water supplies.

This Plan examines the City's current and projected water supplies, demands, and sources; and discusses the City's conservation efforts and water shortage plan. Chapter 2 provides general information about the City's water system. Within Chapters 3 and 4 are discussions of water supplies and demands, including a supply/demand comparison through the year 2035. Chapter 5 details system reliability and describes the water shortage contingency plan, including the stages of action to be taken during drought years. Chapter 6 describes the City's demand management measures. Collectively, the Plan documents the City's planning efforts involved in ensuring a reliable, high quality, supply of water to the public.

1.2 COORDINATION AND PUBLIC NOTIFICATION

The City has encouraged community participation in its urban water management planning efforts since the first plan was developed in 1985. For this update, preliminary notifications were published in the local newspaper as shown in **Appendix A**. As required by the Water Conservation Bill of 2009, a formal public meeting was held on March 21, 2011 to receive public input on the following:

- Water use targets
- Method for determining the targets
- Economic impacts for SJMWS implementation plan for achieving the targets

Another public meeting is scheduled to allow the public to comment on the draft 2010 UWMP before City Council's approval. Notices for the public meetings were advertised in the local San Jose Mercury News and San Jose Post Record and posted on the City's internet website.

The City coordinated with several local agencies to encourage input and participation in its planning. To maintain a level of plan consistency, the City attended and participated in several meetings between other local retailers hosted by its wholesalers, Santa Clara Valley Water District (SCVWD) and San Francisco Public Utilities Commission (SFPUC). Notification letters were sent to local agencies and other water retailers informing them that the planning efforts were underway, and welcoming any comments or other participation. Coordination between the City and its wholesalers, SCVWD and SFPUC, was maintained throughout the planning process. By consulting with the planning documents completed by the wholesalers, including water supply studies and the Groundwater Management Plans, the City is better able to plan for future water supplies and minimize the need to import water from other regions by creating a realistic, consistent source supply plan. Additionally, as part of the City's General Plan Update process, the City established a forum for public participation, including participation from other water retailers and SCVWD, in which water management and conservation policies and coordination between future land uses and management of the urban water supply was discussed.

A Notice of Preparation of Urban Water Management Plan was sent to the following agencies listed in **Table 1-1**.

Table 1-1: List of Notified Agencies

Agency Name	
ALAMEDA COUNTY WATER DISTRICT	LOS TRANCOS COUNTY WATER DISTRICT
CITY OF HAYWARD	MID-PENINSULA WATER DISTRICT
CITY OF MILPITAS	NORTH COAST COUNTY WATER DISTRICT
CITY OF MOUNTAIN VIEW	SKYLINE COUNTY WATER DISTRICT
CITY OF PALO ALTO	WESTBOROUGH WATER DISTRICT
CITY OF SANTA CLARA	CALIFORNIA WATER SERVICE COMPANY
CITY OF SUNNYVALE	GREAT OAKS WATER COMPANY
PURISSMA HILLS WATER DISTRICT	SAN JOSE WATER COMPANY
CITY OF BRISBANE	CITY OF EAST PALO ALTO
CITY OF BURLINGAME	CITY OF GILROY

Agency Name	
CITY OF DALY CITY	CITY OF MORGAN HILL
TOWN OF HILSBOROUGH	COUNTY OF SANTA CLARA
CITY OF MENLO PARK	SANTA CLARA VALLEY WATER DISTRICT
CITY OF MILLBRAE	SAN FRANCISCO PUBLIC UTILITIES COMMISSION
CITY OF REDWOOD CITY	BAY AREA WATER SUPPLY & CONSERVATION AGENCY
CITY OF SAN BRUNO	
GUADALUPE VALLEY MUNICIPAL IMPROVEMENT DISTRICT	SAN JOSE/SANTA CLARA WATER POLLUTION PLANT
COASTSIDE COUNTY WATER DISTRICT	ESTERO MUNICIPAL IMPROVEMENT DISTRICT

Representative copies of postings and letters are included in **Appendix A**.

1.3 PLAN ADOPTION

A public hearing of the 2010 Plan must take place prior to or on the day of adoption by the City Council. Upon adoption of the Plan by City Council, implementation will take place as identified in the Plan. Submission of the adopted Plan to DWR, the California State Library, and Santa Clara County must take place within 30 days from the date of adoption. The Plan must then be made available to the public within 30 days of submission to DWR. The Plan will be made available via the internet at www.sjmuniwater.com. Below is the schedule for adoption and submittal.

Table 1-2: Schedule for Adoption and Submittal

Action	Completion Date
Public Meeting for Water Use Targets	March 21, 2011
Public Meeting for draft 2010 UWMP	May 23, 2011
Public Hearing and Adoption by City Council	June 7, 2011
Submittal to DWR, the California State Library, and Santa Clara County	July 1, 2011
Available to the public via internet	August 1, 2011

A copy of the resolution adopting the Plan is included in **Appendix B**.

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2
System Description

2.1 HISTORY

The City was founded in 1777 and incorporated in 1850. The City consists of 179.2 square miles. It is the third largest city in California following Los Angeles and San Diego, and it is the 10th largest city in the US. It is located in Santa Clara County, south of the San Francisco Bay and is the center of a large and expanding metropolitan area commonly known as Silicon Valley. The City is bordered by Santa Cruz Mountains on the west and the Diablo Mountain range on the east. The majority of the City lies in the bay flats with various hills subdividing the valley into smaller areas such as Almaden Valley, Blossom Valley, and Evergreen Valley.

Three water companies provide drinking water to the City: Great Oaks Water Company, San Jose Water Company, and the San Jose Municipal Water System (SJMWS). The first two are private retailers; whereas, SJMWS is operated by the City's Environmental Services Department. This Plan describes the water supply for SJMWS.

SJMWS entered the water business in May 1961 with the purchase of the Evergreen Water Company. The Evergreen system served a 6,000 acre franchise area with several hundred customers. The City was concerned that a safe, adequate and reliable supply of water be assured for new development within this and other areas newly annexed to the City. It was felt that the extension of City services and facilities to these newly annexed areas would greatly encourage their improvement and development. When the City of Alviso was annexed, SJMWS acquired the North San Jose and Alviso areas. The Edenvale service area was established in 1983, and the Coyote Valley service area was established in 1988.

2.2 ORGANIZATION STRUCTURE

The City operates under the Council/Manager form of government, a system that combines the policy leadership of elected officials in the form of a City Council, with the managerial expertise of an appointed City Manager. The Council is the legislative body that represents the community and is empowered by the City Charter to formulate citywide policy. The City Council is comprised of the Mayor, who is elected by the community at-large, and ten council members who are elected by districts. Under the City Charter, the Mayor is responsible for recommending policy, program and budget priorities to the City Council, which in turn approves policy direction for the City. The City Charter limits the Mayor and Council members from serving more than two consecutive terms.

The City Manager is appointed by the Council and serves as the chief administrative officer of the organization. The City Manager is responsible for administration of City affairs, day-to-day operations, and implementation of Council policies.

The City is organized by City Service Areas (CSAs) that best reflect the way the organization delivers services to the residents. A CSA represents the policy-making level for strategic planning, policy setting, and investment decisions in the critical functions the City provides to the community. SJMWS operates under the CSA of Environmental and Utility Services.

2.3 CLIMATE

The City has a semiarid, Mediterranean climate, characterized by warm dry summers and cool winters. Irrigation water demand is often high in the dry summer months and in winter is fulfilled by rainfall. The City averages 300 days of sunshine annually, with temperatures varying from an average of 50 degrees Fahrenheit in January to an average of 70 degrees in July with a mean precipitation of 15.08 inches. In addition to seasonal variation, the area's climate is subject to periodic droughts that impact water supply. An extreme single-year drought occurred in 1976, when annual rainfall amounted to only 7.2 inches, or about one-half of the average rainfall. A severe, prolonged drought occurred in the late 1980s and early 1990s; over a four-year period, where annual rainfall averaged only two-thirds of the annual average. The area has recently been in the midst of another dry period. Precipitation in 2007 was 7.09 inches, less than half of average rainfall and the lowest rainfall in over 50 years. The Desert Research Institute (DRI) reports that 2008 total precipitation for the City was 10.71 inches, or 73 percent of normal. Total precipitation in 2009 was 13.84 inches, slightly below normal. The cumulative precipitation from 2007 to 2009 indicates that the area has been in a multiple-year drought.

2.4 POPULATION

SJMWS currently provides water service to approximately 27,000 metered connections with a population of over 100,000. Population growth in SJMWS service areas is expected to increase in the next 25 years by approximately 65%. Population estimates as shown in **Table 2-1** were calculated using the DWR methodology, Category 2 since SJMWS service area is less than 95% of the city boundaries. Data from the 2000 Census was used in calculating SJMWS's year 2000 service area population. The population from the 2000 Census is available by Census Block, which is a relatively small geographic area smaller than a Census Tract. Census Blocks are available in GIS format and was used in conjunction with existing City service area GIS resources. Census blocks that are within SJMWS service area by 50% or more was used to determine the year 2000 population for SJMWS. The method is to use year 2000 single-family and multi-family connection and census data to develop a ratio of persons per connection for each of these connection types. The number of single-family and multi-family connections for the other years can then be used to scale the population of the respective years from the year 2000 persons per connection type ratio.

In general, as population increases, so does water demand. The population within SJMWS service area is expected to increase due to the proposed development identified within the Preferred Scenario of the draft Envision San Jose 2040 General Plan Update. Analysis of the Preferred Scenario was completed in late 2010, and reflects projected estimates and figures as available through approximately August, 2010. The service area with the greatest increase in population is in North San José, with a projected increase of over 67,000 people. Population is projected at 3.06 residents per dwelling unit, which is consistent with Department of Planning, Building and Code Enforcement's planning assumptions. Population is expected to increase at least five times over existing conditions. The phasing of the General Plan Update development areas was estimated from the City of San José's "Projections of Jobs, Population and Households". The report provides projections of the total population and jobs in the City from 2020 to 2040.

Table 2-1: Population Projections for SJMWS

	2010	2015	2020	2025	2030	2035
SJMWS Service Area[1]	114,974	135,821	147,091	160,303	175,459	189,644

1. Service area population is defined as the population served by the distribution system.

2.5 DEMOGRAPHICS

The City is in the process of updating its General Plan (Envision San Jose 2040). It is anticipated that Envision San Jose 2040 will be adopted by October 2011. The Preferred Scenario of the draft Envision San Jose 2040 General Plan identifies the addition of 120,000 dwelling units and 470,000 new jobs throughout the city limits. The additional housing and employment will have a significant impact within SJMWS service area as shown in **Table 2-2**.

Table 2-2: Proposed 2040 Additional Dwelling Units and Jobs within SJMWS

	Dwelling Units			Number of Jobs By Job Category					
	Total MFD	Total SFD	TOTAL	Industrial	Office	Retail	Restaurant	Institutional	TOTAL
North San Jose/Alviso	21,637	120	**21,757**	15,484	73,377	2,791	310	100	**92,062**
Evergreen	2,832	366	**3,198**	18	15,676	2,512	279	1,491	**19,976**
Edenvale	0	0	**0**	9,000	7,000	0	0	0	**16,000**
Coyote Valley	0	0	**0**	0	50,000	0	0	0	**50,000**
Total	**24,469**	**486**	**24,955**	**24,502**	**146,053**	**5,303**	**589**	**1,591**	**178,038**

Additional demographic information for the entire city can be found in **Appendix C**.

2.6 SERVICE AREA BOUNDARIES

SJMWS services four different areas of the city: North San Jose/Alviso, Evergreen, Edenvale, and Coyote Valley (**Figure 2-1**).

NORTH SAN JOSE/ALVISO

The North San Jose/Alviso service area consists of 5,600 acres and extends from Trimble Road on the south to the Alviso Slough on the north. The area is bordered on the west by the Guadalupe River and on the east by the Coyote Creek. The land use is predominantly industrial, with some residential and commercial.

EVERGREEN

The Evergreen Service Area extends from Highway 101 on the west to the foothills of the Mount Diablo Range on the east. The area is bounded on the north by Tully Road and on the south by

the City limits. The current land use in Evergreen is predominantly residential (94%) and commercial (5%). The service area contains approximately 10,750 acres.

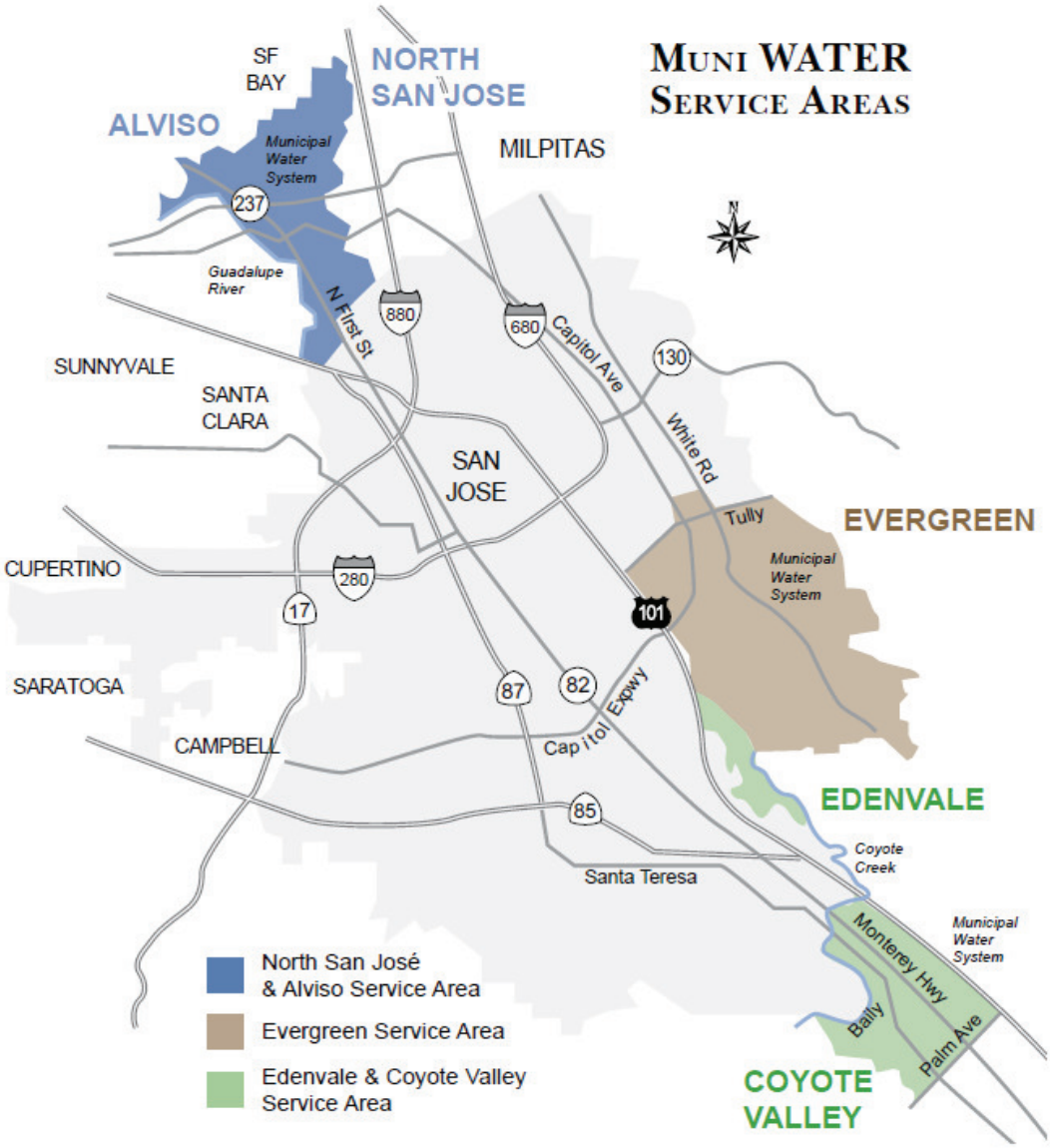
EDENVALE

The Edenvale service area is located east of Coyote Creek and south of Hellyer Avenue. Covering about 700 acres, Edenvale is zoned for industrial and commercial use.

COYOTE VALLEY

The Coyote Valley service area is located west of Highway 101, south of Tulare Hill, and north of Palm Avenue. The area includes approximately 7,500 acres and is currently largely undeveloped (not including 51% as permanent open space lands).

Figure 2-1: City of San Jose Municipal Water System Boundaries



3
Demand

3.1 HISTORY

Water use has climbed steadily from 1978 until 1988, when it began to decline in response to a drought-related water conservation and allocation program. Since 1991, when water usage reached its lowest level in response to enforced drought-related conservation measures, the use of water has been steadily increasing in SJMWS service areas. In 1993, total water usage had recovered from the drought, surpassing the previous high usage year of 1987. Water use in more recent years decreased because of drought, weather, and economic factors. **Table 3-1** reflects the total yearly water use in acre-feet per year (AFY) by SJMWS since 1985.

Table 3-1: Historical and Present Water Production in SJMWS Service Areas (AFY)

Year	SFPUC	SCVWD	Evergreen Wells	NSJ Wells	Edenvale Wells	Coyote Wells	Recycled Water	SJMWS Total[1]
1985	3,255	8,083	810	138	124			**12,410**
1986	3,382	8,535	900	65	102			**12,984**
1987	3,426	8,853	1,133	269	135			**13,816**
1988	2,638	9,244	855	615	157	40		**13,549**
1989	2,649	8,783	82	48	101	41		**11,704**
1990	2,512	9,118	40	540	114	52		**12,376**
1991	1,913	8,280	11	924	99	46		**11,273**
1992	2,443	10,198	11	811	123	57		**13,643**
1993	3,057	10,256	14	517	95	48		**13,987**
1994	3,390	11,237	6	541	98	55		**15,327**
1995	4,139	11,060	40	7	92	59		**15,397**
1996	4,474	11,846	11	117	111	54		**16,613**
1997	4,686	13,795	5	189	112	70		**18,857**
1998	4,539	12,104	6	354	121	52		**17,176**
1999	4,989	13,750	5	0	234	35	916	**19,929**
2000	5,303	14,285	1	0	500	64	1,384	**21,537**
2001	5,207	14,805	2	0	605	74	1,787	**22,480**
2002	5,207	15,275	1	0	577	73	1,720	**22,853**
2003	5,171	15,541	4	0	580	59	1,963	**23,318**
2004	5,300	16,561	0	0	535	61	2,333	**24,790**
2005	4,848	15,384	0	0	563	324	3,066	**24,185**
2006	5,113	15,776	0	0	404	393	3,151	**24,837**
2007	5,358	16,576	0	0	424	373	3,694	**26,425**
2008	5,283	16,217	0	0	409	377	4,225	**26,511**
2009	4,784	14,864	0	0	383	429	3,861	**24,321**
2010	4,592	13,692	0	0	338	329	3,345	**22,296**

1. Discrepancies between the noted water production in **Table 3-1** and water demands in **Chapter 3.4** are due to dissimilar billing cycles.

3.2 BASELINE WATER USE

In accordance with the Water Conservation Bill of 2009, water suppliers must define a 10- or 15-year water use period for use as the basis for calculating the base daily per capita water use in gallons per capita per day (gpcd). This value serves as the baseline for computing required future water use reductions. A 5-year base period is used to calculate the minimum water use reduction requirement.

For recycled water retailers, there is the option to use a base period of up to 15 years. The baseline determination is dependent on recycled water use during 2008 as a percentage of total retail water delivery. If the recycled water use in 2008 was greater than 10% of the total retail water delivery, then the retailer has the option to use a 15-year baseline. While the City is eligible for the 15-year period based on its 2008 recycled water use, connection data (and therefore population estimates) are not available for earlier years. Based on the limited population data, the City has opted to use a 10 year base period.

The 5- and 10-year base period determination is shown in **Table 3-2**. The selected period is representative of long-term water use for the City; water use in more recent years was artificially low because of drought, weather, and economic factors.

Table 3-2: Base Water Use Periods

Parameter	Value
2008 total water deliveries (potable and recycled)	26,511 AFY
2008 total volume of delivered recycled water	4,225 AFY
2008 recycled water as a percent of total deliveries	16%
Year beginning 10-year base period range[1]	1997
Year ending 10-year base period range	2006
Year beginning 5-year base period range	2003
Year ending 5-year base period range	2007

1. While the City is eligible for the 15-year period based on its 2008 recycled water use, connection data (and therefore population estimates) were not available for earlier years. As such, the baseline per capita determination defaults to the 10-year range.

Table 3-3 and **Table 3-4** show the gross water use for each year within the 5- and 10-year base periods as well as the baseline daily per capita water use.

Table 3-3: Base Daily per Capita Water Use (10-year Range)

Year	Service Area Population	Gross Water Use (MGD)	Daily per capita water use (gpcd)
1997	84,971	16.83	198
1998	88,788	15.33	173
1999	94,147	16.97	180
2000	97,504	17.99	185
2001	100,613	18.47	184
2002	103,647	18.68	180
2003	105,440	19.06	181
2004	108,698	20.02	184
2005	113,281	18.85	166
2006	114,230	19.36	169
Base Daily Per Capita Water Use (1997-2006)			**180**

Table 3-4: Base Daily per Capita Water Use (5-year Range)

Year	Service Area Population	Gross Water Use (MGD)	Daily per capita water use (gpcd)
2003	105,440	19.06	181
2004	108,698	20.02	184
2005	113,281	18.85	166
2006	114,230	19.36	169
2007	114,831	20.29	177
Base Daily Per Capita Water Use (2003-2007)			**176**

The base daily per capita water use for 1997-2006 is 180 gpcd as shown on **Table 3-3**. The population estimates were calculated using the DWR methodology and 2000 US Census data. Base daily per capita water use during the 5-year base period was 176 gpcd, as shown on **Table 3-4**. Because the 5-year base daily per capita water use is greater than 100 gpcd, the minimum water use reduction requirement must be calculated to determine whether the City's 2015 and 2020 water use targets exceed the minimum water use reduction requirement (per Section 10608.22 of the Water Code). The 2020 per capita water use target must be less than the minimum water use reduction target of 95% of the 5-year base daily per capita water use.

3.3 URBAN WATER USE TARGETS

Four methods are allowed by Water Conservation Bill of 2009 for calculating the 2015 and 2020 water use targets. Urban Water Use Target Method 1 (80% of 10-Year Base Daily Per Capita Water Use) was used to determine the City's urban water use target, because it is the most applicable to available data as well as the water use and demographic characteristics of the service area. The baseline and targets were developed individually (i.e., for SJMWS service area only), but the City is considering options for regional alliances. By 2020, daily per capita water use must be 80% of the 10-year base daily per capita water use. By 2015, daily per capita water use must be halfway between the 10-year base daily per capita water use and the 2020

target. A summary of the baselines, Method 1 targets, and minimum water use reduction values are presented in **Table 3-5**.

Table 3-5: Base Daily per Capita Water Use and Targets

Parameter	Daily per capita water use (gpcd)
10-year base daily per capita water use (1997-2006)	180
5-year base daily per capita water use (2003-2007)	176
2020 minimum water use target (95% of 5-year baseline)	167
Method 1 2015 water use target (90% of 10-year baseline)	**162**
Method 1 2020 water use target (80% of 10-year baseline)	**144**

The Method 1 2020 target of 144 gpcd is below the minimum water use target of 167 gpcd; therefore, no adjustment to the 2020 target is necessary.

3.4 WATER DEMANDS AND DEMAND PROJECTIONS

Past, current, and projected water use in SJMWS service areas are summarized by classification of the water delivered to all customers in **Table 3-6**, and by service area in **Table 3-7**. SJMWS supplies water to meet the demands of the population within its service areas and does not supply the potable demands of any other city, local agencies or environmental needs. Population is a primary factor affecting urban water demand. Prior to 1995, demand for service connections was growing at about 600 service connections per year; between 2000 and 2004 the demand for service connections grew at about 500 service connections per year. The addition of service connections has been slower over the past several years due to economic factors. The present and projected water demands for SJMWS are shown in **Table 3-6**, which show that SJMWS will experience significant growth in demand. It is anticipated that the demand will more than double from 2010 to 2035. The increase in demand is attributable to the proposed development projects as identified within the draft Envision San Jose 2040 General Plan Update. Some demand reduction as a result of conservation is included within the projected demands, particularly within the residential sectors. Decreased demand from 2005 to 2010 reflects the economic downturn.

Table 3-6: Past, Current, and Projected Water Use for SJMWS (AFY)

Customer Type	2005	2010	2015	2020	2025	2030	2035
Single family residential	10,235	9,280	10,925	10,940	10,950	10,961	10,975
Multi-family residential	3,224	2,050	3,724	4,480	4,985	5,517	6,245
Commercial	1,958	1,178	4,925	6,370	8,064	10,006	11,824
Industrial	2,072	2,303	2,954	3,341	3,794	4,315	4,802
Institutional/Governmental	0	327	51	76	106	140	171
Irrigation	4,429	3,047	4,310	4,310	4,310	4,310	4,310
Other Temporary	107	15	101	101	101	101	101
Total Potable	**22,025**	**18,200**	**26,991**	**29,618**	**32,309**	**35,349**	**38,428**
Total incl. Recycled Water	**25,092**	**21,545**	**32,139**	**35,227**	**38,459**	**42,119**	**45,779**

Table 3-7: Projected Demand for SJMWS by Service Area (AFY)

Service Area	2005	2010	2015	2020	2025	2030	2035
North San Jose/Alviso	5,047	4,535	7,183	8,099	8,833	9,635	10,589
Evergreen	15,912	12,891	16,185	16,592	17,019	17,503	17,986
Edenvale	717	443	1,678	2,230	2,876	3,618	4,312
Coyote	349	330	1,945	2,698	3,580	4,593	5,540
Total Potable	**22,025**	**18,200**	**26,991**	**29,618**	**32,309**	**35,349**	**38,428**
Total incl. Recycled Water	**25,092**	**21,545**	**32,139**	**35,227**	**38,459**	**42,119**	**45,779**

Table 3-8 provides all other water uses and losses that are not accounted for in the past, current, and projected demands associated with user demand. System losses are estimated to be approximately 3% of potable water demands. Saline water intrusion barriers, groundwater recharge, and conjunctive use are not shown below since these uses are managed by SCVWD and are reflected in SCVWD's UWMP for the entire County.

Table 3-8: Additional Water Uses and Losses for SJMWS (AFY)

Water Use	2005	2010	2015	2020	2025	2030	2035
Recycled Water	3,066	3,345	5,149	5,609	6,150	6,770	7,351
System Losses	753	646	810	889	969	1,060	1,153
Total	**3,819**	**3,991**	**5,959**	**6,498**	**7,119**	**7,830**	**8,504**

LOWER INCOME HOUSING WATER USE PROJECTION

Section 10631.1 (a) of the California Water Code requires that the water use projections specifically identify the projected water use for lower income single-family and multi-family residential homes. **Table 3-9** provides the water use projection for lower income households within SJMWS service area (these demands are already included in **Table 3-6** and **Table 3-7**). The current percentage of lower income housing within SJMWS service area is approximately 15.5% of the total lower income housing within the entire City. Assuming the same percentage will be maintained to meet the RHNA goal, an additional 2,026 multi-family dwelling units will be constructed within SJMWS service area between 2007 and 2014 for lower income housing. This

will result in an overall lower income housing demand of 925 AFY by 2015. Projections for additional units beyond 2014 are unknown at this time; however, for planning purposes, the amount of lower income water demand as a percentage of total water demand is assumed to remain constant. Currently, lower income demands are approximately 6% of the overall demands. The projected lower income demands are estimated to be 6% of the total projected residential demands.

Table 3-9: Lower Income Projected Water Use for SJMWS (AFY)

Customer Type	2015	2020	2025	2030	2035
Single family residential	4	4	4	4	4
Multi-family residential	921	921	952	985	1,029
Total Water Use	**925**	**925**	**956**	**989**	**1,033**

WATER DEMAND PROJECTIONS FOR WHOLESALE WATER AGENCIES

Below in **Table 3-10** are the projected demands given to each wholesale water agency that SJMWS receives water from. A copy of the documentation provided to the wholesale agencies is provided in **Appendix D**. No water is sold to other agencies by SJMWS.

Table 3-10: Water Demand Projections for Wholesale Water Agencies (AFY)

Customer Type	Contracted Volume	2015	2020	2025	2030	2035
SFPUC	5,039	5,039	5,039	5,039	5,039	5,039
SCVWD	17,500	16,185	16,592	17,019	17,500	17,500

3.5 WATER USE REDUCTION PLAN

Based on the projected population estimates (**Table 2-1**) and the projected water use (**Table 3-6**), additional conservation will be required to meet the water use targets. **Table 3-11** details the targets and projected water demands from 2015 through 2035 and the amount of additional conservation required to meet those targets.

Table 3-11: Past, Current, and Projected Water Use for SJMWS

Customer Type	2015	2020	2025	2030	2035
Population Estimate	135,821	147,091	160,303	175,459	189,644
Target Water Use Rates (gpcd)	162	144	144	144	144
Target Water Use (AFY)	24,646	23,726	25,857	28,302	30,590
Projected Water Use (AFY)	26,991	29,618	32,309	35,349	38,428
Additional Water Reduction Required	**2,345**	**5,892**	**6,452**	**7,047**	**7,838**

In an effort to meet the projected water use targets, SJMWS is currently working in cooperation with SCVWD and other agencies to increase efforts to conserve water and decrease potable water demand, and to evaluate possibilities for further demand reduction in areas of increased commercial/industrial/institutional use where increased population growth is not expected. SJMWS may also use revised methodologies issued by DWR before 2015 to revise its 2015

and 2020 targets, or it may join regional alliances. These are in addition to SJMWS' current efforts to implement water conservation.

In August 2008, the City's Environmental Services Department prepared a Water Conservation Plan. This three-year plan formalizes the city's commitment to a more sustainable water supply. The plan relies on tools and programs such as outreach and education, cost-sharing programs with SCVWD for residential and commercial users, legislative priorities, Water Shortage Contingency Plan and Drought Plan, conservation pricing, and partnerships (San José August 2008). A new Water Conservation Plan will be prepared in late 2011/early 2012.

The City is also a signatory to the California Urban Water Conservation Council (CUWCC) Memorandum of Understanding (MOU). It has committed to the implementation of the Best Management Practices (BMPs) described in the MOU and summarized below:

- Utility Operations Programs
- Education Programs
- Residential Programs
- Commercial, Industrial, and Institutional Programs
- Landscape Programs

The goals and implementation of these BMPs are further discussed in **Chapter 6** (Demand Management Measures). The City's Water Conservation Plan is included as **Appendix E**.

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4
System Supplies

4.1 SOURCES OF SUPPLY

SJMWS relies on four sources of supply: surface water from SFPUC, local and imported surface water from SCVWD, groundwater from the Santa Clara groundwater basin, and recycled water from the South Bay Water Recycling (SBWR) Program. Supply sources received by SJMWS and discussed within this chapter are generally considered consistent sources, except during times of prolonged drought, during which time supplies are decreased in proportion to wholesale supplies available as discussed in Chapter 5. **Table 4-1** depicts the amount of supply from each source that was purchased in 2010 and is anticipated to be purchased in the future as determined by the City.

Table 4-1: Water Supplies – Current and Projected in a Normal Year for SJMWS (AFY)

Water Supply Sources	2010	2015	2020	2025	2030	2035
SFPUC	4,592	5,039	5,039	5,039	5,039	5,039
SCVWD	13,692	16,185	16,592	17,019	17,500	17,500
Groundwater	668	5,767	7,988	10,251	12,809	15,888
Recycled Water	3,339	5,148	5,609	6,150	6,770	7,351
Total:	**22,291**	**32,139**	**35,228**	**38,459**	**42,118**	**45,778**

Each of the four service areas is supplied by one or more of the water supply sources described in **Table 4-1**.

NORTH SAN JOSE/ALVISO

The area is served through two service connections to SFPUC Bay Division Pipelines 3 and 4. The turnouts feed the demand of the distribution system and storage requirements of the two reservoirs. There are pump station facilities at each of the reservoirs. There is only one pressure zone in this service area. The pumping facilities are used to boost the pressure of water stored in the reservoirs from elevation head to system pressure. There are four groundwater wells with a pumping capacity of approximately 1,500 gpm each; two of the wells are currently permitted to be used under normal conditions to supply water, and two are available for emergency use purposes.

EVERGREEN

Three turnouts are connected to SCVWD's East Pipeline. There are five different pressure zones with 13 storage tanks and 13 pump stations. There are four stand-by groundwater wells with a pumping capacity of approximately 1,500 gpm each that can be used for emergencies.

EDENVALE

Three groundwater wells, with a combined pumping capacity of approximately 3,400 gpm each, pump groundwater to the distribution system and a storage tank.

COYOTE VALLEY

Four groundwater wells, with a combined pumping capacity of approximately 5,500 gpm each, pump groundwater to the distribution system and a storage tank.

4.2 SFPUC – WHOLESALER (SURFACE WATER)

The City receives water from the City and County of San Francisco's Regional Water System (RWS), operated by SFPUC. This supply is predominantly from the Sierra Nevada, delivered through the Hetch Hetchy aqueducts, but also includes treated water produced by SFPUC from its local watersheds and facilities in Alameda and San Mateo Counties.

The amount of imported water available to SFPUC's retail and wholesale customers is constrained by hydrology, physical facilities, and the institutional parameters that allocate the water supply of the Tuolumne River. Due to these constraints, SFPUC is very dependent on reservoir storage to firm-up its water supplies.

SFPUC serves its retail and wholesale water demands with an integrated operation of local Bay Area water production and imported water from Hetch Hetchy. In practice, the local watershed facilities are operated to capture local runoff.

The business relationship between San Francisco and its wholesale customers is largely defined by the "Water Supply Agreement between the City and County of San Francisco and Wholesale Customers in Alameda County, San Mateo County and Santa Clara County" entered into in July 2009 (WSA). The new WSA replaced the Settlement Agreement and Master Water Sales Contract that expired June 2009. The WSA addresses the rate-making methodology used by San Francisco in setting wholesale water rates for its wholesale customers in addition to addressing water supply and water shortages for the RWS. The WSA has a 25 year term.

In terms of water supply, the WSA provides for a 184 million gallon per day (MGD, expressed on an annual average basis) "Supply Assurance" to the SFPUC's wholesale customers, subject to reduction, to the extent and for the period made necessary by reason of water shortage, due to drought, emergencies, or by malfunctioning or rehabilitation of the regional water system. The WSA does not guarantee that San Francisco will meet peak daily or hourly customer demands when their annual usage exceeds the Supply Assurance. The SFPUC's wholesale customers have agreed to the allocation of the 184 MGD Supply Assurance among themselves, with each entity's share of the Supply Assurance set forth in Attachment C to the WSA. The Supply Assurance survives termination or expiration of the WSA and the City's Individual Water Sales Contract with San Francisco.

The Water Shortage Allocation Plan between the SFPUC and its wholesale customers, adopted as part of the WSA in July 2009, addresses shortages of up to 20% of system-wide use. The Tier 1 Shortage Plan allocates water from the RWS between San Francisco Retail and the wholesale customers during system-wide shortages of 20% or less. A Tier 2 Shortage Plan was

adopted by the wholesale customers, which would allocate the available water from the RWS among the wholesale customers.

The City of San Jose and City of Santa Clara's Agreement with SFPUC provides that both cities will remain temporary and interruptible customers until 2018. The maximum amount that SFPUC will deliver to them collectively until 2018 is 9 MGD or 10,082 AFY. The contract with SFPUC is temporary in that it provides an assurance of supply only until December 2018. By December 2018, SFPUC will make further decisions on future water supply beyond 2018, after completing necessary cost analyses and California Environmental Quality Act (CEQA) evaluation/documentation. The supply is interruptible before December 2018 if the SFPUC determines that aggregate use by all wholesale customers will exceed 184 MGD in 2018. The supply cannot be interrupted until five years after the City has received notice of SFPUC's intention to reduce or interrupt deliveries.

As part of the new WSA with SFPUC, SJMWS may purchase excess water, provided the combined purchases of SJMWS and the City of Santa Clara do not exceed 9 MGD. SJMWS may also purchase excess water supplies from other wholesale customers. There are no assurances that this excess water will be available and excess supply is not included in **Table 4-1** and **Table 4-2**. However, SJMWS is committed to purchasing the maximum amount of water available and reducing its reliance on groundwater due to the uncertainties regarding the availability and sustainability of the groundwater basin.

For the purposes of this Plan, it is assumed that the supply available to SJMWS will remain the same through 2035. This is an extrapolation of current and historical water deliveries, as these deliveries have been fulfilled for over three decades. Therefore, such extrapolation is a reasonable planning assumption based on available data.

BAWSCA

SJMWS is a member of the Bay Area Water Supply and Conservation Agency (BAWSCA). BAWSCA was created on May 27, 2003 to represent the interests of the 26 agencies that include cities, water districts, a water company, and a university, in Alameda, Santa Clara and San Mateo counties that purchase water on a wholesale basis from the RWS. The BAWSCA agencies are referred to as the Wholesale Customers.

BAWSCA is the only entity that has the authority to directly represent the needs of the Wholesale Customers that depend on the RWS. Through BAWSCA, the Wholesale Customers can work with SFPUC on an equal basis to ensure the RWS is rehabilitated and maintained and to collectively and efficiently meet local responsibilities.

BAWSCA has the authority to coordinate water conservation, supply and recycling activities for its agencies; acquire water and make it available to other agencies on a wholesale basis; finance projects, including improvements to the regional water system; and build facilities jointly with other local public agencies or on its own to carry out the agency's purposes.

4.3 SCVWD – WHOLESALER (SURFACE WATER)

SCVWD's water supply system is comprised of storage, conveyance, recharge, treatment, and distribution facilities that include local reservoirs, the groundwater subbasins, groundwater

recharge facilities, treatment plants, a treated water transmission system, imported supply, and raw and treated water conveyance facilities. SCVWD supplies water to local retail water agencies which in turn provide it to their retail customers in Santa Clara County. SCVWD has an active conjunctive water management program to optimize the use of groundwater and surface water, and to prevent groundwater overdraft and land subsidence. Nearly half of the County's water supply is from local groundwater aquifers and more than half is imported from Northern California watersheds through State Water Project (SWP) and Central Valley Project (CVP) pumping stations in the Sacramento-San Joaquin Delta. Both groundwater and imported water are sold to retailers.

Imported water is conveyed to Santa Clara County through two main conveyance facilities: the South Bay Aqueduct, which carries SWP water from the South Bay Pumping Plant; and the Santa Clara Conduit and Pacheco Conduit, which bring CVP water from the San Luis Reservoir.

Local runoff is captured in local reservoirs for recharge into the groundwater subbasins or treatment at one of the District's Water Treatment Plants (WTPs). The total storage capacity of these reservoirs is about 170,000 acre-feet (AF). The Rinconada WTP was constructed in 1967 and can sustain a maximum flow rate of 75 MGD. Upgrades are in the planning stage to increase production at Rinconada to 100 MGD. The Penitencia WTP was constructed in 1974 and can sustain a maximum flow rate of 42 MGD. The Santa Teresa WTP was constructed in 1989 and can sustain a maximum flow rate of 100 MGD.

Treated water pipelines that distribute water from the treatment plants to the water retail agencies include the West Pipeline, the Campbell Distributary, the Santa Clara Distributary, the Mountain View Distributary and the Sunnyvale Distributary from Rinconada WTP; the Snell Pipeline and Graystone Pipeline from Santa Teresa WTP; and the East Pipeline, Parallel East Pipeline, and Milpitas Pipeline, which can be fed from the Santa Teresa WTP or from Penitencia WTP.

SJMWS receives water from SCVWD's Santa Teresa and Penitencia WTPs through the East and Snell Pipelines. In 1972, SCVWD entered into the first contract to supply SJMWS with imported water. Another contract initiated in 1981 remains in effect until 2051. The contract established a schedule of water deliveries where SJMWS submits a projected request for a five-year period to facilitate planning and SCVWD contracts annually for minimum deliveries, with restrictions based on peak demand and annual distribution. SJMWS may have access to additional water above the amount indicated in **Table 4-2**, as available.

Table 4-2 shows the existing and planned contract amount for each wholesaler.

Table 4-2: Wholesale Supplies – Existing and Planned Treated Water Sources for SJMWS (AFY)

Wholesale Sources	Contracted	2015	2020	2025	2030	2035
SFPUC[1]	5,039	5,039	5,039	5,039	5,039	5,039
SCVWD[2]	17,500	16,185	16,592	17,019	17,500	17,500
Total	**22,539**	**22,539**	**22,539**	**22,539**	**22,539**	**22,539**

1. SFPUC contract amount may change after 2018 as discussed in Chapter 4.2.
2. SCVWD contract amount is based on 5-yr projection by SJMWS as discussed in Chapter 4.3.

4.4 GROUNDWATER

Groundwater provides about half of the County's water supply for potable use, through pumping by retail water agencies or individual well owners. The groundwater basin in Santa Clara County is not adjudicated and has not been identified or projected to be in overdraft by DWR. The quality, supply, and management of the local groundwater basin is monitored and managed by SCVWD and is summarized in their Groundwater Management Plan (**Appendix F**), adopted in 2001.

SCVWD operates and maintains 18 major recharge ponds, with a combined surface area of more than 320 acres, and over 30 local creeks. Runoff is captured in SCVWD's reservoirs and released into both in-stream and off-stream recharge ponds for percolation into the groundwater basin. In addition, imported water is delivered by the raw water conveyance system to streams and ponds for groundwater recharge. The capacity of these recharge systems is 138,000 AF.

The groundwater system in Santa Clara County performs multiple functions: treatment, transmission, and storage. Water enters the groundwater subbasins through recharge areas generally located at or near the subbasins' perimeter, and is transmitted into the deeper confined aquifer of the central part of the valley. In the process, the water is filtered and becomes suitable for drinking. Eventually the groundwater reaches pumping zones, where it is extracted for municipal, industrial, and agricultural uses. The groundwater basin has vast storage capacity, enabling supplies to be carried over from wet years to dry years.

Within Santa Clara County, SCVWD manages two groundwater subbasins that transmit, filter, and store water: the Santa Clara Subbasin (DWR Subbasin 2-9.02) and the Llagas Subbasin (DWR Subbasin 3.301). In its water supply planning, SCVWD frequently splits the Santa Clara Subbasin into two subareas: the Santa Clara Plain and the Coyote Valley. Although part of the same subbasin, these two subareas have different groundwater management challenges and opportunities and are in different groundwater charge zones.

These subbasins contain young alluvial fill formation and the older Santa Clara Formation. Both formations are similar in character and consist of gravel, sandy gravel, gravel and clay, sand, and silt and clay. The coarser materials are usually deposited along the elevated lateral edges of the subbasins, while the flat subbasin interiors are predominantly thick silt and clay sections inter-bedded with smaller beds of clean sand and gravel. A general discussion of each groundwater subarea is provided below.

SANTA CLARA SUBBASIN - SANTA CLARA PLAIN

The Santa Clara Plain is part of the Santa Clara Subbasin, located in a structural trough that is bounded by the Santa Cruz Mountains to the west and the Diablo Range to the east. The Plain, which is approximately 22 miles long, narrows from a width of 15 miles near the County's northern boundary to about half a mile wide at the Coyote Narrows, where the two ranges nearly converge. The Plain has a surface area of 225 square miles and is approximately 15 square miles smaller than the Santa Clara Subbasin (Basin 2-9.02) as defined by the DWR in Bulletin 118, Update 2003, since it does not include the Coyote Valley portion of the Santa Clara Subbasin. Although hydraulically connected, SCVWD refers to the Coyote Valley separately (see description below) since it is in a different groundwater charge zone than the Santa Clara Plain and has fewer water supply options than the Santa Clara Plain. The Plain

underlies the northerly portion of the Santa Clara County and includes the majority of the streams and recharge facilities operated by the District.

SANTA CLARA SUBBASIN - COYOTE VALLEY

The Coyote Valley portion of the Santa Clara Subbasin is an alluvial-filled basin hydraulically connected to the Santa Clara Plain to the north. The Coyote Valley extends from Metcalf Road south to Cochrane Road, where it joins the Llagas Subbasin at a groundwater divide. The Coyote Valley is approximately seven miles long and ranges in width from a half mile at the Coyote Narrows to three miles, with a surface area of approximately 15 square miles. The District estimates the operational storage capacity of the Coyote Valley to be between 23,000 and 33,000 AF.

LLAGAS SUBBASIN

The Llagas Subbasin extends from the groundwater divide at Cochrane Road, near Morgan Hill, to the Pajaro River (the Santa Clara-San Benito County line) and is bounded by the Diablo and Coast Ranges. The Llagas Subbasin is approximately 15 miles long, three miles wide along its northern boundary, and six miles wide along the Pajaro River. DWR Bulletin 118, Update 2003 identifies this subbasin as Basin 3-3.01 and includes it as part of the Gilroy Hollister Groundwater Basin. The depth of alluvial fill and the underlying Santa Clara Formation varies from about 500 feet at the northern divide to greater than 1,000 feet at its south end. SCVWD estimates the operational storage capacity of the Llagas Subbasin to be between 150,000 and 165,000 AF.

SJMWS

Groundwater is a source of supplemental water supply for SJMWS's North San Jose/Alviso and Evergreen service areas. The Edenvale and Coyote Valley service areas are supplied entirely by groundwater. SJMWS draws groundwater from the Santa Clara Subbasin. The Coyote Valley groundwater wells draw from the Coyote Valley subarea; whereas, the other service areas draw from the Santa Clara Plain subarea (**Figure 4-1**). During the past five years, SJMWS's groundwater demands have been sufficiently met. **Table 4-3** shows the historical volume pumped from each subarea. **Table 4-4** shows the projected groundwater demands for each subarea of the Santa Clara Subbasin.

Table 4-3: Groundwater – Historical Volume Pumped (AFY)

Subareas	2005	2006	2007	2008	2009	2010
Santa Clara Plain	563	404	424	409	383	340
Coyote Valley	324	393	373	377	429	329
Total	**887**	**797**	**797**	**786**	**812**	**669**

Table 4-4: Groundwater – Projected Volume to be Pumped (AFY)

Subareas	2010	2015	2020	2025	2030	2035
Santa Clara Plain	340	3,822	5,290	6,671	8,216	10,348
Coyote Valley	329	1,945	2,698	3,580	4,593	5,540
Total	**669**	**5,767**	**7,988**	**10,251**	**12,809**	**15,888**

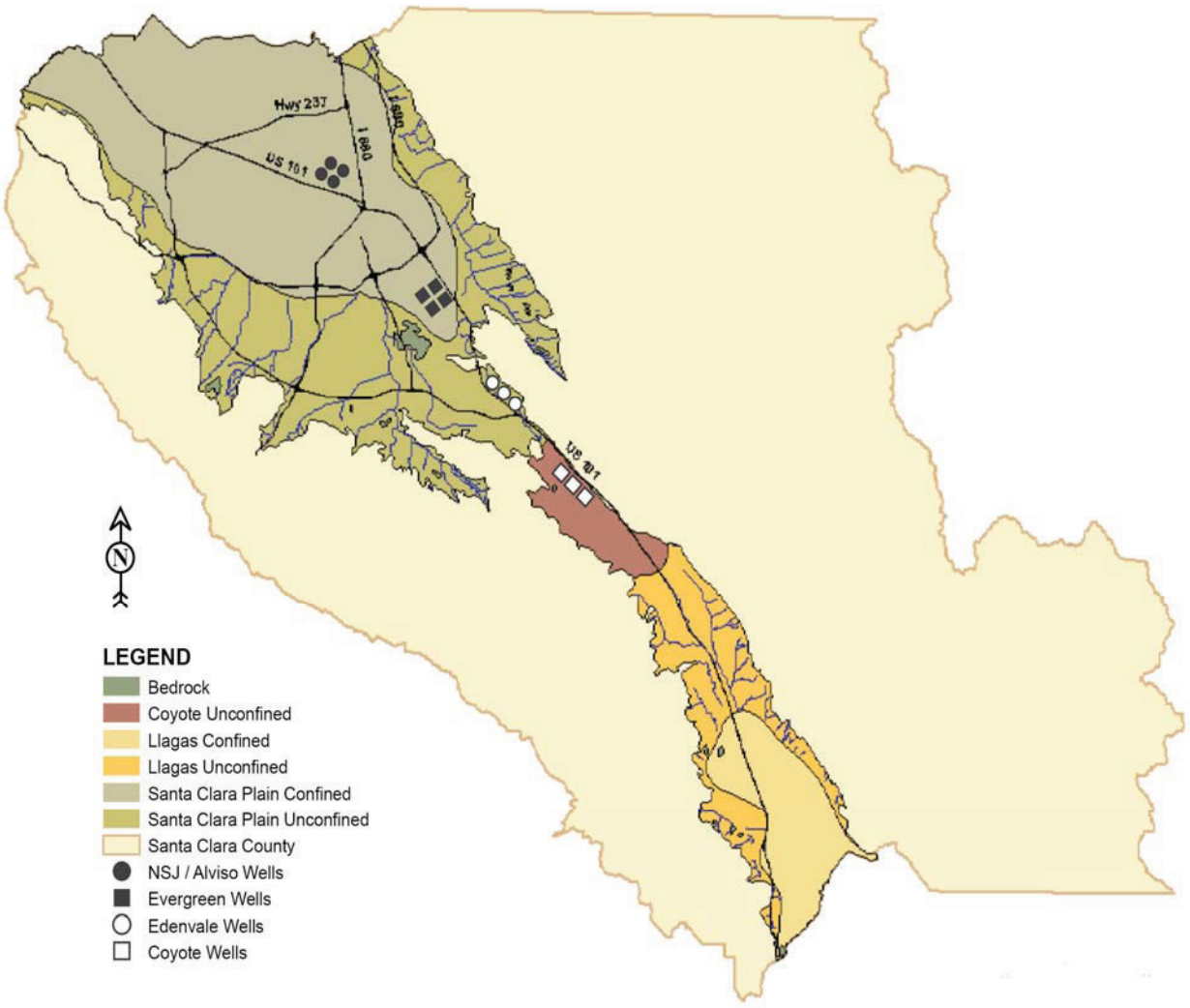
As required by the California Department of Public Health (CDPH) for their Drinking Water Source Assessment and Protection Program, drinking water source assessments were conducted for all 14 groundwater wells within SJMWS service areas during 2003/2004. The assessments were conducted by SJMWS staff, and consisted of information gathered from City records, databases, staff, the State Water Resources Control Board, and visual field surveys.

In North San Jose, potential contamination sources include local electronic manufacturing facilities, gas stations, leaking underground storage tanks and sewer collection facilities. The Evergreen wells are vulnerable to automobile gas stations, underground storage tank leaks and dry cleaning service activities. The Edenvale wells are vulnerable to chemical/petroleum processing storage activities. The Coyote wells are vulnerable to contamination caused by agricultural drainage, illegal activities/unauthorized dumping, storage tank leaks and sewer collection systems. However, the existing well locations and precautions taken during construction in combination with the local hydrology have provided a high level of protection against contamination of the local ground waters.

Saltwater intrusion has occurred in the shallow aquifer beneath North San Jose/Alviso. Saltwater from the Bay moves upstream during high tides and leaks through the clay cap into the upper aquifer zone when this zone is pumped. Land subsidence has also aggravated this condition. Elevated salinity is also present in the lower aquifer zone, but on a much smaller scale, and is attributed to improperly constructed, maintained, or abandoned wells that penetrate the clay aquitard and provide a conduit from the upper to the lower aquifer zone. In response, SCVWD has established an extensive program to locate and properly destroy such conduit wells (SCVWD, 2001).

As the groundwater management agency in Santa Clara County, SCVWD has ongoing groundwater protection programs to ensure high water quality and more reliable water supplies. These programs include well permitting, well destruction, wellhead protection, land use and development review, nitrate management (targeted to areas of elevated nitrate in the southern portion of the County), saltwater intrusion programs, and providing technical assistance to regulatory agencies to ensure local groundwater resources are protected (SCVWD, 2001).

Figure 4-1: Santa Clara County Groundwater Basin and SJMWS Groundwater Wells



4.5 TRANSFER/EXCHANGE OPPORTUNITIES

As noted above, SJMWS has the ability to purchase additional contract water from SFPUC as long as the combined amount between SJMWS and the City of Santa Clara does not exceed 9 MGD. SJMWS can also purchase excess water from other wholesale customers if available. SJMWS also has emergency tie-ins with the City of Santa Clara and San Jose Water Company for short-term transfers.

The majority of the transfer/exchange opportunities are managed by the wholesalers, SFPUC and SCVWD. In general, SFPUC has the ability to purchase additional water from the Tuolumne River and those sellers south of the Delta with water rights or entitlements to water diverted from the Delta. Water can also be purchased upstream of the Delta from sellers along the Sacramento, Feather, Yuba, American, San Joaquin Rivers and their tributaries.

SCVWD routinely uses short-term water transfers to increase water supplies in times of shortage. At present, SCVWD has two long-term transfer agreements. Under one agreement, SCVWD has an option for dry-year supplies totaling at least 20,000 AF over a 20-year period. The other agreement is for four-years which will allow 13,350 AF to be transferred over the term of the agreement, with flexible annual deliveries of at least 4,000 AF. SCVWD exchanges water with San Benito County Water District annually and works with other CVP contractors in San Joaquin Valley as exchange partners.

Additional details regarding wholesaler transfers and exchanges can be found in each individual wholesaler's UWMP.

4.6 DESALINATED WATER OPPORTUNITIES

As a water retailer who does not provide treatment (except fluoridation in the Evergreen area), SJMWS relies on wholesalers to explore desalinated water opportunities. Both SFPUC and SCVWD are working together with East Bay Municipal Utilities District, Contra Costa Water District, and Zone 7 Water Agency in the Bay Area Regional Desalination Project (BARDP). BARDP may consist of one or more desalination facilities that would remove salt from seawater or other brackish water sources, with an ultimate total combined capacity of up to 80 MGD. Desalination would provide a potential potable water supply for municipal and industrial use. The goals are to:

- Increase supply reliability by providing water supply when needed from a regional facility.
- Provide additional source of water during emergencies such as earthquakes or levee failures.
- Provide a supplemental water supply source during extended droughts.
- Allow other major facilities, such as treatment plants, water pipelines, and pump stations, to be taken out of service for maintenance or repairs.

Pre-feasibility studies and pilot testing have been completed. It is estimated that the environmental study will be completed by 2012, followed by design and permitting in 2013, with construction completed by 2015. Again, additional details regarding desalinated water opportunities can be found in SFPUC and SCVWD UWMPs.

4.7 RECYCLED WATER

The City began implementing a major water recycling program, known as the South Bay Water Recycling program (SBWR), under the auspices of the San Jose/Santa Clara Water Pollution Control Plant's (Plant) National Pollutant Discharge Elimination System Permit. The program was developed to protect the salt marsh habitat of two federally protected endangered species, the salt marsh harvest mouse and the California clapper rail, by reducing effluent flows from the Plant into the wetlands of the South Bay. A further benefit of this program was the development of a drought-proof supply of water, which augments local and imported water supplies.

The SBWR program delivers disinfected tertiary treated wastewater from the Plant through an extensive recycled water distribution system consisting of over 105 miles of pipeline (**Figure 4-2**). The recycled water is used for non-potable purposes such as agriculture; industrial cooling and processing; and irrigation of golf courses, parks, and schools. During the peak summer

season, SBWR diverts between 10 and 16 MGD of recycled water for irrigation and industrial uses to over 600 customers throughout San Jose, Santa Clara, and Milpitas.

WASTEWATER COLLECTION AND TREATMENT

Wastewater from SJMWS service areas is collected and treated at the Plant located at the south end of San Francisco Bay, which has a design capacity of 167 MGD. In addition to SJMWS service areas, the Plant treats wastewater from San Jose, Santa Clara, Milpitas, Campbell, Cupertino, Los Gatos, Monte Sereno and Saratoga, serving an area of over 300 square miles and a population of more than 1.5 million. **Table 4-5** illustrates the historical and projected wastewater to be treated at the Plant.

Table 4-5: Recycled Water – Wastewater Collection and Treatment (AFY)

Type of Wastewater	2005	2010	2015	2020	2025	2030	2035
Total wastewater collected and treated	126,673	136,762	142,367	149,093	153,577	158,061	163,666
Volume that meets recycled water standard	8,040	9,376	15,694	21,299	22,420	22,420	22,420

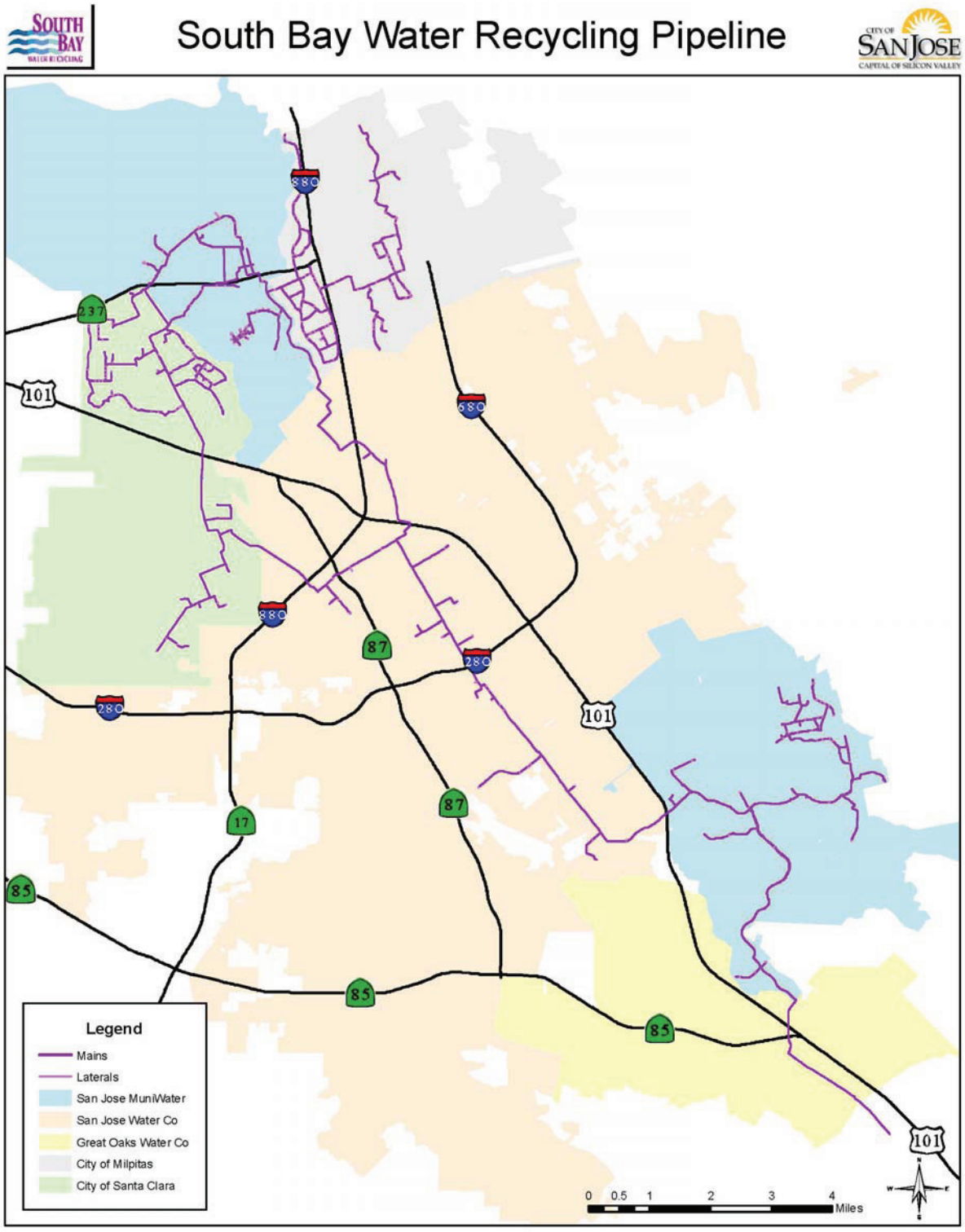
Wastewater is treated by the Plant to tertiary levels, and discharged through Artesian Slough and into the South San Francisco Bay. The SBWR system is part of an effort to maintain wastewater discharge below a level of 120 MGD. Expansion of the recycled water system will be an important part of the effort to prevent additional development-related flows from adversely impacting the salt marsh.

Recently, the City and SCVWD have entered into a 40-year long-term Agreement. The Agreement consists of the following:

- Ownership of an advanced recycled water treatment facility (AWTF)
- Operation and maintenance of recycled water facilities
- Decisions on export of recycled water outside the county
- Future expansion of SBWR that most effectively meets the needs of the community
- Joint technical studies on recycled water issues
- Coordinated recycled water outreach.

The AWTF will be located adjacent to the Plant and consist of microfiltration, reverse osmosis, and ultraviolet disinfection technologies to deliver up to 8 MGD of highly purified water. This high quality water will be blended with the existing tertiary treated recycled water to reduce the level of total dissolved solids (TDS) and enhance the use of recycled water for irrigation and industrial purposes. The AWTF is scheduled to be completed by 2012. This same technology is used by others to convert wastewater into drinking water.

Figure 4-2: SBWR Recycled Water System



RECYCLED WATER USES

Within SJMWS service area, there were 168 recycled water customer accounts as of the end of 2010. Typical uses of recycled water include irrigation (including landscape, median and streetscape irrigation) and industrial (including cooling towers, paper manufacturing, power generation, and dual plumbing water closet use).

These two general types of recycled water uses within SJMWS service area each currently account for approximately half of the total use. It is anticipated that there will be no significant new uses (wildlife habitat, wetlands, etc.) in the immediate future. **Table 4-6** details the quantity of recycled water based on type of usage.

Table 4-6: Recycled Water – Potential Future Use (AFY)

Use Type	Description	2015	2020	2025	2030	2035
Irrigation[1]	Planned use (included in **Table 4-5**)	2,980	3,441	3,982	4,603	5,183
Industrial[1]	Planned use (included in **Table 4-5**)	2,168	2,168	2,168	2,168	2,168
Groundwater Recharge	Use is being evaluated by SCVWD	0	0	11,210	11,210	11,210
Streamflow Augmentation	Use is being evaluated by SCVWD	0	0	11,210	11,210	11,210
	Total:	**5,148**	**5,609**	**28,570**	**29,191**	**29,771**

1. SJMWS has two categories for recycled water customers that correlate with recycled water rates: Irrigation and Industrial

A comparison of 2010 projected use figures to actual use figures is shown below in **Table 4-7**.

Table 4-7: Recycled Water – 2005 UWMP use projection compared to 2010 actual (AFY)

User Type	2010 Actual Use	2005 Projection for 2010[1]
Irrigation	1,678	N/A
Industrial	1,667	N/A
Total	**3,345**	**3,500**

1. Data is based on the total service area for SJMWS. Projections for 2010 in the 2005 UWMP did not separate user type.

SJMWS communicated with several local agencies to coordinate recycled water information, including the City-operated wastewater treatment plant.

OPTIMIZING USE OF RECYCLED WATER

Currently, the cities of San Jose, Santa Clara and Milpitas promote recycled water usage through a variety of mechanisms, including:

- Lower cost of recycled water than potable water.
- SBWR may contribute toward construction costs to retrofit an existing site to receive recycled water.
- SBWR obtains regulatory approval for recycled water usage.

- The cities of San Jose, Santa Clara, and Milpitas have ordinances requiring the use of recycled water for irrigation where available.
- The City prohibits the use of potable water for uses appropriate to recycled water.
- Public education through school curriculum, site supervisor training, marketing to potential customers and outreach at conventions, events, etc.
- SBWR participates in the Bay Area Regional Water Recycling Program (BARWRP), a regional recycled water planning effort.
- SBWR participates in the Bay Area Recycled Water Coalition to obtain Federal grant funding for recycled water projects.
- SBWR obtained ARRA funding to expand the recycled water distribution system.
- Expansion of system to areas where recycled water is unavailable and adding reliability to system.
- Pioneering new uses of recycled water, (i.e. printed circuit boards, paper manufacturing, streamflow augmentation, etc.)
- The City and SCVWD have partnered in the construction of the AWTF to improve the quality of recycled water to enhance the use by irrigation and industrial users.
- SCVWD is evaluating the possibility of indirect reuse.

Throughout the City, the system will continue to expand as additional distribution facilities are constructed by developers as needed to supply recycled water to fulfill their water and sewer flow diversion needs. Due to the many variables involved in recycled water uses and the possible applications of these optimization measures, it is unclear how each individual mechanism can be quantified. Therefore, **Table 4-8** lists the actions used to encourage recycled water use, but an actual projection that quantifies how each method increases the use of recycled water is unknown. SBWR will be soliciting a request for proposal in preparing a Recycled Water Master Plan later this year. It is anticipated that the Master Plan will help quantify the projected volume of recycled water based on type of use and outreach methods used.

Table 4-8: Methods Used to Encourage Recycled Water Use

Methods	Check if Used
Subsidized costs	X
Grants	X
Mandatory requirement for dual plumbing	
Regulatory Relief	X
Regional Planning	X
Incentive Program	X
Long-Term Contracts (Price/Reliability)	
Rate Discounts	X
Prohibit specific fresh water uses	X
Low-interest loans	X
Public education/information	X
Require recycled water use	X

4.8 FUTURE WATER PROJECTS

As a water retailer, SJMWS does not plan on developing "new" water supplies. Typically, capital improvement projects address infrastructure replacement and reliability needs. Future groundwater wells are needed in NSJ/Alviso, Edenvale, and Coyote service areas to support future demands. The Santa Clara Valley groundwater basin is not adjudicated; however, SJMWS will still rely on SCVWD to actively manage the groundwater basin to prevent overdraft and potential subsidence.

Table 4-9: Future Water Supply Projects (AFY)

Service Area	Potential Project	Projected Start	Estimated Per Well (Normal-Year)
NSJ/Alviso	Groundwater Well	2025	1,200
Edenvale	Groundwater Well	2020	1,900
Coyote	Groundwater Well	2025	1,100
		Total:	**4,200**

SJMWS is actively involved in the planning activities of water wholesalers, SFPUC and SCVWD. SJMWS is also involved in the planning activities for recycled water through SBWR. There is potential to use recycled water for indirect reuse which is being evaluated by SCVWD. Additionally, the SCVWD 5-Year Capital Improvement Program includes pipeline and diversion dam projects that have a total average yield or savings of about 20,000 AFY. SFPUC has a Water Supply Improvement Program geared towards improving reliability and water supply. Additional information regarding wholesalers' future projects can be found in their UWMPs.

SJMWS uses its entire allocation of SFPUC imported water, and also relies on groundwater and treated water supplies from SCVWD. In the Preferred Alternative (Water Supply Assessment for Envision San Jose 2040 General Plan Update, September 2010), 5,550 AFY is expected to come from groundwater or other SCVWD sources in the NSJ area; 486 AFY and 4,312 AFY is expected from the Evergreen and Edenvale groundwater, respectively. The wells in Evergreen should be maintained as supplemental supply during peak demand or emergency backup.

5
Water Supply Reliability & Water Shortage Contingency Planning

5.1 WATER SYSTEM RELIABILITY

As a water retailer, SJMWS depends heavily on water supply wholesalers to meet system demands. To meet future demand, SJMWS plans to rely on a portfolio of supplies. By utilizing different supply sources SJMWS may reduce the impact of water shortage from each source. Additionally, SJMWS has developed a Water Conservation Plan (**Appendix E**) to reduce future demands and increase water supply reliability.

NORTH SAN JOSE/ALVISO

SJMWS anticipates meeting future demands by using the full amount of SFPUC water available from the 10,082 AFY combined San Jose and Santa Clara supply. Additional SFPUC supply may be purchased from other SFPUC retail customers if available. Future potable water demand in excess of the SFPUC allocation can be supplemented with groundwater. The four existing groundwater wells can supply an estimated 4,500 AFY assuming year round pumping for 12 hours per day. SFPUC and groundwater supplies total 9,539 AFY which will meet the demands of the service area until 2030, at which time an additional 1,050 AFY of supply will be needed from a new groundwater well. The groundwater basin is not adjudicated and groundwater rights/entitlements have not been defined. Additional groundwater wells will be coordinated with SCVWD, who manages the groundwater basin to prevent overdrafting and contamination. Additionally, SJMWS is working with SCVWD to explore the potential of providing SCVWD treated water to this service area. Expansion of the recycled water system will also help to offset potable demand. The City will continue to promote the use of recycled water as described in **Chapter 4**. Recycled water is available for irrigation, industrial, and other approved uses.

EVERGREEN

SJMWS has a contract for SCVWD treated water supply. In addition, there is an estimated 4,842 AFY of available groundwater supply, assuming year round pumping for 12 hours per day from four existing groundwater wells. With the amount of combined available treated water and groundwater supplies, there is the potential that some supply entitlement could be supplied to help meet the North San Jose/Alviso projected demands, subject to interagency agreements where necessary. Expansion of the recycled water system in this service area will also offset potable water demand.

EDENVALE

This service area currently relies entirely on groundwater. Estimated annual pumping of the existing wells is approximately 2,421 AFY based on two operating wells. An additional 1,211 AFY is available upon rehabilitation of an existing well. A fourth well or additional supply from

SCVWD will be needed to meet 2035 demands. There is the potential to connect the Evergreen service area to Edenvale to utilize SCVWD treated water. Recycled water is also available to supply any approved non-potable needs.

COYOTE

The Coyote service area relies on groundwater and recycled water. Estimated annual pumping of the existing wells is approximately 4,439 AFY. An additional groundwater well will be needed to meet future demands by 2035. As this area grows, recycled water will be considered as a condition of development.

5.2 WATER SUPPLY RELIABILITY - SFPUC

The amount of imported water available to the SFPUC's retail and wholesale customers is constrained by hydrology, physical facilities, and the institutional parameters that allocate the water supply of the Tuolumne River. Due to these constraints, the SFPUC is very dependent on reservoir storage to firm-up its water supplies.

The SFPUC serves its retail and wholesale water demands with an integrated operation of local Bay Area water production and imported water from Hetch Hetchy. In practice, the local watershed facilities are operated to capture local runoff. The following describes allocation of SFPUC water supply during drought conditions. Additional information on SFPUC's supply reliability can be found in their UWMP.

5.2.1 WATER SHORTAGE ALLOCATION PLAN

In July 2009, in connection with the WSA, the wholesale customers and San Francisco adopted a Water Shortage Allocation Plan (WSAP) to allocate water from the regional water system to retail and wholesale customers during system-wide shortages of 20% or less (the "Tier One Plan"). The Tier One Plan replaced the prior Interim Water Shortage Allocation Plan, adopted in 2000, which also allocated water for shortages up to 20%. The Tier One Plan also allows for voluntary transfers of shortage allocations between SFPUC and any wholesale customer and between wholesale customers themselves. In addition, water "banked" by a wholesale customer, through reductions in usage greater than required, may also be transferred.

TIER ONE DROUGHT ALLOCATIONS

The Tier One Plan, which allocates water between San Francisco and the wholesale customers collectively, distributes water based on the level of shortage:

Table 5-1: Distribution of Water Based on Level of System-Wide Reduction

Level of System Wide Reduction in Water Use Required	Share of Available Water	
	SFPUC Share	Wholesale Customers Share
5% or less	35.5%	64.5%
6% through 10%	36.0%	64.0%
11% through 15%	37.0%	63.0%
16% through 20%	37.5%	62.5%

The Tier One Plan will expire at the end of the term of the Water Supply Agreement, unless extended by San Francisco and the wholesale customers.

TIER TWO DROUGHT ALLOCATIONS

The wholesale customers have negotiated and adopted the "Tier Two Plan", the second component of the WSAP which allocates the collective wholesale customer share among each of the 26 wholesale customers. This Tier Two allocation is based on a formula that takes multiple factors for each wholesale customer into account, including:

- Individual Supply Guarantee;
- Seasonal use of all available water supplies; and
- Residential per capita use.

The water made available to the wholesale customers collectively will be allocated among them in proportion to each wholesale customer's Allocation Basis, expressed in MGD, which in turn is the weighted average of two components. The first component is the wholesale customer's Individual Supply Guarantee, as stated in the WSA, and is fixed. San Jose's Water Sales Contract amount of 4.5 MGD is used as its fixed component. The second component, the Base/Seasonal Component, is variable and is calculated using the monthly water use for three consecutive years prior to the onset of the drought for each of the wholesale customers for all available water supplies. The second component is accorded twice the weight of the first, fixed component in calculating the Allocation Basis. Minor adjustments to the Allocation Basis are then made to ensure a minimum cutback level, a maximum cutback level, and a sufficient supply for certain wholesale customers.

The Allocation Basis is used in a fraction, as numerator, over the sum of all wholesale customers' Allocation Bases to determine each wholesale customer's Allocation Factor. The final shortage allocation for each wholesale customer is determined by multiplying the amount of water available to the wholesale customers' collectively under the Tier One Plan, by the wholesale customer's Allocation Factor.

The Tier Two Plan requires that the Allocation Factors be calculated by BAWSCA each year in preparation for a potential water shortage emergency. As the wholesale customers change their water use characteristics (e.g., increases or decreases in SFPUC purchases and use of other water sources, changes in monthly water use patterns, or changes in residential per capita water use), the Allocation Factor for each wholesale customer will also change. However, for long-term planning purposes, each wholesale customer has used the value identified in the Tier Two Plan when adopted as its Allocation Factor. The Tier Two Plan will expire in 2018 unless extended by the wholesale customers.

5.2.2 WATER SYSTEM IMPROVEMENT PROGRAM

In order to enhance the ability of the SFPUC water supply system to meet identified service goals for water quality, seismic reliability, delivery reliability, and water supply, the SFPUC has undertaken the Water System Improvement Program (WSIP), approved October 31, 2008. The WSIP will deliver capital improvements aimed at enhancing the SFPUC's ability to meet its water service mission of providing high quality water to customers in a reliable, affordable and environmentally sustainable manner. Many of the water supply and reliability projects evaluated in the WSIP were originally put forth in the SFPUC's Water Supply Master Plan (2000).

A Program Environmental Impact Report (PEIR) was prepared in accordance with the California Environmental Quality Act for the WSIP. The PEIR, certified in 2008, analyzed the broad environmental effects of the projects in the WSIP at a program level and the water supply impacts of various alternative supplies at a project level. Individual WSIP projects are also undergoing individual project specific environmental review as required.

In approving the WSIP, the Commission adopted a Phased WSIP Variant for water supply that was analyzed in the PEIR. This Phased WSIP Variant established a mid-term water supply planning milestone in 2018 when the Commission would reevaluate water demands through 2030. At the same meeting, the Commission also imposed the Interim Supply Limitation which limits the volume of water that the member agencies and San Francisco can collectively purchase from RWS to 265 MGD until at least 2018. Although the Phased WSIP Variant included a mid-term water supply planning milestone, it did include full implementation of all proposed WSIP facility improvement projects to insure that the public health, seismic safety, and delivery reliability goals were achieved as soon as possible.

As of July 1, 2010, the WSIP was 27% complete overall, with the planning and design work over 90% complete. The WSIP is scheduled to be completed in December 2015.

5.2.3 INTERIM SUPPLY LIMITATION

As part of its adoption of the WSIP, the Commission adopted a water supply element, the Interim Supply Limitation (ISL), to limit sales from the RWS watersheds to an average annual of 265 MGD through 2018. The wholesale customers' collective allocation under the ISL is 184 MGD and San Francisco's is 81 MGD. Although the wholesale customers did not agree to the ISL, the WSA provides a framework for administering the ISL. Strategies to address wholesale customers' unmet needs resulting from the ISL are further discussed below.

5.2.4 INTERIM SUPPLY ALLOCATIONS

The Interim Supply Allocations (ISAs) refers to each individual wholesale customer's share of the ISL. On December 14, 2010, the Commission established each agency's ISA through 2018. In general, the Commission based the allocations on the lesser of the projected fiscal year 2017-18 purchase projections or Individual Supply Guarantees. The ISAs are effective only until December 31, 2018 and do not affect the Supply Assurance or the Individual Supply Guarantees. San Francisco's ISA is 81 MGD. San Jose's ISA is 4.13 MGD.

As stated in the Water Supply Agreement, the wholesale customers do not concede the legality of the Commission's establishment of the ISAs and Environmental Enhancement Surcharge, discussed below, and expressly retain the right to challenge either or both, if and when imposed, in a court of competent jurisdiction.

5.2.5 ENVIRONMENTAL ENHANCEMENT SURCHARGE

The Commission plans to establish the Environmental Enhancement Surcharge concurrently with its budget-coordinated rate process. This surcharge will be unilaterally imposed by SFPUC on individual wholesale customers, and SFPUC retail customers, when each agency's use exceeds their Interim Supply Allocation and when sales of water to the wholesale customers and San Francisco retail customers, collectively, exceeds the Interim Supply Limitation of 265 MGD.

The SFPUC is in the process of developing the methodology and amount of this volume-based charge. The Environmental Enhancement Surcharge will become effective beginning fiscal year 2011-12.

5.2.6 WATER CONSERVATION IMPLEMENTATION PLAN

In September 2009, BAWSCA completed the Water Conservation Implementation Plan (WCIP). The goal of the WCIP is to develop an implementation plan for BAWSCA member agencies to attain the water efficiency goals that the agencies committed to in 2004 as part of the PEIR. The WCIP's goal was expanded to include identification of how BAWSCA member agencies could use water conservation as a way to continue to provide reliable water supplies to their customers through 2018 given the SFPUC's 265 MGD Interim Supply Limitation.

Based on the WCIP development and analysis process, BAWSCA and its member agencies identified five new water conservation measures, which, if implemented fully throughout the BAWSCA service area, could potentially save an additional 8.4 MGD by 2018 and 12.5 MGD by 2030. The demand projections for the BAWSCA member agencies, as transmitted to the SFPUC on June 30, 2010, indicate that collective purchases from the SFPUC will stay below 184 MGD through 2018 as a result of revised water demand projections, the identified water conservation savings, and other actions.

Several member agencies have elected to participate in the BAWSCA regional water conservation programs and BAWSCA continues to work with individual member agencies to incorporate the savings identified in the WCIP into their future water supply portfolios with the goal of maintaining collective SFPUC purchases below 184 MGD through 2018.

5.2.7 LONG TERM RELIABLE WATER SUPPLY STRATEGY

BAWSCA's water management objective is to ensure that a reliable, high quality supply of water is available where and when people within the BAWSCA service area need it. A reliable supply of water is required to support the health, safety, employment, and economic opportunities of the existing and expected future residents in the BAWSCA service area and to supply water to the agencies, businesses, and organizations that serve those communities. BAWSCA is developing the Long-Term Reliable Water Supply Strategy (Strategy) to meet the projected water needs of its member agencies and their customers through 2035 and to increase their water supply reliability under normal and drought conditions.

The Strategy is proceeding in three phases. Phase I was completed in 2010 and defined the magnitude of the water supply issue and the scope of work for the Strategy. Phase II of the Strategy is currently under development and will result in a refined estimate of when, where, and how much additional supply reliability and new water supplies are needed throughout the BAWSCA service area through 2035, as well as a detailed analysis of the water supply management projects, and the development of the Strategy implementation plan. Phase II will be complete by 2013. Phase III will include the implementation of specific water supply management projects. Depending on cost-effectiveness, as well as other considerations, the projects may be implemented by a single member agency, by a collection of the member agencies, or by BAWSCA in an appropriate timeframe to meet the identified needs. Project implementation may begin as early as 2013 and will continue throughout the Strategy planning horizon, in coordination with the timing and magnitude of the supply need.

The development and implementation of the Strategy will be coordinated with the BAWCSA member agencies and will be adaptively managed to ensure that the goals of the Strategy, i.e., increased normal and drought year reliability, are efficiently and cost-effectively being met.

The current contract between SJMWS and SFPUC to receive imported water expires in 2018. The future water allocation beyond 2018 is unknown at the present time. SFPUC will make a decision in December 2018 based on its ongoing environmental investigations. If SFPUC determines that it is necessary to reduce or eliminate San Jose's water supply, they would be required to first complete a CEQA analysis on the impacts of reducing or terminating the supply. San Francisco would work in cooperation with San Jose, BAWSCA, and the Santa Clara Valley Water District in the identification and implementation of additional water sources and conservation measures. As previously discussed in this section, BAWSCA is currently working on a long-term reliable water supply strategy to help ensure future supply to the member agencies. For the purposes of this report, it is assumed that delivery up to the contract maximum will continue beyond 2018.

5.3 WATER SUPPLY RELIABILITY - SCVWD

To maintain water supply reliability and flexibility, SCVWD's water supply includes a variety of sources including local groundwater, imported water and local surface water. SCVWD has an active conjunctive water management program to optimize the use of groundwater and surface water, and to prevent groundwater overdraft and land subsidence. Additional information on SCVWD's supply reliability can be found in their UWMP.

Several factors have the potential to negatively impact reliability, including: hydrologic variability, climate change, invasive species, infrastructure failure, regulatory actions as well as institutional, political and other uncertainties. Hydrologic uncertainties influence the projections of both local and imported water supplies and the anticipated reliability of those supplies. Supply analyses performed by SCVWD are based on the assumption of historical patterns of precipitation. The development of SCVWD projects and programs to meet future needs takes hydrologic variability and climate change into account.

Increases in average temperature due to climate change are occurring, and the impacts of increasing temperature have already been observed. Rises in average temperature will increase sea level and decrease the snow pack—by far the largest surface water "storage" facility in California. Decreased snow pack and projected earlier spring melts will reduce the amount of water available to meet peak demands in late spring and summer. These changes could decrease imported water and possibly local water supplies, while increasing salinity in the Delta, adversely impacting water quality and Bay-Delta ecosystems.

Under any climate change scenario, SCVWD may need to consider additional treatment options to respond to water quality impacts associated with increased salinity in the Delta. SCVWD may also need to consider additional storage to take advantage of more wet-season water, additional supplies to replace reduced water supply from existing sources, and additional water transfers (depending on water market impacts).

In determining the long-range availability of water, consideration must be given to the vulnerability of imported supplies to the effects of prolonged state-wide drought and

environmental impacts. Reductions by DWR or the US Bureau of Reclamation to SCVWD allocations of State Water Project (SWP) or Central Valley Project (CVP)-San Felipe Division water may result in a temporary supply shortfall for SJMWS and other SCVWD retailers. Although SJMWS has the facilities to pump additional groundwater, the Evergreen service area, whose current supplies are 100% imported water, could be faced with supply deficiency, especially during the summer months. Water demands could be met with groundwater, additional imported water supply, water conservation measures, and with expanded recycled water use.

SCVWD obtains its supplies from a variety of sources to maintain maximum efficiency, flexibility, and reliability, including local and imported water supplies. SCVWD augments natural groundwater recharge with a managed recharge program to offset groundwater pumping, sustain storage reserves, and minimize the risk of land subsidence. Through these recharge activities, SCVWD works to keep groundwater basins “full” to protect against drought. Storing surplus water in the groundwater basins enables part of the supply to be carried over from wet years to dry years. SCVWD also has a contract for 100,000 AFY for SWP, and 152,500 AFY for CVP. However, the actual amount of water delivered is typically significantly less than these contractual amounts and depends on hydrology, conveyance limitations, and environmental regulations, including regulatory constraints to protect water quality as well as fish. On a long-term average basis, 83% of the CVP supply is delivered for municipal and industrial use, and 17% is delivered for irrigation use. SCVWD routinely acquires supplemental imported water to meet the county’s needs from the water transfer market, water exchanges, and groundwater banking activities.

In May 1996, SCVWD approved an agreement with Semitropic Water Storage District (Semitropic) to store 45,000 AF of SWP water in Semitropic’s groundwater basin on behalf of SCVWD. In 1997, SCVWD approved a long-term agreement with Semitropic. Under the terms of this agreement, SCVWD has banked water in ten years since 1997, and withdrawn water in four years. The agreement allows SCVWD to maximize the economic value of its imported water contracts by fully utilizing water that might otherwise have to be turned back to the SWP or CVP. For example, in 2006, a very wet year, SCVWD was able to store nearly 58,000 AF of imported water for use in future dry years. The total storage capacity available to SCVWD in the Semitropic Water Bank is 350,000 AF and the current storage balance as of May 2010 is 151,123 AF (SCVWD, 2010 UWMP).

If demands are anticipated to reach the upper end of the demand range, SCVWD could consider additional long-term transfers. At present, SCVWD has two agreements that are classified as long-term transfers. In 1998, SCVWD and two other agencies (Pajaro Valley Water Management Agency and Westlands Water District) jointly participated in the permanent assignment of 6,260 AF from Mercy Springs Water District, an agricultural Central Valley Project (CVP) contractor. Under the agreement, SCVWD has an option for dry-year supplies totaling at least 20,000 AF over a 20-year period. The dry-year option may continue for subsequent terms depending on the future plans of Pajaro Valley Water Management Agency.

In 2010, SCVWD entered into a four-year agreement with Patterson Irrigation District, a contractor in the San Joaquin Valley with a reliable CVP supply based on their San Joaquin River water rights. The total amount that will be transferred over the term of the agreement is 13,350 AF, with flexible annual deliveries of at least 4,000 AF.

5.4 FACTORS AFFECTING SUPPLY

In addition to droughts, there are other threats to the sources providing water supply to SJMWS. SJMWS prepares for these threats through their portfolio of supplies, by working with SFPUC and SCVWD, and through demand management like the Water Shortage Ordinance and the Water Conservation Plan (included in **Appendix E**).

GLOBAL CLIMATE CHANGE

Global climate change represents a serious threat to water supply and the total impact is not fully understood or quantified. According to the Intergovernmental Panel on Climate Change, global warming could significantly alter California's hydrologic cycles and water supply. These impacts could include decreased Sierra snowpack, increased temperatures, more severe droughts, sea level rise, and increased floods. Climate models indicate that precipitation as rainfall is expected to increase as snowfall decreases over the Sierra Nevada and Cascade mountain ranges. Sierra snowpack is expected to be reduced by 25 percent by 2050 (DWR 2007). This reduction directly impacts the volume of imported water sources for SJMWS. Sierra snowmelt feeds reservoirs like Hetch-Hetchy and rivers that flow to the Delta, the sources of SFPUC and SCVWD imported water, respectively.

Climate change may also increase regional temperatures and cause more variable weather patterns. In addition to decreasing snowpack, these increased temperatures may also increase water demand. Higher temperatures could increase water demand throughout the state through increased agricultural irrigation and, in SJMWS service areas, through increased outdoor residential and commercial irrigation. Changing weather patterns could cause more severe flooding and longer droughts.

The Sacramento-San Joaquin Delta is at risk from climate change. More severe flooding and a rising sea level threaten the water ways that serve as a vital link in the state's water system. Additional threats to water supply and the Delta are discussed below. The State of California and DWR are working to reduce the effects of climate change both through reduction of emissions and strategies to address the impacts of climate change. DWR voluntarily joined the California Climate Action Registry, a tool to track and report emissions. DWR is also working to add more clean and renewable energy resources to its power portfolio and to reduce its carbon footprint. To address the impacts of climate change, DWR has included an extensive discussion of the topic in the state's "Water Plan Update 2005" and published "2009 California Climate Adaptation Strategy Discussion – Draft." The 2009 report summarizes climate change threats and ways to manage those threats. In addition, DWR has developed strategies to address impacts including increased monitoring of climatologic and water resource conditions, reduction of greenhouse gas emissions from water management activities, studying the combined effects of increased atmospheric carbon dioxide and increased temperature (to predict future water demand), and adaptation of statewide water management systems by incorporating more flexibility.

Initial climate change modeling completed by the SFPUC indicates that about seven percent of runoff currently draining into Hetch Hetchy Reservoir will shift from the spring and summer seasons to the fall and winter seasons in the Hetch Hetchy basin by 2025. This percentage is within the current interannual variation in runoff and is within the range accounted for during normal runoff forecasting and existing reservoir management practices. The predicted shift in runoff timing is similar to the results found by other researchers modeling water resource

impacts in the Sierra Nevada due to warming trends associated with climate change. The SFPUC has stated that based on this preliminary analysis, the potential impacts of climate change are not expected to affect the water supply available from the San Francisco Regional Water System (RWS) or the or the overall operation of the RWS through 2030.

DELTA PUMPING RESTRICTIONS

The Sacramento-San Joaquin Delta, at the confluence of the Sacramento and San Joaquin rivers, is a key component to the state's water system (DWR 2009b). Much of the water that feeds the State Water Project and Central Valley Project flows through the Delta, both Projects being a significant portion of SCVWD water supplies. The Delta is also home to a sensitive ecosystem with several federally listed threatened species. Balancing the needs of California's water supply with those of the environment has been a challenge for the State of California and DWR.

In 2007, pumping from the Delta for water supply was limited by a federal court to protect the Delta Smelt, a federally listed threatened species. Further restrictions have been imposed to protect other fish species, including the Longfin Smelt and Chinook salmon. These pumping limits directly affect the amount of imported water that SCVWD has available. While SJMWS currently has a contract with SCVWD for imported water in the Evergreen service area, these pumping limits could prevent SJMWS from increasing or maintaining the contracted volumes for SCVWD treated surface water.

The State of California and DWR are currently working to "avert an ecological disaster and ensure reliable water supplies for Californians now and in the future." Former Governor Schwarzenegger appointed a Delta Vision Blue Ribbon Task Force, who produced a final document with their recommendations, "Delta Vision," in January 2008. DWR also recommended strategies for the future of the Delta in its "Water Plan Update 2005". The Governor has also outlined a comprehensive plan for Delta sustainability, building on these recommendations. In addition, DWR is currently working on the Bay-Delta Conservation Plan environmental documents. These documents focus on both water supply reliability and the recovery of listed species, and examine alternatives to ensure the success of both (DWR 2009b).

NATURAL DISASTERS

Disasters such as earthquakes could threaten water delivery infrastructure. The wholesalers that provide SJMWS with water supply are taking steps to ensure water supply reliability.

SFPUC has adopted an Emergency Response and Recovery Plan (ERRP) to enable swift response in the event of damage to their imported water system. Additionally, SFPUC has the WSIP which will improve the regional system with respect to water quality, seismic response, water delivery, and water supply to meet water delivery needs in the service area through the year 2030. The WSIP also establishes level of service goals and system performance objectives. Completion of the WSIP will allow modified system operations, and will result in a series of facility improvement projects. The proposed program area spans seven counties—Tuolumne, Stanislaus, San Joaquin, Alameda, Santa Clara, San Mateo, and San Francisco.

While the SFPUC has historically met and is currently serving its customers' water demands, there are numerous factors contributing to the need for a comprehensive, system-wide program

such as the WSIP. In order to continue to provide reliable water service to its customers, the WSIP allows SFPUC to plan for the future as well as address existing, known deficiencies, including the following:

- *Aging Infrastructure.* Many of the components of the SFPUC regional water system were built in the 1800s and early 1900s. As the system ages, its reliability decreases and the risk of failure increases.
- *Exposure to Seismic and Other Hazards*. The system crosses five active earthquake faults, and many of the existing facilities do not meet modern seismic standards. The California Division of Safety of Dams imposed operating restrictions on two of the system's reservoirs, Calaveras and Lower Crystal Springs Reservoirs, due to seismic and flood control safety hazards, respectively. The restricted operations at these reservoirs reduce local storage capacity and impair normal system operations.
- *Delivery Reliability*. The system requires additional redundancy (i.e., backup) of some critical facilities to ensure sufficient operational flexibility to carry out adequate system inspection and maintenance and to be adequately prepared in the event of an earthquake, system failure, or other emergency. These critical facilities are necessary to meeting day-to-day customer water supply needs, and increased operational flexibility is needed in order to maintain service to all customers during a full range of operating conditions.

SFPUC goals and objectives for the WSIP target these deficiencies.

In 2003, SCVWD initiated the Water Utility Infrastructure Reliability Project (IRP) to determine the current reliability of its water supply infrastructure (pipes, pump stations, treatment plants) and to appropriately balance level of service with cost. The project measured the baseline performance of critical facilities in emergency events and identified system vulnerabilities. The study concluded that SCVWD's water supply system could suffer up to a 60-day outage if a major event, such as a 7.9 magnitude earthquake on the San Andreas Fault, were to occur. Less severe hazards, such as other earthquakes, flooding and regional power outages had less of an impact on SCVWD, with outage times ranging from one to 45 days.

The level of service goal identified for the IRP was "Potable water service at average winter flow rates available to a minimum of one turnout per retailer within seven days, with periodic one day interruptions for repairs." In order to meet this level of service goal, the project developed seven portfolios to mitigate the identified system risks, and identified a recommended portfolio for implementation. As a result, SCVWD has been implementing the recommended portfolio of reliability improvement projects (Portfolio 2). The cost to implement Portfolio 2 is estimated to be approximately $175 Million. Portfolio 2 is expected to reduce the post-earthquake outage period from 45-60 days to 7-14 days.

Additionally, SCVWD routinely monitors the conditions of all their ten dams used for both water supply and flood prevention. Seismic safety evaluations on eight dams are planned by 2013.

SJMWS' distribution system is designed to enable flexibility in water delivery options. Water tanks provide storage capacity to help meet demands during short-term wholesale supply outages, and groundwater wells can be used to supplement imported water supplies as well. Emergency interties with adjacent water retailers can be used if necessary.

5.5 WATER SHORTAGE CONTINGENCY & DROUGHT PLANNING

In response to AB11X, the City coordinated with SCVWD to create a Water Shortage Contingency Plan in 1991 to supplement the Urban Water Management Plan (see **Appendix G**). The Water Shortage Contingency Plan details the stages of action to be implemented in the case of a supply shortage. In 1994 and 2009, the City adopted revisions to the City Municipal Code Chapter 15.10 (**Appendix G**), which included water shortage measures to be enforced during a time of water shortage. A summary of the stages of action is described later on in this Chapter.

This section contains a three-year worst case scenario for water supply availability and details on the stages of action to be implemented in case of a supply shortage based on average, single dry, and multiple dry year supplies as defined below.

AVERAGE/NORMAL WATER YEAR

The “normal” year for the purposes of the report, is a year in the historical sequence that most closely represents median runoff levels and patterns. Based on an evaluation of total supplies available to SCVWD over the historical hydrologic sequence (1922–2003), and given current existing facilities and institutional arrangements, the median and average are within approximately 1 percent. The median year from the analysis of the historical hydrologic sequence is 1935. SCVWD selected 2002 as the “normal year” since it is close to the median and is essentially equal to the average. The selection of a “normal year” does not match the average year for all supply sources, but is the “best fit” for the hydrologic years included in the modeling analysis.

Carryover storage is that portion of the SCVWD’s local and outside of the county surface storage, local groundwater storage and outside the county banked storage that is not required to meet the current year’s demands but could potentially be utilized in subsequent years. Note that groundwater is used in all year types (including years where the total supplies exceed total demands) for distribution, storage and treatment.

SINGLY-DRY YEAR SUPPLY

The single dry year supply is defined as the year with the minimum usable supply. The hydrology of 1977 represents the minimum total supply that has been observed in the historical record according to SCVWD. The District will be able to meet the water needs of the county during the single dry year even with increasing demands, based on the historical hydrologic sequence and carryover supplies that are projected to be available leading into a single dry year. If a similar dry year occurred when carryover storage was not available, implementation of actions associated with the water shortage contingency plan would be required.

In the single dry year analysis, supplies for SCVWD from carryover storage are needed to meet the annual demands under all demand years and make up almost half of the total supplies in the single dry year. SCVWD’s ability to take water from the Semitropic Water Bank is proportional to SWP allocation percentages for the year. During drought years, this can significantly limit how much of its water bank balance SCVWD can withdraw.

SFPUC modeling and historic hydrological sequence identifies 1978 as the model single dry year.

MULTIPLE-DRY YEAR SUPPLY

Multiple dry year scenario analysis is useful particularly in the evaluation of carryover storage. Evaluating the availability of the county's water supplies requires an understanding of the driest periods that can reasonably be expected to occur. Over the more than 120 years of recorded rainfall, seven major drought events have occurred. SCVWD modeling results indicate that the county's water supply system is more vulnerable to successive dry years, such as those that occurred in 1928-1934 and 1987-1992. Multiple dry year periods deplete water storage reserves in local and imported supply reservoirs and in the groundwater subbasins. Multiple dry years (such as the 1987-1992 drought) pose the greatest challenge to SCVWD's water supply. Although the supply in each year may be greater than in a single very dry year, as drought lingers, storage reserves are relied on more and more. The multiple dry year period selected for SCVWD's analysis is from 1987 through 1992.

SFPUC modeling and historic hydrological sequence identifies 1989-1993 as the model multiple dry year sequence.

The water supply available to individual retailers will ultimately be determined by SCVWD and SFPUC. SJMWS will work closely with SCVWD, SFPUC, and other water retail agencies to implement any stages of action to reduce the demand for water during water shortages.

Table 5-2 summarizes the average, single dry, and multiple dry water years used to determine the minimum water supply available as compared to the average/normal water year.

Table 5-2: Basis of Water Year Data

Water Year Type	Base Years	
	SFPUC	SCVWD
Average Water Year	2002	2002
Single Dry Water Year	1978	1977
Multiple Dry Water Years	1989-1993	1987-1992

As discussed earlier in this report, SJMWS relies mostly on SFPUC and SCVWD for its water supply and is directly affected by the water supply conditions both wholesaler faces. This section discusses water supply conditions as it affects the wholesalers.

SFPUC

SFPUC historically has met demand in its service area in all year types from its Tuolumne River, Alameda Creek, and San Mateo County watersheds. In general, 85 percent of the supply comes from the Tuolumne River through Hetch Hetchy Reservoir and the remaining 15 percent comes from the local watersheds through the San Antonio, Calaveras, Crystal Springs, Pilarcitos and San Andreas Reservoirs. SFPUC's adopted WSIP retains this mix of water supply for all year types. In order to achieve its target of meeting at least 80 percent of its customer demand during droughts, the SFPUC must successfully implement the dry-year water supply projects included in the WSIP. SFPUC proposes to expand their water supply portfolio by increasing the types of

water supply resources to meet future demands. This includes approximately 2,240 AFY of transfers and 8,100 AFY of groundwater from the Westside Basin.

The Tier One and Tier Two Plans, as earlier described, would be implemented as necessary in the event of a shortage of SFPUC supplies.

SCVWD

As a result of the 1987 to 1992 drought, local reservoirs were reduced and wholesalers received only partial entitlement from its imported sources. In response to these circumstances, SCVWD instituted an aggressive water conservation program and augmented imported sources of water with additional water supplies. Since the end of the drought, local reservoir levels have returned to normal, allowing greater flexibility to meet water demands during a short-term dry period.

In the event of a multiple dry year supply scenario occurring between now and 2020, supplies for SCVWD and groundwater are planned to be adequate to continue to meet the increased demands, while supplies from SFPUC will decrease. SJMWS will compensate for temporarily decreased supply from SFPUC by using additional groundwater supply as available. SCVWD has accounted for additional groundwater pumping during a single-dry and multiple-dry years. Subsequent to 2020, implementation of water shortage contingency plan actions would be required to reduce demands by approximately 20-25% in the fifth year and beyond of a multi-year drought.

SUPPLY AVAILABILITY

In the event of a decrease of local supplies, SJMWS would respond by pursuing demand reduction programs in accordance with the severity of the supply shortage. Any supply deficit would be compensated for by increased conservation levels and restrictions in consumption.

An analysis of the supplies historically available during times of shortage is reflected in **Table 5-3**. This analysis does not account for population and system growth, and reflects the amount of supply available to meet the system's demands during the designated years.

Table 5-3: Supply Reliability – Historic Conditions (AFY)

Normal Water Year (2002)[1]	Single Dry Water Year (1977)	Multiple Dry Water Years			
		Year 1 (1987)	Year 2 (1988)	Year 3 (1989)	Year 4 (1990)
Percent of Normal Year[2]	37.1%	65.4%	64.1%	55.4%	58.6%

1. Does not include recycled water which was available in 2002, but not 1987-1990.
2. Percentage estimated based on available data, and not adjusted for population and system growth.

Table 5-4 is based on the projected demands during the indicated years, and analyses of the average/normal deliveries to SJMWS from SFPUC and SCVWD in 2002. This analysis uses decreased supply availability in accordance with historic conditions as described in **Table 5-3**; however, an analysis of current supply and wholesale supplier systems indicates that supplies would be available to meet demands even in times of drought, with no reduction of supply necessary until the fifth year and beyond of a multi-year drought.

Table 5-4: Supply Reliability – Current Water Sources (AFY)

Source	Average/ Normal Water Year 2002	Multiple Dry Water Years		
		Year 2011	Year 2012	Year 2013
SFPUC	5,207	3,385	2,939	2,939
SCVWD	15,275	8,225	8,889	8,733
Groundwater	651	3,590	5,808	1,260
Recycled Water[1]	1,720	3,706	4,067	4,427
TOTAL:	**22,853**	18,905	21,703	17,359
	Percent of Average/Normal:	**83%**	**95%**	**76%**

1. Recycled water supply is not anticipated to decrease during multiple dry years.

Table 5-5 through **Table 5-11** provides a comparison between supply and demand for normal, single dry and multiple dry water years. As SFPUC supply decreases, groundwater supplies increase, leaving a zero percent difference between supply and demand.

Table 5-5: Supply and Demand Comparison – Normal Year (AFY)

Source	2015	2020	2025	2030	2035
SFPUC	5,039	5,039	5,039	5,039	5,039
SCVWD & Groundwater	21,592	24,579	27,270	30,310	33,389
Recycled Water	5,148	5,609	6,150	6,770	7,351
Supply Totals	**32,139**	**35,227**	**38,459**	**42,119**	**45,779**
Demand Totals	**32,139**	**35,227**	**38,459**	**42,119**	**45,779**
Difference	0	0	0	0	0
Difference as % Supply	0%	0%	0%	0%	0%
Difference as % Demand	0%	0%	0%	0%	0%

Table 5-6: Supply and Demand Comparison – Single Dry Year (AFY)

Source	2015	2020	2025	2030	2035
SFPUC[1]	3,387	3,387	3,387	3,387	3,387
SCVWD & Groundwater	23,604	26,231	28,922	31,962	35,041
Recycled Water	5,148	5,609	6,150	6,770	7,351
Supply Totals	**32,139**	**35,227**	**38,459**	**42,119**	**45,779**
Demand Totals	**32,139**	**35,227**	**38,459**	**42,119**	**45,779**
Difference	0	0	0	0	0
Difference as % Supply	0%	0%	0%	0%	0%
Difference as % Demand	0%	0%	0%	0%	0%

1. Groundwater will supplement decrease in SFPUC supply

Table 5-7: Supply and Demand Comparison – Multiple Dry Year for 2015 (AFY)

Source	Year 1 2015	Year 2 2016	Year 3 2017
SFPUC[1]	3,387	3,387	2,941
SCVWD & Groundwater	23,604	24,130	25,102
Recycled Water	5,148	5,240	5,332
Supply Totals	**32,139**	**32,757**	**33,375**
Demand Totals	**32,139**	**32,757**	**33,375**
Difference	0	0	0
Difference as % Supply	0%	0%	0%
Difference as % Demand	0%	0%	0%

1. Groundwater will supplement decrease in SFPUC supply

Table 5-8: Supply and Demand Comparison – Multiple Dry Year for 2020 (AFY)

Source	Year 1 2020	Year 2 2021	Year 3 2022
SFPUC[1]	3,387	3,387	2,941
SCVWD & Groundwater	26,231	26,769	27,753
Recycled Water	5,609	5,717	5,825
Supply Totals	**35,227**	**35,873**	**36,519**
Demand Totals	**35,227**	**35,873**	**36,519**
Difference	0	0	0
Difference as % Supply	0%	0%	0%
Difference as % Demand	0%	0%	0%

1. Groundwater will supplement decrease in SFPUC supply

Table 5-9: Supply and Demand Comparison – Multiple Dry Year for 2025 (AFY)

Source	Year 1 2025	Year 2 2026	Year 3 2027
SFPUC[1]	3,387	3,387	2,941
SCVWD & Groundwater	28,922	29,530	30,584
Recycled Water	6,150	6,274	6,398
Supply Totals	**38,459**	**39,191**	**39,923**
Demand Totals	**38,459**	**39,191**	**39,923**
Difference	0	0	0
Difference as % Supply	0%	0%	0%
Difference as % Demand	0%	0%	0%

1. Groundwater will supplement decrease in SFPUC supply

Table 5-10: Supply and Demand Comparison – Multiple Dry Year for 2030 (AFY)

Source	Year 1 2030	Year 2 2031	Year 3 2032
SFPUC[1]	3,387	3,387	2,941
SCVWD & Groundwater	31,962	32,578	33,640
Recycled Water	6,770	6,886	7,002
Supply Totals	**42,119**	**42,851**	**43,583**
Demand Totals	**42,119**	**42,851**	**43,583**
Difference	0	0	0
Difference as % Supply	0%	0%	0%
Difference as % Demand	0%	0%	0%

1. Groundwater will supplement decrease in SFPUC supply

Table 5-11: Supply and Demand Comparison – Multiple Dry Year for 2035 (AFY)

Source	Year 1 2035	Year 2 2036	Year 3 2037
SFPUC[1]	3,387	3,387	2,941
SCVWD & Groundwater	35,041	35,041	35,041
Recycled Water	7,351	7,351	7,351
Supply Totals	**45,779**	**45,779**	**45,779**
Demand Totals	**45,779**	**45,779**	**45,779**
Difference	0	0	0
Difference as % Supply	0%	0%	0%
Difference as % Demand	0%	0%	0%

1. Groundwater will supplement decrease in SFPUC supply

The City Council has adopted several ordinances and resolutions to deal with drought and water waste. **Table 5-12** is a list of the Ordinances and Resolutions and dates they were adopted.

Table 5-12: City Resolutions and Ordinances Regarding Water Shortage

Resolution	Date Adopted
Resolution 60748	June 28, 1988
Resolution 60749	June 28, 1988
Resolution 60950	November 25, 1988
Ordinance 23083	April 18, 1989
Ordinance 23109	April 18, 1989
Ordinance 23110	April 18, 1989
Ordinance 23113	April 18, 1989
Resolution 61292	April 18, 1989
Resolution 62045	March 27, 1990

Resolution	Date Adopted
Resolution 62551	October 20, 1990
Resolution 63593	March 24, 1992
Ordinance 24600	April 26, 1994
Resolution 74917	May 19, 2009
Resolution 74918	May 19, 2009
Ordinance 28597	June 23, 2009
Resolution 75065	June 3, 2009

Of note is Resolution 63593, which formally adopted the Water Shortage Contingency Plan, and Ordinance 28597, which amended parts 2 and 3 of Chapter 15 of the City of San Jose Municipal Code to strengthen requirements related to water conservation and use during a period of water shortage. The Water Shortage Contingency Plan defines the stages of action to be taken at varying levels of supply shortages.

STAGES OF ACTION

In the event of a water shortage, restrictions on potable water use will be enforced by the City according to the water shortage provisions included within Chapter 15.10 of the City's Municipal Code (**Appendix G)**. Mandatory restrictions on potable water use would be applied to different shortage levels to reduce potable demand. **Table 5-13** describes the water supply conditions in which SJMWS will implement the prohibitions at various stages described in **Table 5-14**.

Table 5-13: Water Shortage Contingency – Rationing Stages to Address Shortages

Stage No.	% Shortage	Water Supply Conditions
1	10%	10% shortage declared by wholesale water agency. Current water use is tapping into groundwater reserves.
2	25%	25% shortage declared by wholesale water agency. Shortage conditions are worsening. Groundwater levels continue to decrease
3	30%	30% shortage declared by wholesale water agency. Signs of multiyear drought.
4	40%	40% shortage declared by wholesale water agency. Continued signs of multiyear drought.
5	>40%	Greater than 40% shortage declared by wholesale water agency. Typically meant for immediate crisis such as major infrastructure failure. Water supply reserved for health and safety needs.

MANDATORY PROHIBITIONS AND CONSUMPTION LIMITS ON WATER USE

The City will enforce mandatory reduction programs as necessary to decrease consumption during a water shortage. SJMWS currently has no additional limits on consumption to discourage and/or prevent excessive use during times of supply shortage. However, during a time of water shortage, SJMWS will evaluate the need for any consumption limits, and the City Council may adopt additional consumption limits as deemed appropriate.

Table 5-14: Water Shortage Contingency – Mandatory Prohibitions

Stage No.	Prohibition
Stage 1 10% Mandatory Program	• Irrigation of outdoor landscaping is prohibited during designated daylight hours, with certain exceptions
Stage 2 25% Mandatory Program	• Continue and intensify all activities undertaken during Stage 1 • No potable water may be used to clean any exterior paved or hard-surfaced area, or the exterior of any building or structure • No filling ornamental lakes or ponds with potable water • No washing of vehicles, except at a commercial car washing facility that utilizes a re-circulating water system to capture or reuse water • No refilling swimming pools or outdoor spas more than one (1) foot • Operation of decorative fountains using potable water is prohibited, with certain exceptions
Stage 3 30% Mandatory Program	• Continue and intensify all activities undertaken during Stages 1-2 • Irrigation of outdoor landscaping is prohibited at all times, with certain exceptions • No new outdoor landscaping or plantings shall be installed during the months of May through October • Public use of water from hydrants is prohibited
Stage 4 40% Mandatory Program	• Continue and intensify all activities undertaken in Stages 1-3 • All irrigation of outdoor landscaping is prohibited at all times, with specific limited exceptions • Filling of any swimming pool, fountain or spa is prohibited • Leaks, broken water pipes, irrigation systems, and faucets must be fixed within 48 hours
Stage 5 50% Mandatory Program	• Continue and intensify all activities undertaken in Stages 1-4 • SJMWS evaluate actual water consumption to determine additional measures to be taken to further reduce potable water use. • City to enforce any additional measures deemed appropriate for the situation in order to reduce water use. • City Council will determine priorities for use of available water within SJMWS service area.

PENALTIES OR CHARGES FOR EXCESSIVE USE

The City will enforce mandatory reduction programs as necessary to decrease consumption during a water shortage. SJMWS currently has no set charge for penalties or fees for exceeding consumption limits to be set during times of supply shortage (as described above). However, during a time of water shortage, SJMWS will evaluate the need for any related penalties or fees, and the City Council may adopt additional penalties or charges as deemed appropriate.

Water use restrictions are contained within the City Municipal Code, and therefore SJMWS customers are required to comply with any measures the City determines the need to enforce, including those described in **Table 5-14**. Customers that do not comply with the use restrictions would be subject to citation from the City's Code Compliance inspectors. **Table 5-15** describes some administrative citation fine amounts that may be charged for violation of the prohibited activities at the various stages. Additional penalties or fees may be adopted by the City Council as deemed appropriate.

Table 5-15: Water Shortage Contingency – Penalties and Charges

Stage No.	Description	Penalty/Charge
2	Cleaning of structure/ surfaces	$160.00
2	Operation of certain decorative fountains	$160.00
3	Hydrants	$160.00
4	Landscape irrigation	$160.00

ANALYSIS OF REVENUE AND EXPENDITURE IMPACTS

SJMWS's initial response to shortage is to use reserve funds. A large portion of SJMWS's costs are not directly related to the quantity of water delivered. Examples of these costs include meter readers, billing staff, and pump and facilities maintenance. Expenses are increased during periods of drought by additional programs, staff time, and water purchase costs. Therefore, unit price increases must be implemented to offset the impacts of lower water sales and higher expenses. Finally, expenses such as capital improvements are deferred when feasible. **Table 5-16** shows an example of the financial impacts of reduced demand and the resulting rate increases necessary to meet unchanged expenses.

Due to the variable nature of costs associated with water wholesale purchase and costs related to operation of the distribution system, the increases in the water rate schedule to be charged during a water shortage will be determined during the time of an actual water shortage.

Table 5-16: Financial Impacts

Water Revenue	Percent Reduction	AF Sold	HCF Sold	Average Unit Price $/HCF
$22,616,425	Normal 2010	18,936	8,248,522	$2.74
$22,616,425	25%	14,202	6,186,391	$3.66
$22,616,425	35%	12,308	5,361,539	$4.22
$22,616,425	50%	9,468	4,124,261	$5.48

Operation expenditures and water revenue will be evaluated to determine the appropriate unit increase in the rate schedule. SJMWS will evaluate the situation and recommend an increased rate schedule to be enforced during the shortage, and submit the schedule for approval by the City Council.

IMPLEMENTATION OF THE CONTINGENCY PLAN

The water shortage measures described in Chapter 15.10 of the City of San Jose Municipal Code may be enforced upon resolution of the City Council. The City Council may, by resolution, declare a state of water shortage whenever it finds that water supplies are expected to be inadequate to meet at least ninety percent of projected water demand, or whenever a minimum conservation level of ten percent or more has been established by SFPUC or SCVWD. In adopting such a resolution, the City Council may declare whether the water shortage is a ten, twenty-five, thirty, or forty percent shortage. The resolution declaring a water shortage in 2009 is included as an example in **Appendix H**.

WATER USE MONITORING PROCEDURES

During the 1987-1992 drought, SJMWS compiled water production on a daily basis. All sources were monitored, and a monthly report was submitted to SJMWS Division Manager and SCVWD. This process was found effective in keeping SJMWS within its water allotment.

In the event of a Stage 1 or 2 water shortage, SJMWS would use the above procedure. During a Stage 3 or 4 water shortage, water production figures would be reported to SJMWS Division Manager, and monthly reports would be sent to the Director of Environmental Services Department and the City Council.

In addition, as demonstrated in previous drought periods, SCVWD monitors and tracks water savings. In the period from March 2009 to October 2010, water use decreased by 19% across Santa Clara County (18-20% within San Jose) compared to a baseline period of average water use and adjusted for population growth. Several factors contributed to this, such as the weather, reduced economic activity, and the community's response to SCVWD's and City's short-term water conservation marketing and education efforts.

DISASTER PREPAREDNESS/EMERGENCY RESPONSE PLAN

SJMWS's facilities have been designed to provide adequate supplies of water during normal and emergency operations. Reservoirs and emergency backup generators have been placed at elevations and locations which will maintain supplies to customers during power failures. SJMWS staff is on duty 24 hours a day to respond to emergency situations. Engine-driven generators or pumps are installed to provide emergency supplies of water. SJMWS's facilities are designed such that water stored in reservoirs at the highest elevations may be drawn down to the lower pressure zones for emergency use.

Connections are maintained with adjacent water utilities to provide limited supplies in the event of an emergency. A connection to the San Jose Water Company is maintained in the Evergreen service area. A two-way connection to the City of Santa Clara is maintained in the North San Jose/Alviso service area.

SJMWS has developed an Emergency Response Plan, which includes appendices such as an Emergency Notification Plan, Public Notification Plan, Blackout Plan, and Disaster Operation Plan. The Emergency Response Plan is updated as needed.

5.6 WATER QUALITY

SFPUC

The SFPUC aggressively protects the natural water resources entrusted to its care. Its annual Hetch Hetchy Watershed survey evaluates the sanitary conditions, water quality, potential contamination sources, and the results of watershed management activities by the SFPUC and its partner agencies, including the National Park Service, to reduce or eliminate contamination sources. The SFPUC also conducts sanitary surveys of the local Alameda and Peninsula watersheds every five years. These surveys identified wildlife and human activity as potential contamination sources. The regional system currently meets or exceeds existing water quality standards. However, system upgrades as identified in the WSIP are needed to improve the

SFPUC's ability to maintain compliance with current water quality standards and to meet anticipated future water quality standards.

SCVWD

Treatment of surface water is necessary to ensure that the water SCVWD provides meets or exceeds all federal and state drinking water standards. Surface water quality programs include: treating local and imported surface water for sale to retailers; participating in regional and statewide coalitions to safeguard source water quality protection; and investigating opportunities for water quality improvements through partnership in regional facilities or exchanges.

SCVWD's source waters are susceptible to potential contamination from sea water intrusion and organic matter in the Delta and from a variety of land use practices, such as agricultural and urban runoff, recreational activities, livestock grazing, and residential and industrial development. Local sources are also vulnerable to potential contamination from commercial stables and historic mining practices. No contaminant associated with any of these activities has been detected in the treated water. The water treatment plants provide multiple barriers for physical removal and disinfection of contaminants. Additionally, SCVWD monitors surface water quality in local reservoirs and in the Sacramento-San Joaquin Delta.

GROUNDWATER

SCVWD monitors groundwater quality to assess current conditions and identify trends or areas of special concern. Wells are monitored for major ions, such as calcium and sodium, nutrients such as nitrate, and trace elements such as iron. Wells are also monitored for man-made contaminants, such as organic solvents. The type and frequency of monitoring depends on the well location, historic and current land use, and the availability of groundwater data in the area. Overall groundwater quality in Santa Clara County is good. The most notable exceptions are nitrate and perchlorate, which have impacted groundwater quality in Llagas Subbasin. Historically, no perchlorate has been detected in any of the groundwater sources within SJMWS's service areas. Nitrate detection in SJMWS service areas' groundwater has been historically low and well below the maximum contaminant level set by Federal and State Regulations. Constant monitoring of all wells is required, as wells are vulnerable to potential contamination from local sources and activities.

As required by CDPH for their Drinking Water Source Assessment and Protection Program, drinking water source assessments were conducted for all 14 groundwater wells within SJMWS service areas during 2003/2004. The assessments were conducted by SJMWS staff, and consisted of information gathered from City records, databases, staff, the Water Resources Control Board, and visual field surveys.

In North San Jose, potential contamination sources include local electronic manufacturing facilities, gas stations, leaking underground storage tanks and sewer collection facilities. The Edenvale wells are vulnerable to chemical/petroleum processing storage activities. The Evergreen wells are vulnerable to automobile gas stations, underground storage tank leaks and dry cleaning service activities. The Coyote wells are vulnerable to contamination caused by agricultural drainage, illegal activities/unauthorized dumping, storage tank leaks and sewer collection systems. However, the existing well locations and precautions taken during construction in combination with the local hydrology have provided a high level of protection against contamination of the local ground waters. Water quality for new groundwater wells is

monitored during well development. Well head treatment can be installed to address exceedence of a state and/or federally regulated constituent for both new and existing wells if feasible. City staff will address new water quality regulations in the future to determine if treatment is necessary to meet any new or revised drinking water standard.

Saltwater intrusion has occurred in the shallow aquifer beneath North San Jose/Alviso. Saltwater from the Bay moves upstream during high tides and leaks through the clay cap into the upper aquifer zone when this zone is pumped. Land subsidence has also aggravated this condition. Elevated salinity is also present in the lower aquifer zone, but on a much smaller scale, and is attributed to improperly constructed, maintained, or abandoned wells that penetrate the clay aquitard and provide a conduit from the upper to the lower aquifer zone. In response, SCVWD has established an extensive program to locate and properly destroy such conduit wells.

As the groundwater management agency in Santa Clara County, SCVWD has ongoing groundwater protection programs to ensure high water quality and more reliable water supplies. These programs includes well permitting, well destruction, wellhead protection, land use and development review, nitrate management (targeted to areas of elevated nitrate in the Coyote Subarea and the Llagas Subbasin), saltwater intrusion programs, and providing technical assistance to regulatory agencies to ensure local groundwater resources are protected.

6
Demand Management Measures

6.1 BACKGROUND, IMPLEMENTATION AND EVALUATION

The City of San José Environmental Services Department has been a signatory to the MOU and a member of the California Urban Water Conservation Council (CUWCC) since 1995. As a signatory, the City submits Best Management Practice (BMP) Activity Reports and Coverage Reports to the CUWCC reporting database on a biennial basis. The BMP Program is a program through the CUWCC and is intended to establish water conservation measures to improve water use efficiency with its partners. The City will report to the CUWCC on the implementation of the CUWCC BMPs, but will include a discussion of each of the Demand Management Measures (DMMs) for the purposes of this report. This section describes the DMMs that are implemented within SJMWS service area in an effort to increase water conservation and meet the 2015 and 2020 water use targets.

Water conservation activities for SJMWS are implemented by the City's water conservation program and SCVWD. Since the mid 1990s, City staff has focused primarily on indoor water conservation with the goal of reduced wastewater flows to the San Jose/Santa Clara Water Pollution Control Plant (WPCP). Outdoor water conservation activities for SJMWS have been administered by SCVWD. City staff also performs outreach and education for indoor and outdoor water conservation to customers within SJMWS service area and other areas.

Evaluation of Effectiveness: Evaluating the effectiveness of a single DMM is difficult and generally not cost-effective for the City. Each program is not necessarily monitored separately for effectiveness and water savings. Evaluating the effectiveness of all DMMs as a whole provides a better representation and can be translated into overall water conservation savings, which is discussed below.

Water Conservation Savings: Water savings estimates are not available for each individual DMM. SCVWD has provided the projected savings as a result of DMM implementation as shown in **Table 6-1**. SJMWS participates in SCVWD programs through cost sharing and partnerships. Through SCVWD program participation and partnerships, these projected savings can be achieved.

Table 6-1: SCVWD Total Water Conservation Program Water Savings Goals

Year	2010	2015	2020	2025	2030	2035
Water Conservation Savings Goal (AFY)[1]	50,600	63,100	76,100	86,700	98,500	98,500

Source: SCVWD – Draft 2010 Urban Water Management Plan, Chapter 5.
1. Total conservation savings goal includes both urban and agricultural conservation using 1992 as the base year.

Installation of water-conserving plumbing will conserve water overall in the long-term, but could reduce the ability to save water for short-term DMMs during water shortages, a phenomenon termed “demand hardening.” Long-term water conserving DMMS are technology based, as such, further water savings rely on customers to actively reduce their water consumption. Saturation of water-conserving device installations and reliance on the behavioral changes of users makes future water savings more challenging than in the past.

6.2 DEMAND MANAGEMENT MEASURES

A. WATER SURVEY PROGRAMS FOR SINGLE-FAMILY RESIDENTIAL AND MULTI-FAMILY RESIDENTIAL CUSTOMERS

Implementation: This program was first implemented in July of 1998 as a pilot program. It is an active program administered by SCVWD. The City shares the cost to support this program. SCVWD plans to continue its program to meet the region's long-term water conservation goals.

Description: SCVWD markets water-use surveys to single-family and multi-family residential customers throughout the County. Since 1998, SCVWD has performed more than 29,600 residential audits, including more than 2,000 in FY 2009-2010 of which 106 surveys were completed in SJMWS service area.

The program includes educating the customer on how to read a water meter; checking flow rates of showerheads, faucet aerators and toilets; checking for leaks; installing low-flow showerheads; aerators and/or toilet flappers if necessary; checking the irrigation system for efficiency (including leaks); measuring landscaped area; developing an efficient irrigation schedule for the different seasons; and providing the customer with evaluation results, water savings recommendations, and other educational materials. In 2004, SCVWD began programming a homeowner's irrigation controllers as well (i.e., if allowed by the homeowner, the surveyors will input the recommended schedules into the controller).

Each year these programs are promoted countywide through a summer media campaign, which typically includes television, radio, and print advertisements.

B. RESIDENTIAL PLUMBING RETROFIT

Implementation: This program was first implemented in 1992. It is an active program administered by SCVWD. SJMWS also implements the program and shares the cost to support this program. This program is expected to continue into the future.

Description: SJMWS and SCVWD distribute high-quality, low-flow showerheads and faucet aerators to single-family and multi-family residents as the implementation of the residential plumbing retrofits program. SJMWS obtains the devices from SCVWD and distributes to customers both at SJMWS office and at public water conservation presentations. Since program inception, more than 296,000 low-flow showerheads and aerators have been distributed throughout the County, including more than 22,000 in FY 2009-2010. The cost for these devices is not tracked by SJMWS. **Table 6-2** below provides the number of plumbing retrofits during FY 2009-2010 in SJMWS service area.

Table 6-2: Residential Plumbing Retrofits Conducted in FY 2009-2010

	FY 2009-2010
No. of Showerhead retrofits distributed	**500**
No. of Aerator retrofits distributed	**163**

Source: SCVWD – Water Conservation Program Monthly Report Totals through June 2010, dated August 3, 2010.

C. SYSTEM WATER AUDITS, LEAK DETECTION, AND REPAIR

Implementation: SJMWS continuously implements water audits and leak detection and repair for the water distribution system. Since FY 1999-2000, the City has been reporting the results of pre-screen audits to the CUWCC for BMP compliance. SJMWS expects to continue the implementation of this DMM as part of the new CUWCC BMP 1.2, Water Loss Control.

Description: To prevent water waste and water losses in the system, SJMWS conducts an annual pre-screening system audit. The pre-screening audit is a comparison of the metered water sales and the total supply into the system. The difference between the two values represents potential water losses or leaks in the system. Compliance with the CUWCC BMP is achieved when the metered sales (plus other verifiable uses) are at least 90% of the water supplied to the system. Since FY 1999-2000, SJMWS has been reporting full compliance with the BMP pre-screening requirement.

Leak detection is implemented using a sonic device technique, flushing, and valve surveys. Any issues, reported leaks, and repairs are noted, mapped and entered into a leak repair database for tracking purposes to identify patterns. SJMWS also implements a valve maintenance program that uses both Global Positioning System (GPS) and Geographic Information System (GIS) technology. The program helps to facilitate leak detection and maintenance. SJMWS also implements a program to notify customers of leaks on the customer's side of the meter. In addition, SJMWS has prepared a plan to test source and production meters, and a plan to locate and repair unreported leaks.

D. METERING WITH COMMODITY RATES FOR ALL NEW CONNECTIONS AND RETROFIT OF EXISTING CONNECTIONS

Implementation: SJMWS implements metering requirements within SJMWS service area. SJMWS will continue to implement the metering requirements within the service area.

Description: SJMWS requires that all service connections within the service area are metered. All new service connections are metered and are billed by volume of water. Fire services are each equipped with a detection meter, for which customers are billed a meter charge. Connections to SJMWS are governed by Section 15.08 of the San José Municipal Code. SJMWS has also prepared a plan to test, repair, and replace meters to assure that they are properly maintained and operational, to check for tampering, and to prevent and repair leaks. The Municipal Code Section 15.08 is provided as **Appendix D**.

E. LARGE LANDSCAPE CONSERVATION PROGRAMS AND INCENTIVES

Implementation: Large landscape conservation programs are administered by SCVWD. There are currently two programs implemented, including the Landscape Survey Program (LSP) and the Landscape Rebate Program. The landscape survey program was first implemented in 1995.

The landscape rebate program is a combination of programs including the weather-based irrigation controllers (WBICs) program, the Irrigation System Hardware Rebate Program (ISHRP), the Residential Irrigation System Hardware Rebate Program (RISHRP), and the Water Efficient Landscape Rebate Program (WELRP). The WELRP was first implemented in 2005 and the other three programs were first implemented in 2006. The four programs were combined

into the Landscape Rebate Program in 2009. Both survey and rebate programs are currently active and both programs will continue to be implemented in the future.

Description of Landscape Survey Program (LSP): Since 1995, SCVWD has offered and provided large landscape water audits to sites in the County with one acre or more of landscaping. Landscape managers have been provided water-use analyses, scheduling information, in-depth irrigation evaluation, and recommendations for affordable irrigation upgrades. Each site receives a detailed report upon completion of the audit. An annual report is generated to recap the previous year's efforts. To generate several reporting and monitoring options, water use history, meter numbers, account numbers, and site contacts and addresses are captured for each site in a specialized database. In 2009, in an effort to expedite program participation and water savings, the program was expanded to include any commercial, industrial, and institutional sites with 5,000 square feet or more of irrigated landscape.

The LSP reaches the community through advertising in Tri-County Apartment Association's monthly Apartment Management magazine, colorful flyers at the biannual Home & Garden Show, NCTLC Turf & Landscape Expo, and retailer outreach through direct mailing of personalized letters to high water use customers and also through City newsletters and business newsletters. There have been 30 audits conducted in SJMWS service area through this program in FY 2009-2010.

Description of Landscape Rebate Program: In 2006, SCVWD partnered with five bay area water supply agencies and received a DWR Proposition 13 grant that provided funding for the installation of WBICs. This new generation of irrigation controller utilizes the principals of evapo-transpiration (ET) to automatically calculate a site-specific irrigation schedule based on several factors, including plants and soil type. The controller then adjusts the irrigation schedule as local weather changes to regulate unnecessary irrigation.

SCVWD first implemented a direct install program which installed two types of WBICs (real-time and historic) in both residential and commercial sites throughout SCVWD's service area. In order to expedite program participation and include emerging WBIC manufacturers, SCVWD shifted the WBIC program to a rebate style program that offered rebates of $300-$1,100 per approved controller installed.

SCVWD expanded its irrigation equipment incentives beyond the WBIC program, when two grants were received in 2006 for the implementation of two types of water efficient irrigation hardware installation rebate programs.

The first grant, received from DWR, kicked off implementation of the ISHRP. This program aimed to install a variety of water efficient irrigation hardware at commercial, industrial, and institutional sites throughout the County. Through ISHRP, SCVWD provided rebates ranging from $200 to a maximum of $2,000 per site (not to exceed 50% of the hardware cost). Qualifying hardware included rain sensors, high distribution uniformity nozzles, dedicated landscape meters, replacement sprinkler heads, converting overhead irrigation to drip irrigation, pressure reducing valves, and spray heads or rotors with pressure compensating heads and/or check valves.

The second water efficient irrigation equipment grant was received from the United States Bureau of Reclamation and was to launch the RISHRP. The program was designed to retrofit inefficient irrigation equipment at residential sites with new water conserving equipment. This residential version of the ISHRP offered rebates for the same efficient irrigation equipment but

was unique as RISRHP offered flat rebate amounts per equipment items. Through the RISHRP program, residents could receive rebates ranging from $50 up to $1,000 per site.

In addition to efficient irrigation equipment retrofits, SCVWD began to focus on water efficient landscapes by launching the WELRP in early 2005. The WELRP offered rebates to residential and commercial sites for the replacement of approved high water using landscape with low water use plants, mulch, and permeable hardscape. WELRP participants could receive up to $0.75 per square foot of irrigated turf grass with a maximum of rebate of $1,000 and $10,000 for residential and commercial sites respectively. In an effort to expedite program participation, SCVWD Board of Directors moved to double the maximum rebate from $1,000 up to $2,000 for residents and from $10,000 up to $20,000 for commercial sites in March 2009.

A summary of the surveys and rebates issued within SJMWS service area during FY 2009-2010 is provided in **Table 6-3**.

Table 6-3: Large Landscape Surveys Conducted during FY 2009-2010

	FY 2009-2010
No. of Surveys Completed	30
No. of Equipment Retrofit Rebates	3
No. of Landscape Conversion Rebates	5
No. of WBIC Rebates	0

Source: SCVWD – Water Conservation Program Monthly Report Totals through June 2010, dated August 3, 2010.

F. HIGH-EFFICIENCY WASHING MACHINE REBATE PROGRAMS

Implementation: The residential rebate program was first implemented in July 1995. In October 2001, SCVWD began participating in the regional Bay Area Water Utility Clothes Washer Rebate Program. Since January 2008, the regional program has partnered with Pacific Gas & Electric (PG&E). This is an active program administered by SCVWD and the City shares the cost to support this program. The program is expected to continue in the future, though in the year 2019, it is expected that higher clothes washer standards will be in effect and cost-sharing may be re-evaluated at that time.

Description: Residents of the County are eligible for a rebate of up to $175 for qualifying clothes washers. Qualifying clothes washers are rated by the Consortium for Energy Efficiency (CEE) as Tier 3. The total rebate is a combined rebate from both SCVWD and PG&E. In FY 2009-2010, 1,225 residential clothes washer rebates were issued in SJMWS service area.

G. PUBLIC INFORMATION PROGRAMS

Implementation: The City, SJMWS, and SCVWD participate in developing and implementing public information programs. SCVWD designs, funds, and implements a public information program and SJMWS conducts additional outreach efforts supporting SCVWD program. The City also implements outreach programs in the WPCP service area. The City, SJMWS, and SCVWD will continue to implement public information programs in the future.

Description: The City, SJMWS, and SCVWD have carried out various public information campaigns in the past and present. Multi-media advertising have covered topics such as water

conservation, urban runoff pollution prevention, water quality, groundwater recharge, water supply, water recycling, watershed and flood protection, and stream stewardship. Efforts included paid advertising, public service announcements, bill inserts/brochures, website development, and special events. Campaigns have been carried out in various languages including English, Spanish, Vietnamese, and Chinese. The City's annual expenditure for public information programs (not including administration) is up to $100,000.

H. SCHOOL EDUCATION PROGRAMS

Implementation: In 1995, SCVWD's Public Information Office hired a full-time, fully credentialed educator who holds life-time teaching and Administrative Services credentials to coordinate the school education programs. From 2001-2007, a second, bilingual educator joined SCVWD's full-time staff to assist with the program. The City has also been implementing school education programs in the WPCP service area for over 10 years. The City and SCVWD will continue to implement school education programs in the future.

Description: SCVWD's educators develop school programs, contract with the Youth Science Institute for additional instructors, and supervise university student interns as classroom assistants. SCVWD has been continuously active in this area by providing free classroom presentations, puppet plays, and tours of SCVWD facilities to schools within the County. The objective is to teach students about water conservation, water supply, watershed stewardship, and flood protection. SCVWD also provides school curricula to area educators, including workbooks and videos, as well as hands-on training for teachers. Materials distributed to students include topical lessons. All meet state education framework requirements and are grade-level appropriate. All students who participate in the program received materials.

The City's school education program is implemented through its annual grant program for youth education projects. The City provides grants of up to $5,000 to local schools and educational organizations for projects that result in increasing water-related awareness among youth in Kindergarten through Grade 12. Each year, the City funds up to $50,000 in water-related education projects. In 2010, the City's school education program was expanded to include funding for and participation in BAWSCA's regional school education program, which provides group assembly presentations and lesson plans for teachers about water conservation, and a residential water audit and plumbing retrofit kit for the students who participate.

I. CONSERVATION PROGRAMS FOR COMMERCIAL, INDUSTRIAL, AND INSTITUTIONAL (CII) ACCOUNTS

Implementation: Since 1992, SCVWD has implemented various programs targeting commercial, industrial, and institutional (CII) customers. The City also has implemented the Water Efficient Technologies (WET) Program since 1995. Both the City and SCVWD expect to continue the programs in the future, with the potential for minor changes based on technological advancements.

Description: Many initiatives and programs are implemented to increase water efficiency in the CII sectors. Following is a description of the programs offered:

City's Water Efficient Technologies (WET) Program: To encourage all commercial and industrial businesses to implement permanent water reduction measures, the City offers financial incentives to businesses that discharge within the WPCP service area, offering $4 for every

HCF[1] of wastewater flow reduced. Rebates range from $400 to $50,000 per site. The maximum rebate is $50,000 per project, or 50% of the project cost, whichever is less. The City budgets up to $150,000 annually for the program.

SCVWD's Commercial Toilet Program: SCVWD has a free high-efficiency toilet replacement program specifically for businesses in Santa Clara County. The program is for CII users as well as apartment complexes. The existing toilet must flush at 3.5 gallons per flush or higher. The toilets to be installed are high-efficiency toilets (HETs) utilizing state-of-the-art technology. The toilet and the installation are free of charge. In FY 2009-2010, there were 17 HET direct installs in SJMWS service area.

SCVWD's Commercial Washer Program: In July 1999, SCVWD partnered with Silicon Valley Power and the City to offer rebates for the replacement of laundromat clothes washers with high-efficiency washers. In 2000, the program was expanded to commercial machines in multi-family complexes. The program offers rebates of $400 per unit on approved purchased and leased high-efficiency washing machines within the County. In FY 2009-2010, 78 commercial clothes washer rebates were issued in SJMWS service area.

SCVWD's Pre-Rinse Spray Valve Program: SCVWD purchased a quantity of high-efficiency pre-rinse spray valves with a flow rate of 1.15 gallons per minute for distribution to commercial sites, especially those identified through the CII Water Survey Program. In FY 2009-2010, 2 pre-rinse spray valves were installed in SJMWS service area.

SCVWD's Submeter Rebate Program: This program, which began as a pilot program in FY 2000-2001, gives a rebate of $100 for every water submeter installed at multi-family housing complexes, such as mobile home parks and condominium complexes. Water use records from participating mobile home parks showed an average water savings of 23 percent per mobile home. In FY 2009-2010, the City assisted with SCVWD's efforts to install submeters and this resulted in participation by two mobile home parks in the SJMWS service area.

J. WHOLESALE AGENCY PROGRAMS

SJMWS is not a wholesale agency and does not provide water to other retailers.

K. CONSERVATION PRICING

Implementation: Conservation pricing is implemented by SJMWS and will continue to be implemented by SJMWS in the future.

Description: Single- and multi-family residential customers are subject to a tiered rate structure while commercial, industrial, institutional, and irrigation customers are subject to a uniform rate structure. SJMWS is not required to comply with the sewer rate requirement because sewer service is administered by the WPCP. In addition, for customers in SJMWS service area, the County of Santa Clara collects payment for sewer service through property taxes.

[1] A HCF is the unit water suppliers commonly use to measure volume and is equal to 748 gallons or one hundred cubic feet.

L. WATER CONSERVATION COORDINATOR

Implementation and Description: The City has a full-time equivalent (FTE) Water Conservation Coordinator. The position was established as early as 1995. The current Water Conservation Coordinator information is provided below:

Name: Alice Ringer
Title: Environmental Services Specialist, Water Conservation
Environmental Services Department, City of San José
Address: 3025 Tuers Road, San Jose CA 95121
Phone: 408-363-4708
Fax: 408-277-4954
Email: alice.ringer@sanjoseca.gov

There is at least one additional staff member that works with the Water Conservation Coordinator ensuring that there is at least one FTE staff working on water conservation programs. It is expected that there will continue to be at least one FTE staff member dedicated to water conservation programs.

M. WATER WASTE PROHIBITION

Implementation: The City has a water waste ordinance that was adopted in 1994 and updated in 2009. The ordinance will continue to be in effect unless it is superseded or amended with a new ordinance.

Description: SJMWS service area is within City limits and is governed by the City's municipal code. Municipal Code Section 15.10 dictates the water waste prohibitions within the City. Prohibitions include the following:

- No water use which results in gutter flooding or water runoff;
- No serving water in food service establishments unless requested;
- Notices shall be displayed in bathrooms of hotels, motels, and other lodging providing guests with the option to not launder towels and linens to help conserve water;
- Restrictions on washing building exteriors, hard or paved surfaces, and vehicles;
- Restrictions on commercial car washes;
- Requirements for building and construction use of fire hydrants ; and
- Restrictions on landscape irrigation including time of day and duration.

SJMWS' water conservation staff assists in the enforcement of the ordinance for the entire City including SJMWS service area. The Municipal Code Section 15.10 is provided as **Appendix D**.

N. RESIDENTIAL ULTRA-LOW-FLUSH TOILET REPLACEMENT PROGRAMS

Implementation: This program was first implemented by SCVWD in 1992 as a ULFT program and was active through 2003. The City administered its own ULFT program from 1999 to 2004. Beginning in 2004, SCVWD began implementing a High Efficiency Toilet (HET) program as described below. This program is an active program that the City also shares the cost to implement. The program is expected to continue in the future, though in the year 2014, it is expected that higher toilet water efficiency standards will be in effect and cost-sharing may be re-evaluated at that time.

Description: The current program consists of a rebate program for single-family and multi-family accounts and a full-installation program for multi-family accounts. County residents can receive up to $125 per toilet for replacing old, high water-use toilets that use 3.5 gallons per flush (gpf) or more, with a new HET or Dual Flush Toilet from an approved toilet list. In FY 2009-2010, 155 HET or Dual Flush Toilet rebates were issued in SJMWS service area.

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