# CITY OF SUNNYVALE 2010
# Urban Water Management Plan




June 2011

Prepared for
**The City of Sunnyvale**

Prepared By
**HydroScience Engineers, Inc**
**San Jose, CA**

HydroScience Engineers, Inc.
Strategic Water Solutions

# City of Sunnyvale

# 2010 Urban Water Management Plan

**June 2011**

Prepared for

City of Sunnyvale
Department of Public Works
221 Commercial Street
Sunnyvale, CA 94088

Prepared by

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## ACKNOWLEDGMENTS

We would like to thank the following individuals for contributing to the successful development of the City of Sunnyvale 2010 Urban Water Management Plan.

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Chris Moylan, Councilmember
Anthony (Tony) Spitaleri, Councilmember
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# SECTION 1 − PLAN PREPARATION

## 1.1 INTRODUCTION

The City of Sunnyvale's (City) 2010 Urban Water Management Plan (UWMP) was prepared to provide a comprehensive update to the 2005 UWMP, which was adopted by City Council on December 20, 2005. The 1983 California Urban Water Management Act (Act), also referred to as Assembly Bill (AB) 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 a UWMP every five years.

This plan will enable the State Department of Water Resources (DWR) to make projections on water usage and determine the status of water conservation efforts throughout the State. Although the efficient use of water supplies is a statewide concern, the planning and implementation of such use can best be accomplished at the local level.

The 2010 update to the City's 2005 UWMP builds upon previous updates, incorporates relevant water management issues and addresses supply and demand projections for the next 25 years within the City. It incorporates State legislative mandates that have been enacted, in particular Senate Bill (SB) X7-7, the Water Conservation Act of 2009, and AB 1420 Water Demand Management Measures. These legislative mandates target a 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 compliant daily per capita water use.

The 2010 UWMP must also include information on water deliveries and uses; water supply sources; efficient water uses; and demand management measures, including implementation strategy and schedule. DWR has the responsibility for the review and certification process of the UWMP pursuant to the Act. A current UWMP 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.

The goals of the 2010 UWMP update include:

- To provide a valuable resource tool to be used by policy makers at city, county, and local government levels to facilitate making sound and consistent decisions relating to water management and regional growth in the area.
- To meet all Federal and State regulatory requirements.
- To update the City's water conservation plan and projections for future conservation efforts.
- To identify communication links between key departments at both City and County levels, and to strengthen ties for cooperatively addressing water supply and land use planning issues.
- To continue and solidify relationships with other retailers and wholesalers to better address issues concerning water supply and demand.

## 1.2 PLAN ORGANIZATION

The 2010 UWMP is organized as recommended in the *Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan* dated March 2011 to expedite review and approval by DWR. The sections contained in the 2010 UWMP are as follows:

- Section 1 – Plan Preparation
- Section 2 – System Description
- Section 3 – System Demands
- Section 4 – System Supplies
- Section 5 – Water Supply Reliability & Water Shortage Contingency Planning
- Section 6 – Demand Management Measures

## 1.3 COORDINATION

The City participates in area and regional planning with the Bay Area Water Supply and Conservation Agency (BAWSCA), the San Francisco Public Utilities Commission (SFPUC) and the Santa Clara Valley Water District (SCVWD). Sunnyvale also participates in basin-wide groundwater and conservation planning with SCVWD. SCVWD provides management of local groundwater resources and contracts for imported water to the County. Participation in these planning efforts helps ensure that the City will receive an adequate amount of water to provide for its residents and businesses. It also provides for drought-condition planning and coordination with the rest of the region so that no particular water provider is unduly impacted by lack of water.

The City contacted the SFPUC (through BAWSCA) and the SCVWD for assistance with its UWMP and at the same time provided those agencies with pertinent data for their own plans.

The City encouraged the involvement of social, cultural and economic community groups during the preparation of the 2010 UWMP. Specific efforts were made to send out a public notification mailer to all community groups, including public and private water suppliers. BAWSCA agencies were notified of the 2010 preparation process. The City directed these agencies to the location of the Draft UWMP and solicited comments and suggestions.

The City published its intention to update the 2005 UWMP, and invited public comments on the City's Web page. The City also published a notice of intention in the San Jose Mercury News. Copies of notices for participation in the 2010 UWMP preparation can be found in **Appendix A**.

A Notice of Preparation of the UWMP 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 |
| STANFORD UNIVERSITY | GREAT OAKS WATER COMPANY |
| PURISSMA HILLS WATER DISTRICT | SAN JOSE WATER COMPANY |
| CITY OF BRISBANE | CITY OF SAN JOSE |
| CITY OF BURLINGAME | CITY OF GILROY |
| CITY OF DALY CITY | CITY OF MORGAN HILL |
| TOWN OF HILSBOROUGH | COUNTY OF SANTA CLARA |
| CITY OF MENLO PARK | SAN JOSE/SANTA CLARA WATER POLLUTION PLANT |
| CITY OF MILLBRAE | |
| CITY OF REDWOOD CITY | BAY AREA WATER SUPPLY & CONSERVATION AGENCY |
| CITY OF SAN BRUNO | |
| COASTSIDE COUNTY WATER DISTRICT | SAN FRANCISCO PUBLIC UTILITIES COMMISSION |
| ESTERO MUNICIPAL IMPROVEMENT DISTRICT | |
| SANTA CLARA VALLEY WATER DISTRICT | GUADALUPE VALLEY MUNICIPAL IMPROVEMENT DISTRICT |
| CITY OF EAST PALO ALTO | |

## 1.4 PLAN ADOPTION AND IMPLEMENTATION

The public hearing and consideration of adoption of the 2010 UWMP will take place on June 28, 2011 during a normal City Council session. Upon adoption of the 2010 UWMP by City Council, implementation will take place as identified in this document. Submission of the adopted UWMP to DWR will take place within 30 days from the date of adoption. The UWMP will be made available to the public via the internet at www.sunnyvale.ca.gov within 30 days of submission to DWR and will be submitted to the California State Library. The adopted resolution is included in **Appendix B**.

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# SECTION 2 − SYSTEM DESCRIPTION

## 2.1 HISTORY

The City of Sunnyvale was incorporated in 1912 and became an official charter city in 1950. When the City was incorporated in 1912, its population was approximately 1,500 and the entire municipal water system relied exclusively on groundwater for its potable water supply source. The original water supply source was from a privately-owned well at the Joshua Hendy Iron Works Factory in Sunnyvale. By 1926, a total of three wells were operational, none of which is in use today. During World War II, the Federal government awarded several war contracts that led to the development of the Central Water Plant and groundwater well.

At the close of World War II, Sunnyvale began to grow very quickly. By the early 1950s, demand for water surpassed the supplies available from groundwater and led to overdraft of the aquifers. As a direct consequence of the overdraft of the groundwater, land subsidence in the northern region of the City was at 0.3 feet per year. By 1952, the population had grown to 10,000, and it was at that time that Sunnyvale entered into a contractual agreement with the City and County of San Francisco for delivery of imported SFPUC water. That same year, three connections were made to the SFPUC supply to serve as a primary water source, to be supplemented by the now seven City-owned and operated wells located throughout the City. In the 17 years that followed, the City population grew to 96,000. Sunnyvale realized the need for an additional water supply source, and contracted with the SCVWD for two connections to the SCVWD's West Pipeline. By 1970, the City had developed three of its four current water supply sources (SFPUC/Hetch Hetchy, SCVWD Central Valley Project water, and City-owned wells).

As the demand for water was steadily on the rise during the period of 1970 through the mid-1980s, the City expanded the number of Hetch Hetchy connections to its current total of six. Sunnyvale also added two well water producing facilities, which gave the City a total of 11 City-owned and operated wells at that time.

The City also expanded its interconnections with surrounding water utilities in the immediate area to ensure a sustainable water supply during times of emergencies, thus adding to the system's reliability. The City has, at the present time, connections to the cities of Mountain View, Cupertino and Santa Clara, as well as to the California Water Service Company

The water demand reached an all-time-high in 1987 and demand was expected to increase, reaching approximately 36,000 acre-feet per year (AFY) at the projected system build-out. The six-year drought that started in the late 1980s and ended in the mid 1990s brought about many changes in water usage, which came largely from the industrial sector. Conservation measures and a recycled water program adopted by the City were some of the most important drought-induced changes. Changes in the economic dynamics of the area occurring after 2001 brought about new reductions to the water demand. Current projections for the water system build-out expect a slow increase to less than 30,000 AFY over the next 30 years.

## 2.2 ORGANIZATION STRUCTURE

The City operates under a council-manager form of government. Council, as the legislative body, represents the entire community and is empowered by the City Charter to formulate citywide policy. Seven Council members are elected at large by City voters for numbered seats and serve four-year terms. The City Charter limits Council members to serving two consecutive terms. The Mayor and Vice Mayor are selected from among the ranks of the Council and serve two year and one year terms respectively.

The City Manager is appointed by Council and serves as the Chief Executive Officer, responsible for day-to-day administration of City affairs and implementation of Council policies. Boards and commissions, through public meetings, advise the City Council on policy issues. The City Council meetings are open to the public with few exceptions as allowed by law and take place between one and four Tuesdays per month.

The City's water utility is managed, operated, and maintained by the Field Services Division of the Department of Public Works. This Division is responsible for the purchase and distribution of potable and non-potable water as well as construction of new and replacement infrastructure.

## 2.3 CLIMATE

The City enjoys a generally mild, temperate climate with relatively low levels of precipitation. Daytime temperatures range from the high 70's during the summer to typically not less than 50°F in the winter. Climate information for the area is illustrated in **Table 2-1** below.

**Table 2-1: Local Climate Data**

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Standard Monthly Average $ET_o$[1] (inches) | 1.35 | 1.87 | 3.45 | 5.03 | 5.93 | 6.71 | 7.11 | 6.29 | 4.84 | 3.61 | 1.80 | 1.36 | 49.35 |
| Average Rainfall (inches) | 2.12 | 2.07 | 1.93 | 0.93 | 0.05 | 0.08 | 0.05 | 0.14 | 0.25 | 1.14 | 2.09 | 1.71 | 12.56 |
| Average Max Temperature (°F) | 59.0 | 62.4 | 65.8 | 68.7 | 75.9 | 79.3 | 81.7 | 81.9 | 79.3 | 72.4 | 60.1 | 57.0 | 70.5 |
| Average Min Temperature (°F) | 39.3 | 41.6 | 43.6 | 44.1 | 48.4 | 51.6 | 54.6 | 54.5 | 53.2 | 48.2 | 41.2 | 38.7 | 46.7 |

1. ETo = Evapo Transpiration is the loss of water to the atmosphere by the combined processes of evaporation (from soil and plant surfaces) and transpiration (from plant tissues).

## 2.4 SERVICE AREA POPULATION

The City provides water service to a population of approximately 140,450 people. City population is projected to increase approximately 16% in the next 25 years. Population estimates as shown in **Table 2-2** were calculated using the DWR methodology 2, Category 1 since the City's service area overlaps the City boundaries by more than 95%. The population estimates are from the May, 2010 data provided by the State Department of Finance (DOF).

**Table 2-2: Population Projections for City of Sunnyvale**

| | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 |
|---|---|---|---|---|---|---|
| City Population | 141,099 | 141,700 | 147,300 | 152,000 | 157,900 | 163,300 |

## 2.5 DEMOGRAPHICS

The City is a diverse community with a residential population of approximately 140,450, of which approximately 118,500 are estimated to be of working age. Residents are generally well educated, with approximately 67% having some level of college education.

The City has one of the highest incomes per household in the nation, coupled with one of the lowest crime rates for a city of its size. It has a solid economic base, and poverty levels in the City have remained consistently lower than those of Santa Clara County or the State. With its Silicon Valley location, the City has a solid high-tech presence having transitioned from agricultural to defense to the current high tech economy. It has remained on the cutting edge of Silicon Valley's innovation. The top industries in the City include information services (25%), manufacturing (24%), and retail trade (10%), though the City is home to growing clusters of emerging technology companies in the high-tech and biotechnology industries.

The following are some other demographic factors:

- Total employment generated by City businesses is estimated to be 85,400.
- The average household income is approximately $79,926.
- There are over 55,000 housing units. With a complete build-out of housing units per Sunnyvale's General Plan, the number of housing units would increase to 63,580 units. In 20 years, it is expected that net new housing units would increase by between 5,500 and 6,700 units.
- Existing commercial and industrial development accounts for 35.4 million square feet. With a complete build-out of commercial and industrial property, according to the General Plan, the square footage would increase to 49 million. The average annual net new development is expected to be 215,000 square feet for an 81% build-out in 20 years.

### *2.5.1. Low-Income Housing*

With over 1,200 units, Sunnyvale has actively supported affordable rental housing utilizing a variety of local, State and Federal funds, and works extensively with non-profit housing developers in the ownership and management of its projects. Rent-restricted housing in Sunnyvale includes both publicly subsidized affordable housing, generally assisted with any combination of Federal, State, local, and/or private subsidies, and deed-restricted rental units provided through the City's Below Market Rate (BMR) program. Sunnyvale's BMR program currently requires rental developments consisting of nine or more units to provide a minimum of 15% of the project's units at rents affordable to low-income households for a period of 55 years.

Additional detailed demographic data can be found in **Appendix C**.

## 2.6 SERVICE AREA DESCRIPTION

The City of Sunnyvale has an approximate area of 24 square miles and is located in Santa Clara County, just minutes from the City of San Jose and approximately 40 miles south of the City and County of San Francisco. The City retails potable drinking water and non-potable water within the City limits. California Water Service Company (Cal Water), an investor-owned water utility, retails potable drinking water from Cal Water owned groundwater wells in pocket areas of the City (see **Figure 2-1**).

### *2.6.1. Distribution System*

The City owns, operates, and maintains a water supply and distribution system worth in excess of $200 million. The system is a closed network consisting of three different pressure zones. Sunnyvale's elevation varies from sea level at the northern end of town to approximately 300 feet above sea level at the southwest corner of town. Zone I extends roughly from El Camino Real northward to the San Francisco Bay and is supplied primarily by SFPUC water. Zone II consists of everything south of Zone I with the exception of the southwest corner of the City and is served by a supply mixture of SFPUC water, City groundwater wells, and SCVWD treated water. Zone III serves the southwest section of town with Hollenbeck Avenue on the east side and Fremont Avenue on the north side and is served by a combination of SCVWD treated water and City well water. The conveyance system extends over 300 miles in length, with pipe diameters ranging from 4 inches to 36 inches.

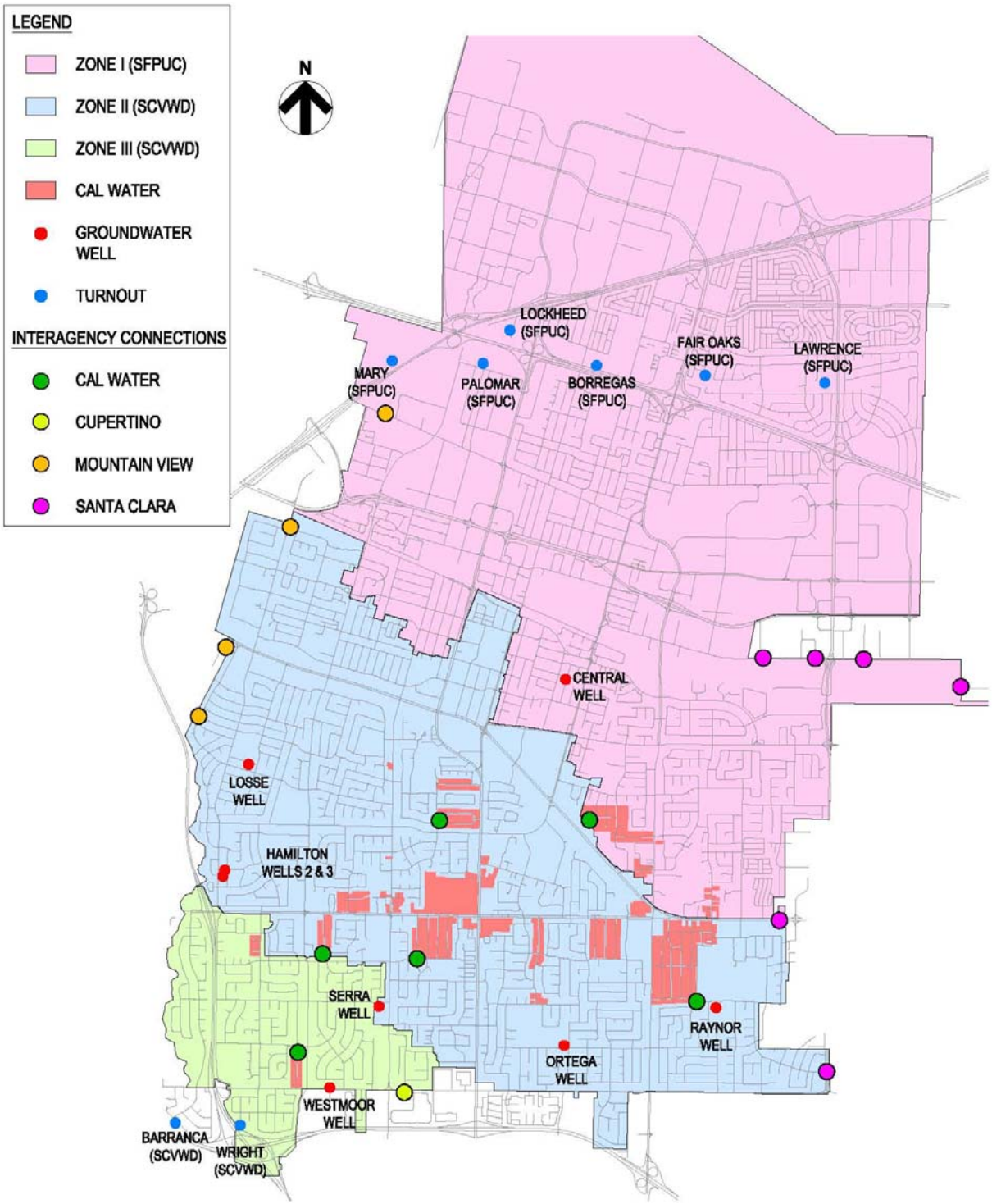
Water pressure within the distribution system is maintained within a range of 40 pounds per square inch (psi) to 105 psi throughout all three zones. A Supervisory Control and Data Acquisition (SCADA) system allows the City to maintain a balanced system, generally keeping water deliveries between those pressure readings.

Zone I receives direct downstream pressure from the SFPUC pipeline system with an operating pressure of approximately 130 psi, though that pressure is reduced through the use of pressure regulating valves before it is delivered to customers.

Several pocketed areas within the City boundaries, located primarily along Fremont Avenue and Sunnyvale-Saratoga Road, receive water from Cal Water. These areas were at one time part of unincorporated Santa Clara County, but have since been annexed by the City. Cal Water produces its own water from wells the company owns exclusively. The City, through a cooperative effort, provides emergency connections to Cal Water's system to improve fire flows when needed.

There are ten potable water storage reservoirs at five different locations throughout the City with a total storage capacity of 27.5 million gallons. There is also one recycled water reservoir with a storage capacity of two million gallons. This volume of water can meet at least one day of average water demand during the summer and up to two days of average water demand during the winter for the entire City.

**Figure 2-1: City of Sunnyvale Service Area Map**



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# SECTION 3 − SYSTEM DEMANDS

## 3.1 HISTORICAL WATER USE

Water use varies throughout the years depending on several natural factors including the weather and the extension of seasons, but is also dependent on other factors such as business climate and the economy. Recognizing long-term general trends in water requirements is valuable in projecting future supply needs.

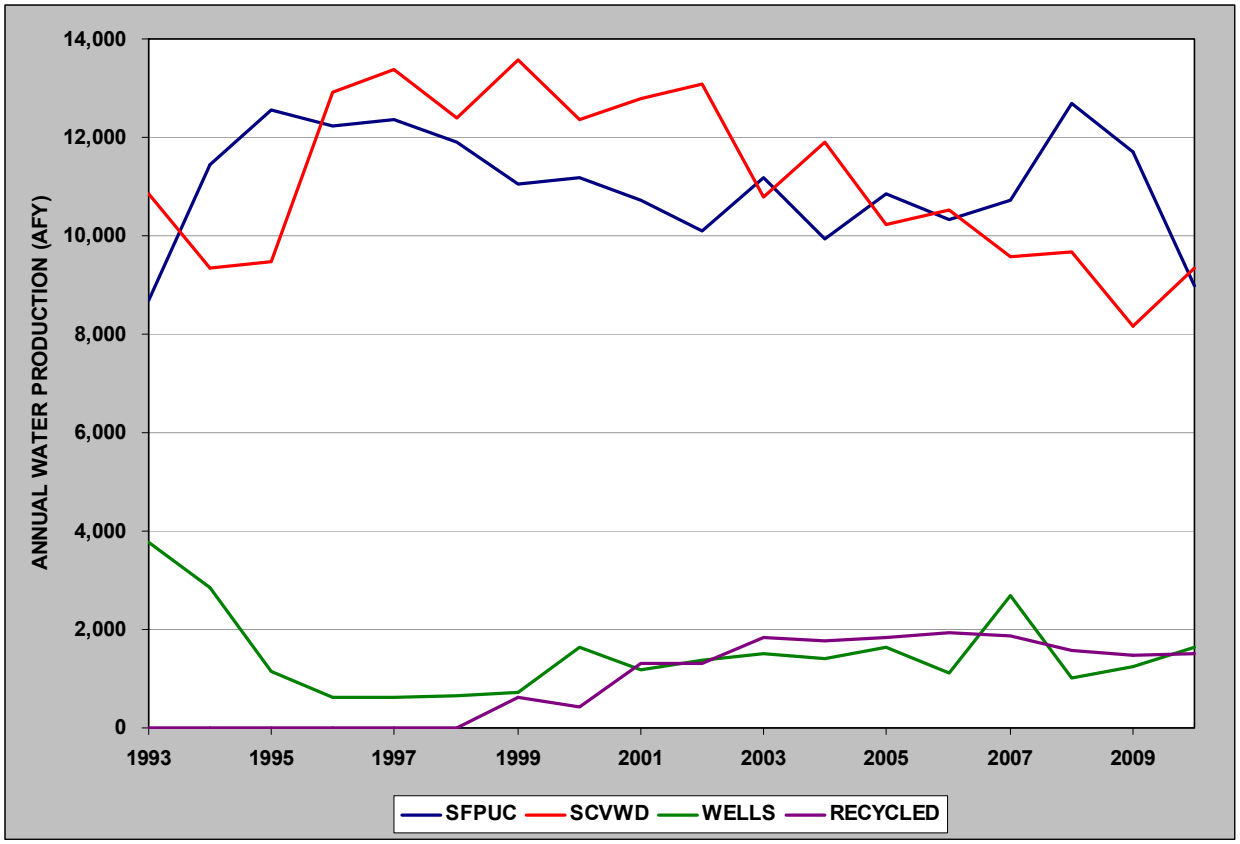
Water use in Sunnyvale generally increased during the period of 1993 to 2001 and steadily decreased since 2002 in response to drought-related conservation measures, economic factors and based on contractual limitations previously negotiated. The City converted its traditional sewer treatment plant in the mid 1990's to allow for the production of recycled water and began using recycled water in 1999, supplementing the overall water supply. The City strategically plans its purchases of water from SCVWD and SFPUC based on cost, so the increase in deliveries from one source will generally be accompanied by a decrease from the other. **Table 3-1** reflects the total annual water production in acre-feet per year (AFY) by the City since 1993.

**Table 3-1: Historical and Present Water Production (AFY)**

| Year | SFPUC Hetch Hetchy | SCVWD | Local Wells | Recycled Water | Total Water Production |
|---|---|---|---|---|---|
| 1993 | 8,690 | 10,866 | 3,786 | 0 | 23,343 |
| 1994 | 11,451 | 9,360 | 2,867 | 0 | 23,679 |
| 1995 | 12,552 | 9,491 | 1,132 | 0 | 23,176 |
| 1996 | 12,216 | 12,915 | 616 | 0 | 25,747 |
| 1997 | 12,372 | 13,389 | 630 | 0 | 26,391 |
| 1998 | 11,916 | 12,378 | 667 | 0 | 24,962 |
| 1999 | 11,058 | 13,577 | 713 | 639 | 25,987 |
| 2000 | 11,192 | 12,372 | 1,649 | 437 | 25,649 |
| 2001 | 10,730 | 12,773 | 1,189 | 1,317 | 26,008 |
| 2002 | 10,096 | 13,094 | 1,367 | 1,296 | 25,852 |
| 2003 | 11,195 | 10,773 | 1,521 | 1,823 | 25,311 |
| 2004 | 9,927 | 11,916 | 1,395 | 1,783 | 25,021 |
| 2005 | 10,868 | 10,232 | 1,631 | 1,851 | 24,582 |
| 2006 | 10,322 | 10,524 | 1,113 | 1,928 | 23,887 |
| 2007 | 10,723 | 9,587 | 2,696 | 1,874 | 24,879 |
| 2008 | 12,675 | 9,675 | 1,006 | 1,576 | 24,932 |
| 2009 | 11,720 | 8,176 | 1,231 | 1,486 | 22,613 |
| 2010 | 8,982 | 9,331 | 1,629 | 1,523 | 21,465 |

**Figure 3-1** (below) is a graphical depiction of the annual water production from the City's four water supply sources during the period of 1993 to 2010.

**Figure 3-1: Annual Water Production 1993-2010 (AFY)**




## 3.2 BASELINE WATER USE

In accordance with the Water Conservation Act of 2009, water suppliers must identify a 10 or 15-year water use period for use as the basis for calculating their Base Daily Water Use. This value serves as the baseline for computing future required reductions in gallons per capita per day (gpcd). By 2015, the per capita water use in the retailer's service area must be reduced by ten percent (10%) from the baseline. By 2020, per capita water use must be reduced by twenty percent (20%). In addition, the legislation requires that suppliers must use come up with a 5 year baseline period to calculate minimum water use reductions.

For recycled water retailers, there is the option to use a base period of up to 15 years for calculating their Base Daily Water Use. The baseline determination is dependent upon recycled water use during 2008 as a percentage of total water use. If the recycled water use in 2008 was greater than 10% of the total water use, the retailer has the option to use a 15 year baseline. Based on Sunnyvale's 2008 recycled water use, the City is not eligible for the 15-year base period. Thus, the baseline water use is calculated using a 10-year base period.

The base period determination is shown in **Table 3-2**. The selected period of 1995 to 2004 is representative of long-term water use for the City. The 5-year base period used to calculate the minimum water use reduction requirement is also shown on **Table 3-2**. The period from 2003-2007 was selected for the City's 5-year base.

**Table 3-2: Base Water Use Periods**

| Parameter | Value |
|---|---|
| 2008 total water deliveries | 24,932 AFY |
| 2008 total volume of delivered recycled water | 1,576 AFY |
| 2008 recycled water as a percent of total deliveries | 6% |
| Number of years in base period[1] | 10 years |
| Year beginning base period range | 1995 |
| Year ending base period range | 2004 |
| Number of years in base period | 5 years |
| Year beginning base period range | 2003 |
| Year ending base period range | 2007 |

1. The City is not eligible for the 15-year base period based on the recycled water use during 2008.

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

**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) |
|---|---|---|---|
| 1995 | 124,333 | 20.69 | 166 |
| 1996 | 125,841 | 22.98 | 183 |
| 1997 | 128,168 | 23.56 | 184 |
| 1998 | 129,464 | 22.28 | 172 |
| 1999 | 131,127 | 23.20 | 177 |
| 2000 | 131,760 | 22.90 | 174 |
| 2001 | 132,524 | 23.22 | 175 |
| 2002 | 132,580 | 23.08 | 174 |
| 2003 | 132,343 | 22.60 | 171 |
| 2004 | 133,242 | 22.34 | 168 |
| **Baseline per capita water use (1995-2004)** | | | **174** |

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

| Year | Service Area Population | Gross Water Use (MGD) | Daily per capita water use (gpcd) |
|---|---|---|---|
| 2003 | 132,343 | 22.60 | 171 |
| 2004 | 133,242 | 22.34 | 168 |
| 2005 | 132,725 | 21.95 | 165 |
| 2006 | 133,544 | 21.33 | 160 |
| 2007 | 135,721 | 22.21 | 164 |
| **Baseline per capita water use (2003-2007)** | | | **165** |

The baseline per capita water use for the period of 1995-2004 is 174 gpcd as shown on **Table 3-3**. The population estimates were calculated using the DWR methodology and Department of Finance (DOF) data. Baseline per capita water use during the 5-year compliance period is calculated to be 165 gpcd, as shown on **Table 3-4**. Because the 5-year baseline per capita water use is greater than 100 gpcd, the minimum water use reduction requirement must also be calculated. The calculation is used to determine whether the City's 2015 and 2020 water use targets meet the minimum water use reduction requirement (per Section 10608.22 of the California Water Code).

## 3.3 WATER USE TARGETS

Four methods are allowed by Water Conservation Bill of 2009 for calculating the 2015 and 2020 water use targets. The first method was used (wherein per capita daily water use in 2020 is 80% of the base daily per capita water use), because it is the most applicable to available data as well as the water use and demographic characteristics of the service area. The target 2020 per capita water use target cannot exceed 95% of the five-year compliance baseline water use. Target water use in 2015 should be 90% of the base daily per capita water use.

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

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

| Parameter | Daily per capita water use (gpcd) |
|---|---|
| Baseline per capita water use (1995-2004) | 174 |
| Baseline per capita water use (2003-2007) | 165 |
| 2020 minimum water use target (95% of 5-year baseline) | 157 |
| Method 1 2015 water use target (90% of 10-year baseline) | 157 |
| Method 1 2020 water use target (80% of 10-year baseline) | 139 |

The Method 1 2020 target of 139 gpcd is below the minimum water use target of 157 gpcd; therefore, no adjustment to the 2020 target is necessary.

## 3.4 WATER DEMANDS AND DEMAND PROJECTIONS

The City of Sunnyvale categorizes its water accounts into five broad customer categories: single-family, multi-family, commercial (incorporating industrial and institutional), irrigation, and fire services. The commercial sector includes all non-residential accounts that are not classified as irrigation.

Past, current, and projected water use in the City are summarized by classification of the water delivered to all customers in **Table 3-6**, and by source in **Table 3-7**. Population is a primary factor affecting urban water demand. Since 2005, the number of service connections has increased by more than 1,500 for residential and commercial accounts. Single-family residential connections increased by 446, nearly a 20% increase; multi-family residential connections increased by 278, over a 17% increase; and commercial/institutional connections increased by 941, nearly a 50% increase. Landscape irrigation connections have decreased from 786 to 588 connections while recycled water landscape irrigation connections increased by 31 to 112. "Other" connections, historically fire-lines, have decreased from 862 to 108 connections. The present and projected water demands for the City are shown in **Table 3-6**. The decrease in demand from 2005 to 2010 can be attributed to economic downturn.

**Table 3-6: Past, Current, and Projected Water Use by Customer Type (AFY)**

| Customer Type | 2005 | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 |
|---|---|---|---|---|---|---|---|
| Single family residential | 8,264 | 7,023 | 6,555 | 6,393 | 6,341 | 6,378 | 6,378 |
| Multi-family residential | 6,047 | 8,309 | 7,755 | 7,563 | 7,502 | 7,545 | 7,545 |
| Commercial | 9,035 | 4,261 | 4,507 | 5,334 | 6,485 | 8,100 | 8,100 |
| Irrigation | 642 | 970 | 905 | 883 | 876 | 881 | 881 |
| Other (Firelines) | 946 | 911 | 850 | 829 | 823 | 827 | 827 |
| **Total Potable** | **24,934** | **21,474** | **20,573** | **21,002** | **22,026** | **23,731** | **23,731** |

While the number of irrigation connections decreased since 2005, the water usage in that category increased during the same period. This is due to several factors, including the combining of water meters for greater efficiency and the increased use by large customers such as golf courses and athletic fields.

**Table 3-7: Projected Demand by Source (AFY)**

| Service Area | 2005 | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 |
|---|---|---|---|---|---|---|---|
| SFPUC | 10,868 | 8,982 | 10,003 | 10,003 | 10,003 | 10,003 | 10,003 |
| SCVWD | 10,232 | 9,331 | 9,570 | 9,999 | 11,023 | 12,728 | 12,728 |
| Wells | 1,631 | 1,629 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 |
| **Total Demand** | **24,582** | **21,464** | **20,573** | **21,002** | **22,026** | **23,731** | **23,731** |

Water loss within the City's distribution system can occur from various causes such as leaks, breaks, malfunctioning valves and the difference between the actual and measured quantities

from water meter inaccuracies. Other losses come from legitimate uses such as water/sewer main and hydrant flushing, tests of fire suppression systems and street cleaning.

The system losses experienced by Sunnyvale's water distribution system have historically been between 4% and 8% and are thus substantially lower than the 10% losses normally experienced by systems in urban areas (AWWA, Water Resource Planning; Manual of Water Supply Practices M50, 2001, p33), as shown on **Table 3-8**. Ninety-five percent of public water distribution systems experience losses between 7 and 15%. The system loss projections and total demand projections contained in this UWMP assume a future system loss percentage of approximately 6%, which represents a conservative estimate based on the actual system losses historically experienced by the City.

**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. 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 (AFY)**

| Water Use | 2005 | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 |
|---|---|---|---|---|---|---|---|
| Recycled Water | 1,851 | 1,523 | 1,400 | 1,525 | 1,650 | 1,775 | 1,775 |
| System Losses | 1,496 | 1,288 | 1,234 | 1,260 | 1,321 | 1,423 | 1,423 |
| **Total** | **3,374** | **2,811** | **2,634** | **2,785** | **2,971** | **3,198** | **3,198** |

### *3.4.1. Low 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. The City projects that there will be 1,361 Affordable Housing rentals, 229 Below Market Rate (BMR) rentals, and 434 BMR ownership units in 2015 based on the current number of units and the various BMR and Affordable Housing restrictions and expirations, which apply to current and new developments. Projections for additional units beyond 2015 are unknown at this time.

Projected water use is based on the number of units, the average household size within the City, and the projected water use factors. Projected water use factors are based on the forecasted populations and water demands through 2035. **Table 3-9** provides the water use projection for lower income households within the City service area (these demands are already included in **Table 3-6** and **Table 3-7**).

**Table 3-9: Lower Income Estimated Current and Projected Water Use (AFY)**

| Customer Type | 2015 | 2020 | 2025 | 2030 | 2035 |
|---|---|---|---|---|---|
| Single family residential (BMR Units) | 161 | 158 | 161 | 167 | 167 |
| Multi-family residential (Affordable Housing + BMR Units) | 591 | 580 | 590 | 612 | 612 |
| **Total Water Use** | **752** | **738** | **751** | **779** | **779** |

Average Household Size of 2.56, Community Economic Profile, June 2010, City of Sunnyvale

### *3.4.2. Water Demand Projections for Wholesale Water Agencies*

No water was sold to other agencies. **Table 3-10** (below) depicts the projected demands given to each wholesale water agency from which the City receives water. A copy of the documentation provided to the wholesale agencies is provided in **Appendix D**.

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

| Customer Type | Contracted Volume | 2015 | 2020 | 2025 | 2030 | 2035 |
|---|---|---|---|---|---|---|
| SFPUC | 10,003 | 10,003 | 10,003 | 10,003 | 10,003 | 10,003 |
| SCVWD | 10,409 | 9,570 | 9,999 | 11,023 | 12,728 | 12,728 |

## 3.5 WATER USE REDUCTION PLAN

As part of the Water Resources Sub-Element of the City's General Plan, the City has a long range goal for water conservation. The Sub-Element states the following:

> ***GOAL B: Water Conservation −*** *Promote more efficient use of the City's water resources to reduce the demands placed on the City's water supplies*
>
> ***Policy B.1:*** *Lower overall water demand through the effective use of water conservation programs designed to increase water use efficiency in the residential, commercial, industrial and landscaping arenas, partnering with our wholesalers.*
>
> ***Action Strategies***
> - *B.1a: Develop staged conservation plans that will effectively respond to periods of water shortages or droughts. The plans will include the use of restrictions tailored to the level of conservation required, and will be coordinated with other concerned agencies.*
> - *B.1b: Keep the community regularly advised as to the status of the City's water supply, how they can achieve conservation goals, and how the community is progressing toward those goals.*
> - *B.1c: Develop partnerships with other agencies and participate in their programs to achieve regional water conservation goals.*
> - *B.1d: Support the Ahwanne Water Principles put forward by the Local Government Commission (LGC) in 2005 and participate in the continued update of the principles to promote the efficient use of the City's water resources.*
> - *B.1e: Develop comprehensive plans that employ tools such as individual water metering and demand based pricing to encourage conservation.*

Current water use is at approximately 136 gpcd, which is less than the 2020 target of 139 gpcd. Assuming that the City can maintain or improve water use on a per capita basis, then the City is on target to meet the 2020 objective.

In an effort to decrease overall system demand, the City is currently working (in cooperation with SCVWD and other agencies) on water conservation education and outreach programs. Specifically, the City and/or its partnering agencies are implementing outreach and education to residential and commercial water users regarding water-wise and drought resistant landscaping and the increased use of recycled water. The details of each water use reduction program and the City's implementation plan are further discussed in **Section 6** (Demand Management Measures).

# SECTION 4 − SYSTEM SUPPLIES

## 4.1 SOURCES OF SUPPLY

The City has three sources of potable water supply: purchased surface water from SFPUC, purchased treated surface water from SCVWD, and groundwater from seven, City-owned and operated wells. One additional well remains on stand-by for emergencies. An additional source of non-potable water comes from the City's Water Pollution Control Plant in the form of recycled water. The City also has distribution system inter-ties to the cities of Cupertino, Mountain View, and Santa Clara as well as to California Water Service Company through service connections located within city boundaries that are reserved for use in case of an emergency.

**Figure 4-1** represents the percentage of water supply from each source for Calendar Year 2010 and **Table 4-1** depicts the current and planned water supplies for the City.

**Figure 4-1: City of Sunnyvale Sources of Water Supply**

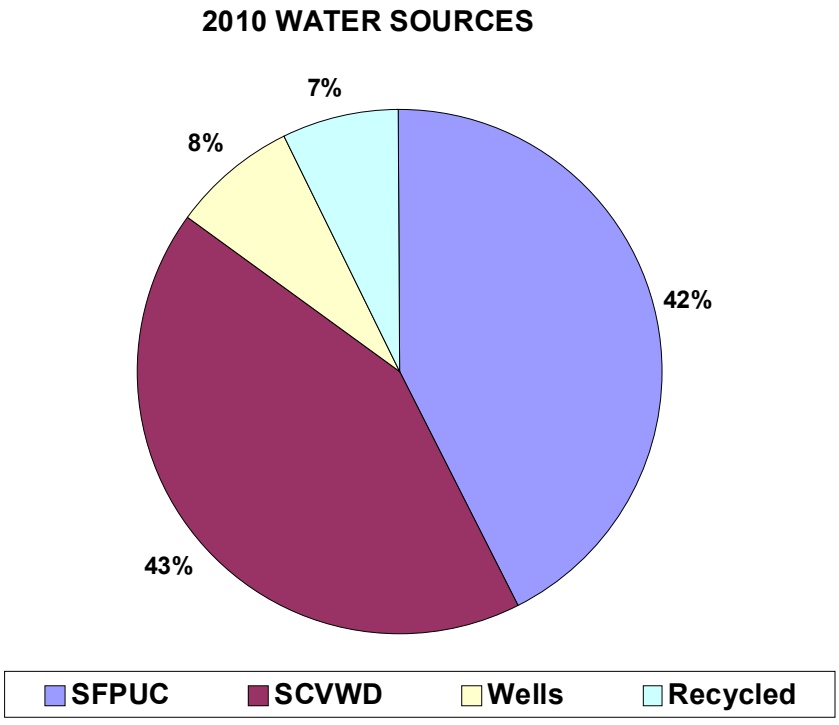


**Table 4-1: Water Supplies – Current and Projected in a Normal Year (AFY)**

| Water Supply Sources | 2010 | 2015 | 2020 | 2025 | 2030 |
|---|---|---|---|---|---|
| SFPUC | 8,982 | 10,003 | 10,003 | 10,003 | 10,003 |
| SCVWD | 9,331 | 9,570 | 9,999 | 11,023 | 12,728 |
| Groundwater | 1,629 | 1,000 | 1,000 | 1,000 | 1,000 |
| Recycled Water | 1,523 | 1,400 | 1,525 | 1,765 | 1,775 |
| **Total Supply** | **21,465** | **21,973** | **22,527** | **23,791** | **25,506** |

As **Table 4-1** indicates, recycled water supplies are expected to drop slightly by 2015 due to an expected reduction in the production of recycled water by the City's Water Pollution Control Plant (WPCP) due to outages during capital improvements. The increase projected thereafter is largely due to aggressive efforts by the City to encourage the use of recycled water for non-potable uses.

## 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 the SFPUC from its local watersheds and facilities in Alameda and San Mateo Counties.

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 ensure ongoing reliability of 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. The local watershed facilities are operated to capture local runoff.

The business relationship between the SFPUC 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" (WSA) entered into in July 2009 (WSA). This new 25 year WSA replaced the Settlement Agreement and Master Water Sales Contract that expired in June 2009. The WSA addresses the rate-making methodology used by the SFPUC in setting wholesale water rates for its customers in addition to addressing water supply and water shortages for the RWS.

The WSA is supplemented by an individual Water Supply Contract between SFPUC and each individual retailer, also entered into in July 2009. These contracts also expire in 25 years.. The City of Sunnyvale has an Individual Supply Guarantee (ISG) of 12.58 MGD (or approximately 14,100 acre feet per year). Although the WSA and accompanying Water Supply Contract expire in 2034, the ISG (which quantifies San Francisco's obligation to supply water to its individual wholesale customers) survives their expiration and continues indefinitely. The Sunnyvale contract also includes a minimum purchase amount of 8.93 MGD (10,003 AFY), which Sunnyvale agrees to buy, regardless of whether sales drop below this level.

As previously stated, 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. This Assurance is 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 on Attachment C to the WSA.

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. The WSA also anticipated a Tier 2 Shortage Plan adopted by the wholesale customers which would allocate the available water from the RWS among the wholesale customers. The Tier 2 agreement was completed and approved by all the wholesale customers in March, 2011.

## 4.3 SCVWD – WHOLESALER (SURFACE WATER)

SCVWD supplies the City of Sunnyvale with treated surface water through an entitlement of imported Central Valley Project (CVP) water and the State Water Project (SWP), as well as surface water from local reservoirs. The current contractual agreement between the City and SCVWD sunsets in 2051. It was effective in 1976 with a 75 year term.

SCVWD's imported water is conveyed through the Sacramento-San Joaquin Delta then pumped and delivered to the county through three main pipelines: the South Bay Aqueduct, which carries water from the SWP, and the Santa Clara Conduit and Pacheco Conduit, which bring water from the federal CVP.

SCVWD has a contract for 100,000 AFY from the SWP, and nearly all of this supply is used for municipal and industrial (M&I) needs. The CVP contract amount is 152,500 AFY. However, the actual amount of water delivered is typically significantly less than these contractual amounts and depends on hydrology, conveyance limitations, and environmental regulations. On a long-term average basis, 83% of the CVP supply is delivered for M&I use, and 17% is delivered for irrigation use. Actual deliveries from imported sources vary significantly depending on hydrology, regulatory constraints to protect water quality as well as fish and wildlife, and other factors. SCVWD routinely acquires supplemental imported water to meet the county's needs from the water transfer market, water exchanges, and groundwater banking activities.

Local runoff is captured in local reservoirs for recharge into the groundwater basin or treatment at one of SCVWD's three water treatment plants. The total storage capacity of the District reservoirs is approximately 170,000 AF without the Department of Safety of Dams (DSOD) restrictions. Water stored in local reservoirs provides up to 25% of Santa Clara County's water supply. Reservoir operations are coordinated with imported Bay-Delta water received from the SWP and the CVP.

**Table 4-2** represents the existing and planned wholesale water supply as determined by the City.

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

| Wholesale Sources | Contracted | 2015 | 2020 | 2025 | 2030 | 2035 |
|---|---|---|---|---|---|---|
| SFPUC | 10,003 | 10,003 | 10,003 | 10,003 | 10,003 | 10,003 |
| SCVWD | 10,409 | 9,570 | 9,999 | 11,023 | 12,728 | 12,728 |
| **Total** | **20,412** | **19,573** | **20,002** | **21,026** | **22,731** | **22,731** |

## 4.4 GROUNDWATER

The City of Sunnyvale has seven operating wells and one well on stand-by for emergencies. The seven wells are used by the City as a supplemental source to the imported SFPUC and SCVWD water supplies.

In addition to supplying the City with groundwater, the SCVWD provides the City with basin-wide groundwater and conservation planning assistance. Local groundwater supplies up to half of the county's water supply during normal years. The groundwater basin in Santa Clara County is not adjudicated and has not been identified or projected to be in overdraft by DWR.

Conjunctive use management is a practice by which the groundwater basin is pumped more in drier years and then replenished (or recharged) during wet and average years. Groundwater is replenished naturally from rainfall and augmented by SCVWD-operated recharge operations. Conjunctive use helps protect the groundwater basin from overdraft, land subsidence, and saltwater intrusion and provides critical groundwater storage reserves.

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, the District 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. The City's groundwater comes from the Santa Clara Plain subarea of the Santa Clara Subbasin. A general discussion of this subarea is provided below.

### *4.4.1. 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. The Santa Clara Plain 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 since it is in a different groundwater charge zone and has fewer water supply options than the Santa Clara Plain. The Plain underlies the northern portion of Santa Clara County and includes the majority of the streams and recharge facilities operated by SCVWD (SCVWD UWMP, 2010).

In April of each year, when the quantity of imported water available to SCVWD by contract and the local water yield can be estimated somewhat accurately, SCVWD estimates the carryover storage. Based on the calculated carryover capacity and anticipated customer demand, SCVWD reviews and modifies its groundwater management strategy in order to maintain adequate water in the basin and avoid subsidence. A copy of SCVWD Groundwater Management Plan adopted in 2001 can be found in **Appendix E**.

Groundwater is extracted by way of wells, either owned or operated by area retailers or private property owners. The allowable withdrawal of groundwater by the City depends on a number of factors, including withdrawals by other water agencies, the quantity of water recharged and carry-over storage from the previous year. **Figure 4-2** illustrates the groundwater basin in relationship to the City's groundwater wells. **Table 4-3** shows historic metered groundwater pumping data for the City from 2006 to 2010.

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

| Basin Name | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|
| Santa Clara Plain Subarea | 1,113 | 2,696 | 1,006 | 1,231 | 1,629 |
| % of Total Water Supply | 5% | 11% | 4% | 5% | 8% |

The projected amount of groundwater to be pumped by the City is shown on **Table 4-4**.

**Table 4-4: Groundwater – Projected Volume to be Pumped (AFY) [1]**

| Basin Name | 2015 | 2020 | 2025 | 2030 | 2035 |
|---|---|---|---|---|---|
| Santa Clara Plain Subarea | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 |
| % of Total Water Supply | 4.55% | 4.44% | 4.22% | 3.92% | 3.92% |

1. The City is studying the economic and operational feasibility of drilling more groundwater wells in the years to come. Should the additional wells be drilled, these projections will change.

## 4.5 TRANSFER OPPORTUNITIES

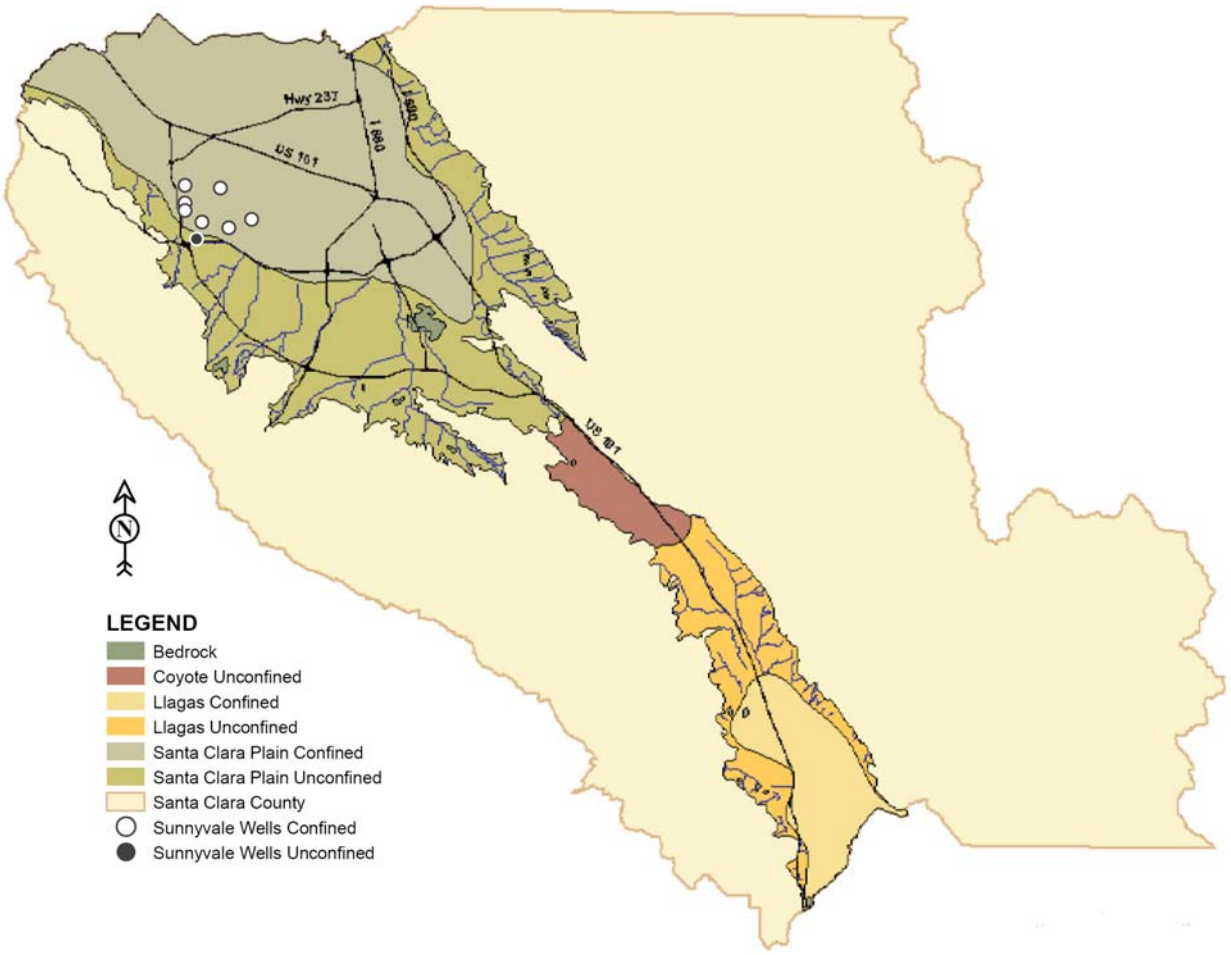
The City is currently connected to the cities of Cupertino, Mountain View and Santa Clara and to California Water Service Company through service connections located within Sunnyvale for use during emergency situations.

**Table 4-5: Transfer and Exchange Opportunities** [1]

| Transfer Agency | Transfer or Exchange | Short Term or Long Term | Proposed Volume (gpm) |
|---|---|---|---|
| City of Cupertino | Emergency Transfer | Short Term | 0 |
| City of Mountain View | Emergency Transfer | Short Term | 0 |
| City of Santa Clara | Emergency Transfer | Short Term | 0 |
| California Water Service Company | Emergency Transfer | Short Term | 0 |

1. The City is not proposing to transfer or exchange any water other than in the case of emergency.

**Figure 4-2: Santa Clara County Groundwater Basin and City Groundwater Wells**




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 and 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, one entered into in 1998 with both the Pajaro Valley Water Management Agency and the Westlands Water District, and another entered into in 2010 with the Patterson Irrigation District. Details of these agreements can be found in Section 5 of this Plan. In addition, details regarding wholesaler transfers and exchanges can be found in each individual wholesaler's UWMP.

## 4.6 DESALINATED WATER OPPORTUNITIES

Both SFPUC and SCVWD are working together with the East Bay Municipal Utilities District, Contra Costa Water District, and theZone 7 Water Agency as 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 and construction completed by 2015. Additional details regarding desalinated water opportunities can be found in the SFPUC and SCVWD UWMPs.

## 4.7 RECYCLED WATER OPPORTUNITIES

The City of Sunnyvale has developed a recycled water program which today serves parks, golf courses and the landscaping needs of diverse industries. A wastewater reclamation program was developed in 1991 when the City first identified short-term goals of recycling wastewater of 20% to 30% of high-quality effluent from the Sunnyvale Water Pollution Control Plant (Plant). The long-term goal of the City is to reuse 100% of all wastewater (15 MGD) generated from the Plant to reduce all flows to the bay, as stated in the 2000 Recycled Water Master Plan.. This goal, if attained, would involve the export of water to a location or agency outside the City limits. The Plant has a design flow capacity of 29.5 MGD for treatment of wastewater from the City.

The City has completed Phases I and II of the 2000 Recycled Water Master Plan, which now serves Baylands Park, Lockheed/Martin Area, the Sunnyvale Municipal Golf Course, and other parks and industrial areas in the northern part of the City. A storage tank was built in the Year 2000 to allow for more recycled water to be developed and stored in order to keep up with demand on the system once the area is built out. Possible extensions to serve the south end of the City and also Cupertino and Los Altos may be evaluated in the future.

### *4.7.1. Treatment and Disposal of Wastewater*

The Plant is located at 1444 Borregas Avenue and is designed for an ultimate flow capacity of 29.5 MGD, though current flows through the plant average approximately 15 MGD. The amount of influent wastewater handled by the Plant varies with the time of day and with the seasonal changes in demand.

The Plant collects wastewater from the sanitary sewer system which must then be treated before it can be discharged to the lower San Francisco Bay. This treatment occurs at the Plant, which is an advanced tertiary treatment plant consisting of the following processes:

- Primary Treatment (Sedimentation)
- Secondary Treatment (Oxidation)
- Tertiary Treatment (Filtration and Disinfection)

These processes provide treatment to a level that will meet NPDES discharge requirements. Most of the treated water is discharged to the south San Francisco Bay via the Guadalupe slough. Approximately 10% of the Plant flow is treated to a higher level to meet the necessary recycled water quality, and is delivered to customers for non-potable uses, primarily irrigation.

Sunnyvale has experienced a slight decrease in Plant influent over the past five years, but anticipates a steady level of 15 MGD for plant influent over the next 25 years.

**Table 4-6** presents the total amount of wastewater that is collected and treated as well as the amount that is treated to meet recycled water standards. This information is projected out to 2035.

**Table 4-6: Recycled Water – Wastewater Collection and Treatment (AFY)**

| Type of Wastewater | 2005 | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 |
|---|---|---|---|---|---|---|---|
| Total wastewater collected and treated | 17,016 | 15,515 | 19.212 | 19,324 | 19,548 | 19,548 | 19,548 |
| Volume that meets recycled water standard | 811 | 866 | 1,105 | 1,411 | 1,800 | 2,298 | 2,298 |

**Table 4-7** describes the wastewater disposal method used other than for recycled water.

**Table 4-7: Non-Recycled Wastewater Disposal (AFY)**

| Method of Disposal | Treatment Level | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 |
|---|---|---|---|---|---|---|---|
| South San Francisco Bay | Tertiary | 865 | 1,129 | 1,443 | 1,817 | 2,267 | 2,267 |

## 4.8 POTENTIAL AND PROJECTED USE, OPTIMIZATION PLAN WITH INCENTIVES

### *4.8.1. Water Recycling Program*

The California Water Code requires the use of recycled water in place of potable water whenever it is economically and technically feasible. Recycled water is also a reliable source of supply for non-potable uses during a drought.

With the State of California growing at a rate of 2% a year and the Santa Clara County area growing at 6% a year, it is necessary to look to alternative supplies to help augment existing limited water supplies in the County. Significant water reuse can also provide an alternative to unrestricted discharge, thereby helping to comply with discharge requirements, while at the same time avoiding the costs required to build new wastewater treatment facilities.

### *4.8.2. Current Uses of Recycled Water- Completed Projects*

The City has completed Phase I and some of Phase II (IIa and IIb) of the Recycled Water Master Plan. The Baylands Park distribution facilities were first constructed during Phase I of the program. The pipelines consist of 24,200 feet of pipe ranging from 12-inch to 36-inch lines extending from the Plant east to Baylands Park and west to the Sunnyvale Golf Course. Recycled water deliveries to these two locations began during the summer of 1996. Work later progressed to include remaining targeted customers including Lockheed/Martin, Sunnyvale SMaRT© Station, and the Caltrans interchange at US101 and SR237. Phase I also included pipelines to connect the Moffett Golf Course and could possibly serve the NASA/Ames Research Center in the near future.

Phase IIa pipelines include 34,000 feet of piping to serve landscape uses in the Moffett Park Area north of Highway 237 plus the first 3,000 feet of the 24-inch "east main" connection which extends south from Caribbean Drive. This phase of the project was completed in October 1996. Approximately 140 potential customers have been identified in the Phase IIa area, with a total demand of 0.41 MGD.

Phase IIb pipeline completes the 24-inch transmission main between Caribbean Drive and Kifer Avenue. A two million-gallon storage tank has been constructed to hold recycled water at Wolfe Road and Kifer Avenue.

**Table 4-8** compares the actual 2010 uses of recycled water to the projected uses in the 2005 UWMP.

**Table 4-8: Recycled Water – 2005 UWMP use projection compared to 2010 actual (AFY)**

| User Type | 2010 Actual Use | 2005 Projection for 2010 |
|---|---|---|
| Landscape | 761 | 775 |
| Wildlife Habitat | 0 | 0 |
| Other (WPCP operations) | 657 | 900 |
| Other (Hydrants) | 14 | 5 |
| **Total** | **1,432** | **1,680** |

### *4.8.3. Benefits of Recycled Water*

The use of recycled water provides for the following benefits:

- Potable water users benefit since more water becomes readily available for the potable supply.
- All Sunnyvale residents benefit from securing a long-term adequate water supply to sustain economic growth and ensure public health.
- Recycled water users benefit by avoiding strict conservation requirements and water use restrictions during times of drought and by paying less than the cost of potable water.
- All water users benefit from bringing in another water source to augment supplies.
- Area wetlands benefit from reduced fresh water discharges into the saline wetlands.

### *4.8.4. Recycled Water Optimization*

The City of Sunnyvale recycled water program is designed to distribute recycled water throughout the City for irrigation of schools, parks, golf courses, and businesses. The recycled water distribution system currently consists of approximately 43,000 feet of 12-inch through 36-inch transmission mains (possible future extensions) and over 34,000 feet of 8-inch distribution lines. Areas in Sunnyvale served by the system are shown in **Figure 4-3**.

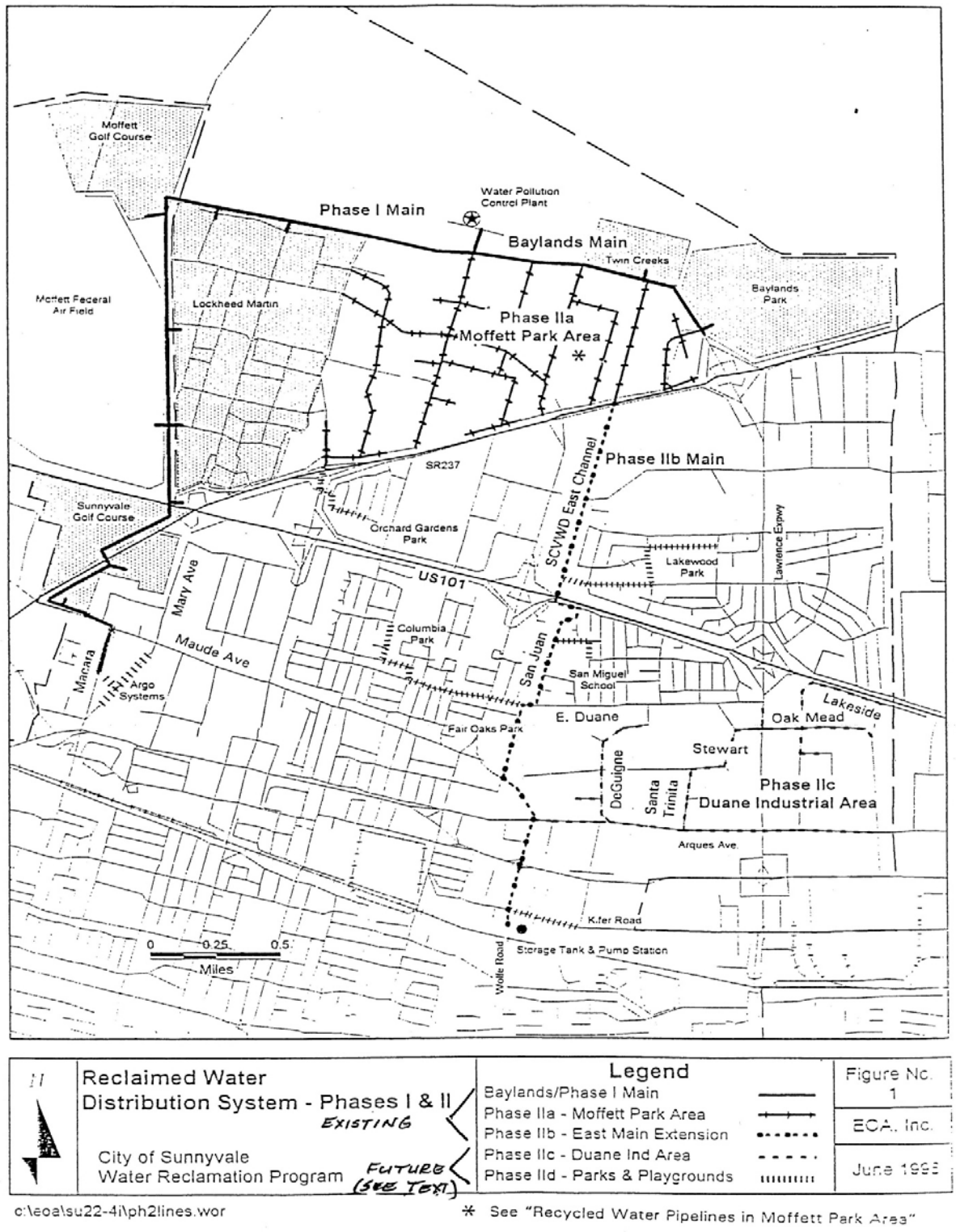
The Phase IIb Main pipeline and Phase II Pumping and Storage Facilities located at Wolfe Road and Kifer Avenue are complete. The storage tank at Kifer Avenue created two million gallons of recycled water storage to assist in meeting demands on the system. Pipelines designated as Phase IIc and Phase IId on **Figure 4-3** represent possible future extensions of the system.

Estimates of recycled water demand for sites within the City are based on actual or projected irrigation use, as determined by the review of City water billing records. For sites outside Sunnyvale, estimates are based on the facility area or by comparison to other similar sites within the City. Pipeline alignments were selected to minimize overall piping requirements, and to accommodate a phased approach to construction. **Table 4-9** lists the potential future use of recycled water.

**Table 4-9: Recycled Water – Potential Future Use (AFY)**

| Use Type | Description | 2015 | 2020 | 2025 | 2030 | 2035 |
|---|---|---|---|---|---|---|
| Irrigation | Parks, Golf Course, Schools, etc. | 870 | 870 | 870 | 870 | 870 |
| Industrial | Cooling Towers, Environ-mental Enhancements | 2 | 3 | 3 | 3 | 3 |
| Wildlife Habitat | Stream Flow Augmentation | 0 | 0 | 5 | 5 | 5 |
| Other (WPCP) | | 806 | 905 | 900 | 900 | 900 |
| Other (Hydrants) | | 2 | 2 | 2 | 2 | 2 |
| | **Total** | **1,680** | **1,780** | **1,780** | **1,780** | **1,780** |

**Figure 4-3: Recycled Water System with Potential Future Extensions**



### *4.8.5. Recycled Water Incentives*

The City promotes the use of recycled water through its price structure. Recycled water is priced at 90 percent of the prevailing, first-tier potable water rate. The City intends to continue this financial incentive in the foreseeable future, as possible.

Division 7, Chapter 7 of the California Water Code, known as the Water Recycling Law, provides a legal basis for mandating the use of recycled water. The law states that the use of potable water for non-potable purposes (including irrigation) constitutes a waste or unreasonable use of water if recycled water of suitable quality is available at reasonable cost. Based on State law, some jurisdictions have implemented "mandatory use" policies through local ordinance. Sunnyvale's use of the market technique of providing recycled water at a 10 percent discount and assistance in making on-site modifications (retrofits), along with an active public education process and a user-friendly permit process have resulted in significant expansion of the system. With few exceptions, the pricing policy has been successful in encouraging prospective users to convert to the limited use of recycled water in those areas where it is available. A re-occurrence of drought conditions could be expected to further enhance interest in recycled water.

**Table 4-10: Methods Used to Encourage Recycled Water Use**

| Methods | Check if Used |
|---|---|
| Retrofit assistance | X |
| Grants | |
| Dual plumbing standards | X |
| Permit process enhancement | X |
| Regional planning | |
| Incentive program | |
| Long-term contracts (price/reliability) | |
| Pricing policy (i.e. rate discounts) | X |
| Prohibit specific fresh water uses | |
| Low-interest loans | |
| Public education/information | X |
| Require recycled water use | |

### *4.8.6. Projected Future Uses of Recycled Water*

The remaining phases will be developed as part of the City's Capital Improvement Program (CIP), in coordination with all other water and infrastructure needs.

For instance, Phase IIc was proposed for the East Duane Industrial area. Demand in this area has been measured at approximately 0.6 MGD. However, this area is involved in redevelopment to high density residential, and the potential potable and non-potable uses will need to be reevaluated.

Phase IId would consist of constructing 20,000 feet of 8-inch distribution piping from Phase I and Phase IIb mains to serve several City parks and industrial customers adjacent to Phase I and Phase IIb. Sites include Orchard Park, Fair Oaks Park, Columbia Park, Lakewood Park, San Miguel Playground, and several users on Kifer Avenue. The estimated demand is approximately 0.12 MGD.

Southwest Sunnyvale, via the West Main, would require an extension of the west main southward from Sunnyvale Golf Course and would permit service to parks, playgrounds, City landscape, industrial customers, and homeowner associations located in the southwest portion of Sunnyvale. Major users would include Cannery Park, De Ana Park and School, Las Palmas Park, San Antonio Park, Serra Park, Washington Park, Fremont High School, Mango School, Sunnyvale Civic Center, shopping centers at Washington and Mary and Mary and Fremont, Woodgate and Sunset Homeowners Associations (HOAs) and other HOAs located just off Sunnyvale-Saratoga Road south of Fremont Avenue. The total recycled water demand for this phase is estimated to be 0.45 MGD. Approximately 14 miles of pipeline to include a 12-inch main and 4-inch to 8-inch distribution piping would be required.

Southeast Sunnyvale, via the East Main, would permit use at additional parks, playgrounds, City landscape, industrial customers, and HOAs. Major users would include Sunken Gardens Golf Course, Peterson High School, Ortega Park, Columbia Park, Murphy Park, Raynor Park, the Sunnyvale Community Center, Ellis School, Palmer College, Sunset Oaks HOA, Roundtree HOA, IKOS, Signetics, Town Center, Westinghouse and the shopping area at Wolfe/Reed/Old San Francisco Road area. The total recycled water demand is estimated to be 0.74 MGD. Approximately 14 miles of pipeline to include a 12-inch main and 4-inch to 8-inch distribution piping would be required.

### *4.8.7. Los Altos and Cupertino Areas*

Further extension of the east and west mains to sites outside the City limits would reach a number of potential customers in the Cupertino and Los Altos areas as indicated in Figure 5.31. The estimated recycled water demand in this area is approximately 1.2 MGD.

### *4.8.8. Technical and Economic Feasibility of Future Recycled Water Projects*

Landscape irrigation: Opportunities for the expanded use of recycled water for irrigation are ultimately limited by the total City-wide irrigation demand and the seasonal nature of such demand. The total irrigation demand, including residential use, is estimated to be in the range of 5-6 MGD on an average annual basis. Service to individual residences is not practical from a cost or administrative standpoint, although service to apartment complexes and homeowners associations (HOAs) may be feasible. Excluding individual residences, the total potential City-wide irrigation demand is approximately 3.4 MGD; demand on a peak summer day may be two to three times this amount. However, because of the high cost of pipelines and other infrastructure, not all of this demand can be served in a cost effective manner. The larger sites (primarily City parks) provide the main driver for expansion of the distribution network.

Industrial/Commercial Process Use: Recycled water is a suitable source of water for a variety of commercial/industrial processes, including use in cooling towers, wet scrubbers, boilers, car washes, commercial laundries, and other processes. To date, such uses have not developed to

any significant degree in Sunnyvale. Nevertheless, the City will continue to encourage such non-irrigation uses.

#### *4.8.9. Recycled Water Streamflow Augmentation and Groundwater Recharge*

Non-irrigation uses such as streamflow augmentation and groundwater recharge represent long-term options and solutions that could potentially accommodate large amounts of recycled water flow. Such activities are being evaluated by SCVWD, in its capacity as the groundwater management agency for Santa Clara County. SCVWD has initiated a public outreach program to assess public acceptance. SCVWD also intends to form a technical committee to evaluate water quality issues as it relates to the use of recycled water for groundwater recharge. Studies to be conducted by SCVWD will provide recommendations on treatment technologies and alternatives, conveyance and storage systems, project capital and operating costs, and permitting requirements.

#### *4.8.10. Recycled Water Coordination*

Since the early 1990s, the City of Sunnyvale has produced and sold recycled water for non-potable purposes in the northern part of the City service area. A separate master plan was developed for recycled water, detailing the level of treatment, types of uses, and possible expansion phases for the provision of recycled water throughout the City. From 1993 to 2008, the SCVWD provided financial assistance and support by underwriting some of the operational costs for the City's recycled water system. This assistance was provided in acknowledgement of the savings to the SCVWD by avoiding the need to purchase new sources of water that might otherwise be necessary without the benefit of recycled water to substitute for potable water for non-potable uses.

CDPH and the State Water Resources Control Board regulate the production and use of recycled water in the State of California. The City provides all required reports, as mandated, including a Recycled Water Program Master Plan (2000), and Recycled Water Annual Reports. Recycled water provided by the City meets the requirements of California Code of Regulations Title 22 as disinfected tertiary treated water.

## 4.9 FUTURE WATER PROJECTS

The City's water supply comes mainly from the two wholesale providers, SCVWD and SFPUC. Groundwater is typically used to offset peak daily demands and for emergency purposes such as drought conditions and wholesale water service interruptions. As such, as a water retailer, Sunnyvale has no current capital projects that would add new potable water supply. The 20-year budget includes a groundwater well study that will look into the need to drill additional wells. If the study concludes that the City would benefit from more groundwater wells, a project may be set up at that time.

# SECTION 5 − WATER SUPPLY RELIABILITY & WATER SHORTAGE CONTINGENCY PLANNING

## 5.1 WATER SUPPLY RELIABILITY

### *5.1.1. Reliability of Well Water*

Protecting the local groundwater basins is critical to maintaining water supply reliability in the County of Santa Clara, especially when random risks are considered. The basins supply nearly half of the water used annually in the County and also provide emergency reserve for droughts or outages.

SCVWD's Groundwater Management Plan ensures that local groundwater resources are sustained and protected. Groundwater management encompasses activities and programs that identify and mitigate contamination threats to the groundwater basin, replenish and recharge groundwater supplies, prevent groundwater overdraft and land subsidence, and sustain storage reserves. SCVWD programs to sustain and protect groundwater resources are described in detail in the SCVWD's Groundwater Management Plan of 2001 included as **Appendix E** of this document.

### *5.1.2. Reliability of Treated Water Provided by 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.

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.

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 U.S. Bureau of Reclamation (USBR) 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 the City and other SCVWD retailers.

Water demands could be met with groundwater, additional imported water supply, water conservation measures, and with expanded recycled water use.

SCVWD obtains its local and imported water supplies from a variety of sources to maintain maximum efficiency, flexibility, and reliability. 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 from the SWP, and 152,500 AFY from the 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 aquatic wildlife. 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. In the fourteen years since this agreement was approved, SCVWD has banked water in ten of the years, while withdrawing water in only four. 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 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.

### *5.1.3. Reliability of Treated Water Provided by 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 ensure the reliability of 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.

#### 5.1.3.1 Water Shortage Allocation Plan

In July 2009, in connection with the WSA, the wholesale customers and the City of 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 up to 20% (the "Tier One Plan"). The Tier One Plan replaced the prior Interim WSAP, adopted in 2000, which also allocated water during 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 greater than required reductions in usage, 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 WSA, 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 into account for each wholesale customer, 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 million gallons per day (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. 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 shall use as its Allocation Factor, the value identified in the Tier Two Plan, when adopted. The Tier Two Plan will expire in 2018 unless extended by the wholesale customers.

#### 5.1.3.2 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 project specific environmental review as required.

In approving the WSIP, SFPUC 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 SFPUC would reevaluate water demands through 2030. At the same meeting, SFPUC also imposed the Interim Supply Limitation, which limits the volume of water that the member agencies and San Francisco can collectively purchase from Regional Water System (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.

Interim Supply Limitation

As part of its adoption of the WSIP, SFPUC adopted a water supply element, the Interim Supply Limitation (ISL), to limit sales from the RWS watersheds to an average of 265 MGD annually 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 discussed in greater detail below.

Interim Supply Allocations

The Interim Supply Allocations (ISAs) refer to each individual wholesale customer's share of the ISL. On December 14, 2010, SFPUC established each agency's ISA through 2018. In general, SFPUC 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. Sunnyvale's ISA is 9.44 MGD.

As stated in the WSA, the wholesale customers do not concede the legality of SFPUC'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.

Environmental Enhancement Surcharge

SFPUC plans to establish the Environmental Enhancement Surcharge concurrently with the 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 ISA and when sales of water to the wholesale customers and City of 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.

#### 5.1.3.3 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 ISL. SFPUC imposed the ISL on October 31, 2008, to limit the volume of water that the BAWSCA member agencies and City of San Francisco can collectively purchase from the RWS to 265 MGD until at least 2018.

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 SFPUC on June 30, 2010, indicate that collective purchases from 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.

#### 5.1.3.4 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.

## 5.2 FACTORS AFECTING WATER SUPPLY

In addition to droughts, there are other threats to sources of water supply. Sunnyvale relies on their diversification of water supply, continuous work with SFPUC and SCVWD, demand management strategies as discussed in Chapter 6, and the Water Conservation Plan (included in **Appendix F**) to address these threats.

### *5.2.1. Global Climate Change*

The issue of climate change has become an important factor in water resources planning in the State, and is frequently being considered in urban water management planning activities, though the extent and precise effects of climate change remain uncertain. As described by the SFPUC in its Final Water Supply Availability Study for the City and County of San Francisco, dated October 2009, there is evidence that increasing concentrations of greenhouse gases have caused and will continue to cause a rise in temperatures around the world, which will result in a wide range of changes in climate patterns. Moreover, there is evidence that a warming trend occurred during the latter part of the 20th century and will likely continue through the 21st century. These changes will have a direct effect on water resources in California, and numerous studies have been conducted to determine the potential impacts to water resources. Based on these studies, climate change could result in the following types of water resource impacts, including impacts on the watersheds in the Bay Area:

- Reductions in the average annual snowpack due to a rise in the snowline and a shallower snowpack in the low and medium elevation zones, such as in the Tuolumne River basin, and a shift in snowmelt runoff to earlier in the year;
- Changes in the timing, intensity and variability of precipitation, and an increased amount of precipitation falling as rain instead of as snow;
- Long-term changes in watershed vegetation and increased incidence of wildfires that could affect water quality;
- Sea level rise and an increase in saltwater intrusion;
- Increased water temperatures with accompanying potential adverse effects on some fisheries and water quality;
- Increases in evaporation and concomitant increased irrigation need; and
- Changes in urban and agricultural water demand.

According to the SFPUC (2009), other than the general trends listed above, there is no clear scientific consensus on exactly how climate change will quantitatively affect the state's water supplies, and current models of water systems in California generally do not reflect the potential effects of climate change.

Initial climate change modeling completed by 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 inter-annual 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 RWS or the overall operation of the RWS through 2030.

SFPUC views the assessment of the effects of climate change as an ongoing project requiring regular updating to reflect improvements in climate science, atmospheric/ocean modeling, and human response to the threat of greenhouse gas emissions. To refine its climate change analysis and expand the range of climate parameters being evaluated, as well as expand the timeframes being considered, the SFPUC is currently undertaking two additional studies. The first utilizes a newly calibrated hydrologic model of the Hetch Hetchy watershed to explore sensitivities of inflow to different climate change scenarios involving changes in air temperature and precipitation. The second study will seek to utilize state-of-the-art climate modeling techniques in conjunction with water system modeling tools to more fully explore potential effects of climate change on the SFPUC water system as a whole. Both analyses will consider potential effects through the year 2100.

### *5.2.2. Delta Pumping Restrictions*

Increases in average temperature due to climate change are generally agreed upon and the impacts of increasing temperature have already been observed. Climate change effects on precipitation are more difficult to predict, with some models forecasting less rainfall for the state and some models forecasting more rainfall. Regardless of the impacts on the total amount of precipitation, 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.

Based on the SWP Delivery Reliability Report 2009 and associated CALSIM II modeling results, projected imported supplies under climate change conditions from the Delta for average, normal year, dry year and multiple dry years, Delta imports are reduced by three percent on average and four percent over the multiple dry year period compared to the analysis performed without climate change (SCVWD, 2010 UWMP).

### *5.2.3. Natural Disasters*

Disasters such as earthquakes could threaten water delivery infrastructure. SFPUC and SCVWD are taking steps to ensure water supply reliability. Following San Francisco's experience with the 1989 Loma Prieta Earthquake, the SFPUC created a departmental *Emergency Operations Plan* (SFPUC EOP). The SFPUC EOP was originally released in 1992, and has been updated on average every two years. The latest plan update will be released in Spring, 2011. The SFPUC EOP addresses a broad range of potential emergency situations that may affect the SFPUC and that supplements the City and County of San Francisco's EOP prepared by the Department of Emergency Management and most recently updated in 2008. Specifically, the purpose of the SFPUC EOP is to describe the department's emergency management organization, roles and responsibilities and emergency policies and procedures.

In addition, SFPUC divisions and bureaus have their own EOPs that are in alignment with the SFPUC EOP and describe each division's/bureau's specific emergency management organization, roles and responsibilities and emergency policies and procedures. The SFPUC tests its emergency plans on a regular basis by conducting emergency exercises. Through

these exercises the SFPUC learns how well the plans will or will not work in response to an emergency. Plan improvements are based on exercise and sometimes real world event response and evaluation. Also, the SFPUC has an emergency response training plan that is based on federal, state and local standards and exercise and incident improvement plans. SFPUC employees have emergency training requirements that are based on their emergency response role.

#### 5.2.3.1 SFPUC Emergency Drinking Water Planning

In February 2005, the SFPUC Water Quality Bureau published a City Emergency Drinking Water Alternatives report. The purpose of this project was to develop a plan for supplying emergency drinking water in the City after damage and/or contamination of the SFPUC raw and/or treated water systems resulting from a major disaster. The report addresses immediate response after a major disaster. Since the publication of this report, the SFPUC has implemented a number of projects to increase its capability to support the provision of emergency drinking water during an emergency. These projects include:

- Public Information and materials for home and business;
- Designation and identification of 67 emergency drinking water hydrants throughout San Francisco;
- Purchase of emergency related equipment including water bladders and water bagging machines to help with water distribution post disaster; and
- Coordinated planning with City Departments, neighboring jurisdictions and other public and private partners to maximize resources and supplies for emergency response

With respect to emergency response for the SFPUC Regional Water System, the SFPUC has prepared the *SFPUC Regional Water System Emergency Response and Recovery Plan* (ERRP), completed in 2003 and updated in 2006. The purpose of this plan is to describe the SFPUC RWS emergency management organizations, roles and responsibilities within those organizations, and emergency management procedures. This contingency plan addresses how to respond to and to recover from a major RWS seismic event, or other major disaster. The ERRP complements the other SFPUC emergency operations plans at the Department, Division and Bureau levels for major system emergencies.

The SFPUC has also prepared a *SFPUC-Suburban Customer Water Supply Emergency Operations and Notification Plan*. The plan was first prepared in 1996 and has been updated several times, most recently in July of 2010. The purpose of this plan is to provide contact information, procedures and guidelines to be implemented by the following entities when a potential or actual water supply problem arises: the SFPUC Water Supply and Treatment Division (WS&TD), Water Quality Bureau (WQB), and SFPUC wholesale customers, BAWSCA, and City Distribution Division (CDD – considered to be a customer for the purposes of this plan). For the purposes of this plan, water quality issues are treated as potential or actual supply problems.

Power Outage Preparedness and Response

SFPUC's water transmission system is primarily gravity fed, from the Hetch Hetchy Reservoir to the City and County of San Francisco. Within San Francisco's in-city distribution system, the key pump stations have generators in place and all others have connections in place that would allow portable generators to be used.

Although water conveyance throughout the RWS would not be greatly impacted by power outages because it is gravity fed, the SFPUC has prepared for potential regional power outages as follows:

- The Tesla disinfection facility, the Sunol Valley Water Treatment Plant, and the San Antonio Pump Station have back-up power in place in the form of generators or diesel powered pumps. Additionally, both the Sunol Valley Water Treatment Plant and the San Antonio Pump Station would not be impacted by a failure of the regional power grid because it runs off of the SFPUC hydro-power generated by the RWS.
- Both the Harry Tracy Water Treatment Plant and the Baden Pump Station have back-up generators in place.
- Additionally, the WSIP includes projects which will expand the SFPUC's ability to remain in operation during power outages and other emergency situations.

#### 5.2.3.2 SCVWD Water Utility Infrastructure Reliability Project

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.

#### 5.2.3.3 Sunnyvale Catastrophic Supply Interruption Planning

In 2004, G&E Engineering conducted a seismic vulnerability study of Sunnyvale's water system. According to their findings, a magnitude 7.9 earthquake on the San Andreas Fault would cause Sunnyvale's water system to fail. An earthquake of that magnitude would result in a prolonged loss of water service to over 131,000 people and the calculated loss of function of the water system for up to 60 days. To mitigate the failure of the water system, the City has seismically retrofitted its two (2) 5 million gallon storage tanks at Wright Avenue and is proposing to retrofit more key water infrastructure components that may be at risk. The City has prioritized seismic vulnerability mitigation projects and included them in its 20-year Capital Improvements Plan. Future projects will be completed according to this plan contingent upon available funding.

## 5.3 WATER SHORTAGE CONTINGENCY PLANNING

### *5.3.1. Stages of Action*

In March 1989, in response to the third year of a continuing drought, SCVWD announced a supply reduction of 25% (of 1987 county wide water usage). All water retailers and cities in the county were asked to implement plans to achieve the 25% reduction for the remainder of 1989.

Sunnyvale staff, in anticipation of 25, 35, 45, and 50 percent or greater supply reductions developed a water shortage contingency plan that includes mandatory (and voluntary) water use restrictions, rate block adjustment, and approaches for enforcement associated with each stage of anticipated reduction.

As stated above, the following **Table 5-2** describes the four levels of supply reductions that were used for development of Sunnyvale's water shortage contingency plan.

**Table 5-2: Water Shortage Contingency – Rationing Stages to Address Shortages**

| Stage No. | % Shortage | Water Supply Conditions |
|---|---|---|
| 1 | 25% | 25% shortage declared by wholesale water agency. Shortage conditions are worsening. Groundwater levels continue to decrease |
| 2 | 35% | 35% shortage declared by wholesale water agency. Signs of multiyear drought. |
| 3 | 45% | 45% shortage declared by wholesale water agency. Continued signs of multiyear drought. |
| 4 | 50% or greater | Greater than 50% shortage declared by wholesale water agency. Typically meant for immediate crisis such as major infrastructure failure. Water supply reserved for health and safety needs. |

### *5.3.2. Prohibitions, Penalties, and Consumption Reduction Methods*

**Table 5-3** details the use restrictions for each stage of reduction.

**Table 5-3: Water Shortage Contingency – Mandatory Prohibitions**

| Stage No. | Prohibition |
|---|---|
| Stage 1<br>25% | • Flooding or runoff on sidewalks, streets or gutters<br>• Cleaning sidewalks, driveways, buildings, patios, parking lots or other paved/hard surfaced areas<br>• Using hose for washing cars, buses, boas, trailers without positive automatic shutoff value on hose<br>• Use of decorative fountains<br>• Water waste due to broken/defective plumbing, sprinkler, watering or irrigation systems<br>• Restaurant water service unless requested<br>• Landscape irrigation during daylight hours<br>• Hydrant flushing (unless for public health or safety) |
| Stage 2<br>35% | • All of the above<br>• New installations of plants, shrubs, trees, lawns other growing things<br>• Landscape for mounds, hardscape okay but cannot include living plant materials<br>• New swimming pool or pond construction<br>• Filling or refilling swimming pools (can replace water loss due to evaporation)<br>• Outdoor watering December through March. |
| Stage 3<br>45% | • All of the above<br>• Watering turf, grass or dichondra lawns (can provide minimal water for sports playing fields)<br>• Golf courses except for tees and greens |
| Stage 4<br>50% or greater | • All of the above<br>• Landscape irrigation with potable water of any City-owned premises or businesses where recycled water is available for connection.<br>• Utilization of potable water for any City operation where recycled water could be used. |

In addition, Sunnyvale has adopted a series of water conservation action plans for City departments that correspond to the 25, 35, 45, and 50 percent or greater reduction scenarios. These plans apply mandatory prohibitions to potable water usage at City golf courses, City parks, City streetscape trees and landscaping, and public safety. The rates and charges for water services will be further increased for the 50% reduction case.

### *5.3.3. Water Rate Structure for Conservation*

A major part of Sunnyvale's strategy for water conservation developed in 1989 is a block rate pricing structure involving a lifeline rate set at 15% above the existing rates, a conservation block rate set at a multiple of two times usage in applicable existing rate blocks, and a high impact/high use category at a multiple of 3.5 times the existing rate blocks. The lifeline category exists for all categories of users whereas the conservation and high use rates are applied to recognize the greatest opportunities and needs for reduction and to be sensitive to the importance of manufacturing production and commercial needs. The same approach would be used should the City move to a 35, 45, or 50 percent or greater reduction. However, the multipliers would escalate.

Separate metering systems have been set up for fire and landscape uses with potable water utilized for landscaping purposes at a different rate than domestic water.

**Table 5-4: Water Shortage Contingency – Penalties and Charges**

| Stage No. | Description | Penalty/Charge |
|---|---|---|
| 2 | Fine for non-essential water uses as described in City ordinance | Not to exceed $1,000 |
| 2 | Cost recovery for Installation and removal of flow restricting valves | $100 |

### *5.3.4. Enforcement Approach*

The thrust of enforcement of Sunnyvale's conservation program is to solicit cooperation from water users who are unaware of the restrictions or have failed to comply with the provisions of the ordinance. Every effort is made to inform these users of the need for conserving water. If discussions with the user are unsuccessful in obtaining compliance, enforcement mechanisms are available.

The Departments of Public Works and Public safety cooperate on the responsibility for enforcement of the City's conservation plan. Computerized systems track complaints throughout the enforcement process. The process involves first establishing contact with the individual who may be in violation, giving the individual information about code requirements and verbally requesting that the user comply with these requirements. If a complaint has been registered with Neighborhood Preservation, the complainant is contacted and notified of the results of the preliminary investigation. The complainant is kept informed at each step of the process. Upon receipt of a notice of a second violation, the violator will receive a written notice to comply and a warning that the next violation may result in a citation and/or the installation of a flow restricting device at the water meter. This flow restricting device would reduce the flow of water to a trickle, thereby allowing the occupant only enough water for health and sanitation purposes. If there are further complaints and a citation is to be issued, the Department of Public Safety is called to issue the citation.

A "hot line" telephone number is established for drought information and to register complaints. Trained staff is available to provide information and to respond to complaints.

### *5.3.5. Analysis of Revenue Impacts of Reduced Sales During Shortages*

In the event of a water shortage scenario, water fund revenues may decrease from the implementation of conservation measures and corresponding reduction in water sales. Conversely, expenses will increase as a result of the implementation and enforcement of water conservation measures. Expenditures will also rise on a per-unit basis, as wholesalers increase their per-unit price to compensate for the loss of revenue from wholesale sales.

The City has several options to address financial issues during a water shortage. First, the City retains two significant reserves, one for operating contingencies (Contingency Reserve) such as water shortages that is set at 25% of operations and purchased water costs, and a second for the purpose of stabilizing rates over time (Rate Stabilization Reserve). Each will help the City balance the water fund during supply shortages. The City is developing an emergency tiered rate structure that sends hard conservation pricing signals to customers during a period of supply shortage. Finally, the City has four sources of supply and the ability to move most of its supply from any one point to any other point (the exception being recycled water). In the event

of a water shortage, especially in the short term, the City has multiple supply options that should contribute to a more-stable revenue base than if the City were under very limited wholesale supplies.

### *5.3.6. Water Use Monitoring Procedure*

For the purposes of implementing the water shortage contingency plan, the City relies on both staff observations regarding excessive water use as well as customer complaints. City staff is also studying the economic and operational feasibility of using metering technology to implement the plan, but no specific plans exist to make such a change.

## 5.4 DROUGHT PLANNING

### *5.4.1. Average/Normal Water Year*

The "normal" year for the purposes of this Plan, is a year in the historical sequence that most closely represents median runoff levels and patterns. Carryover storage is that portion of 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 this 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. The average/normal water year used by both wholesalers and the City is 2002.

The City selected 1985 as a representation of a "normal" or "average" water year based on an analysis of past water use. The year 1985 was determined to be representative of a year with both average precipitation and average water usage by the City.

### *5.4.2. Single-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. SCVWD 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. The City selected 1977 as the single dry year since groundwater managed by SCVWD will be relied upon to make up the deficit from water wholesalers.

### *5.4.3. 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 by the City for analysis is from 1987 through 1990.

The water supply available to individual retailers will ultimately be determined by SCVWD and SFPUC. The City 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 5-5** 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 5-5: Basis of Water Year Data**

| Water Year Type | Base Year(s) |
|---|---|
| Average Water Year | 1985 |
| Single Dry Water Year | 1977 |
| Multiple Dry Water Years | 1987-1990 |

As discussed earlier in this report, the City 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.

### *5.4.4. 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% of the supply comes from the Tuolumne River through Hetch Hetchy Reservoir and the remaining 15% 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% 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.

### *5.4.5. 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. The City 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.

### *5.4.6. Supply Availability*

In the event of a decrease of local supplies, the City 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 5-6**. 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 5-6: Supply Reliability – Historic Conditions (AFY)**

| Water Source | Normal Water Year (1985) | Single Dry Water Year (1977) | Multiple Dry Water Years | | | |
|---|---|---|---|---|---|---|
| | | | Year 1 (1987) | Year 2 (1988) | Year 3 (1989) | Year 4 (1990) |
| SCVWD | 9,199 | 6,636 | 10,335 | 12,073 | 11,503 | 10,499 |
| SFPUC | 13,209 | 10,956 | 10,956 | 9,522 | 9,522 | 10,870 |
| Groundwater | 8,369 | 5,104 | 4,019 | 4,116 | 2,509 | 1,973 |
| **Totals** | **30,277** | **22,696** | **25,310** | **25,711** | **23,534** | **23,432** |
| **Percent of Normal Year** | | **75.0%** | **83.6%** | **84.9%** | **77.7%** | **77.1%** |

**Table 5-7** is based on the projected demands during the indicated years, and analyses of the average/normal deliveries to the City from SFPUC and SCVWD in 1985. This analysis uses decreased supply availability in accordance with historic conditions as described in **Table 5-7**; 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 5-7: Supply Reliability – Current Water Sources (AFY)**

| Source | Average/ Normal Water Year 2002 | Multiple Dry Water Years | | |
|---|---|---|---|---|
| | | Year 2011 | Year 2012 | Year 2013 |
| SFPUC | 10,096 | 11,307 | 9,818 | 9,818 |
| SCVWD | 13,094 | 7,403 | 8,692 | 8,323 |
| Groundwater | 1,367 | 4,108 | 4,133 | 2,474 |
| Recycled Water[1] | 1,296 | 1,498 | 1,474 | 1,449 |
| **Totals** | **25,853** | **24,316** | **24,116** | **22,065** |
| **Percent of Average/Normal** | | **94%** | **93%** | **85%** |

1. Decrease in recycled water supply is shown due to decrease in demand from 2010 to 2015.
2. Additional groundwater supply will be used to supplement decreases in purchased treated water supply.

**Table 5-8** through **Table 5-14** 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 5-8: Supply and Demand Comparison – Normal Year (AFY)**

| Source | 2015 | 2020 | 2025 | 2030 | 2035 |
|---|---|---|---|---|---|
| SFPUC | 10,003 | 10,003 | 10,003 | 10,003 | 10,003 |
| SCVWD | 9,570 | 9,999 | 11,023 | 12,728 | 12,728 |
| Groundwater | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 |
| Recycled Water | 1,400 | 1,525 | 1,650 | 1,775 | 1,775 |
| **Supply Totals** | **21,973** | **22,527** | **23,676** | **25,506** | **25,506** |
| **Demand Totals** | **21,973** | **22,527** | **23,676** | **25,506** | **25,506** |
| Difference | 0 | 0 | 0 | 0 | 0 |
| Difference as % Supply | 0% | 0% | 0% | 0% | 0% |
| Difference as % Demand | 0% | 0% | 0% | 0% | 0% |

**Table 5-9: Supply and Demand Comparison – Single Dry Year (AFY)**

| Source | 2015 | 2020 | 2025 | 2030 | 2035 |
|---|---|---|---|---|---|
| SFPUC | 10,003 | 10,003 | 10,003 | 10,003 | 10,003 |
| SCVWD | 9,570 | 9,999 | 11,023 | 12,728 | 12,728 |
| Groundwater | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 |
| Recycled Water | 1,400 | 1,525 | 1,650 | 1,775 | 1,775 |
| **Supply Totals** | **21,973** | **22,527** | **23,676** | **25,506** | **25,506** |
| **Demand Totals** | **21,973** | **22,527** | **23,676** | **25,506** | **25,506** |
| Difference | 0 | 0 | 0 | 0 | 0 |
| Difference as % Supply | 0% | 0% | 0% | 0% | 0% |
| Difference as % Demand | 0% | 0% | 0% | 0% | 0% |

**Table 5-10: Supply and Demand Comparison – Multiple Dry Year for 2015 (AFY)**

| Source | Year 1 2015 | Year 2 2016 | Year 3 2017 |
|---|---|---|---|
| SFPUC | 10,003 | 9,818 | 9,818 |
| SCVWD | 9,570 | 9,656 | 9,742 |
| Groundwater | 1,000 | 1,185 | 1,185 |
| Recycled Water | 1,400 | 1,425 | 1,450 |
| **Supply Totals** | **21,973** | 22,084 | 22,195 |
| **Demand Totals** | **21,973** | **22,084** | **22,195** |
| Difference | 0 | 0 | 0 |
| Difference as % Supply | 0% | 0% | 0% |
| Difference as % Demand | 0% | 0% | 0% |

**Table 5-11: Supply and Demand Comparison – Multiple Dry Year for 2020 (AFY)**

| Source | Year 1 2020 | Year 2 2021 | Year 3 2022 |
|---|---|---|---|
| SFPUC | 10,003 | 9,818 | 9,818 |
| SCVWD | 9,999 | 10,204 | 10,409 |
| Groundwater | 1,000 | 1,185 | 1,185 |
| Recycled Water | 1,525 | 1,550 | 1,575 |
| **Supply Totals** | **22,527** | 22,757 | 22,987 |
| **Demand Totals** | **22,527** | **22,757** | **22,987** |
| Difference | 0 | 0 | 0 |
| Difference as % Supply | 0% | 0% | 0% |
| Difference as % Demand | 0% | 0% | 0% |

**Table 5-12: Supply and Demand Comparison – Multiple Dry Year for 2025 (AFY)**

| Source | Year 1 2025 | Year 2 2026 | Year 3 2027 |
|---|---|---|---|
| SFPUC | 10,003 | 9,818 | 9,818 |
| SCVWD | 11,023 | 11,364 | 11,705 |
| Groundwater | 1,000 | 1,185 | 1,185 |
| Recycled Water | 1,650 | 1,675 | 1,700 |
| **Supply Totals** | **23,676** | 24,042 | 24,408 |
| **Demand Totals** | **23,676** | **24,042** | **24,408** |
| Difference | 0 | 0 | 0 |
| Difference as % Supply | 0% | 0% | 0% |
| Difference as % Demand | 0% | 0% | 0% |

**Table 5-13: Supply and Demand Comparison – Multiple Dry Year for 2030 (AFY)**

| Source | Year 1 2030 | Year 2 2031 | Year 3 2032 |
|---|---|---|---|
| SFPUC | 10,003 | 9,818 | 9,818 |
| SCVWD | 12,728 | 12,728 | 12,728 |
| Groundwater | 1,000 | 1,185 | 1,185 |
| Recycled Water | 1,775 | 1,775 | 1,775 |
| **Supply Totals** | **25,506** | **25,506** | **25,506** |
| **Demand Totals** | **25,506** | **25,506** | **25,506** |
| Difference | 0 | 0 | 0 |
| Difference as % Supply | 0% | 0% | 0% |
| Difference as % Demand | 0% | 0% | 0% |

**Table 5-14: Supply and Demand Comparison – Multiple Dry Year for 2035 (AFY)**

| Source | Year 1 2035 | Year 2 2036 | Year 3 2037 |
|---|---|---|---|
| SFPUC | 10,003 | 9,818 | 9,818 |
| SCVWD | 12,728 | 12,728 | 12,728 |
| Groundwater | 1,000 | 1,185 | 1,185 |
| Recycled Water | 1,775 | 1,775 | 1,775 |
| **Supply Totals** | **25,506** | **25,506** | **25,506** |
| **Demand Totals** | **25,506** | **25,506** | **25,506** |
| Difference | 0 | 0 | 0 |
| Difference as % Supply | 0% | 0% | 0% |
| Difference as % Demand | 0% | 0% | 0% |

As shown in the tables above, Sunnyvale would be able to increase the amount of groundwater pumped to meet reasonably anticipated deficiencies from other sources, thus supply is projected to be sufficient to meet demand out to 2035. The Sunnyvale groundwater basin is not adjudicated, which means the right to pump groundwater from the basin has not been given by judgment of a court or board.

For each of the five-year increments presented above, the three-year dry period indicates that supplies will be able to meet demands through increased groundwater pumping and implementation of drought conservation programs. The City will be able to address the projected demands without rationing.

## 5.5 WATER QUALITY IMPACTS ON RELIABILITY

As described previously, the City has three sources that supply its potable water. These are the treated surface water from SCVWD and SFPUC and local groundwater. SCVWD provides

approximately 47% of Sunnyvale's annual potable water, SFPUC provides approximately 40%, Sunnyvale owned- and operated-wells provide 6% and the remaining 7% comes from recycled water.

### *5.5.1. SFPUC*

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

### *5.5.2. 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.

### *5.5.3. 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 the Llagas Subbasin.

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 Coyote

Subarea and the Llagas Subbasin), saltwater intrusion programs, and providing technical assistance to regulatory agencies to ensure local groundwater resources are protected.

#### 5.5.3.1 Sunnyvale Groundwater Water Quality

Nitrate in the environment comes from both natural and anthropogenic sources. Small amounts of nitrate in groundwater (less than 10 mg/L) are normal, but higher concentrations suggest an anthropogenic origin. Common anthropogenic sources of nitrate in groundwater are fertilizers, septic systems, and animal waste. The drinking water maximum contaminant level (MCL) for nitrate is 45 mg/L as nitrate. Since the Santa Clara Valley has a long history of agricultural production and septic systems are still in use in the unincorporated areas of the county, monitoring for nitrate contamination is an essential groundwater management function in this valley.

Sunnyvale has observed nitrate in excess of 50% of the MCL and conducts monitoring for nitrate more often than is required by regulation.

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# SECTION 6 − DEMAND MANAGEMENT MEASURES

The City of Sunnyvale has a commitment to water conservation and to that end has instituted a tiered water fee schedule that penalizes excessive water consumption as well as a recycled water program. Many of the Demand Management Measures (DMMs) offered by the City are programs run by or coordinated through the SCVWD, one of the wholesalers from which the City buys water. The programs are either funded through the wholesale water rates paid by the City, or are directly reimbursed by the City. **Table 6-1** below lists each measure and indicates who administers the program. Each DMM is discussed in detail in the following section.

**Table 6-1: Demand Management Measures (DMMs)**

| Demand Management Measure | City Program | District Program |
|---|---|---|
| Water survey programs for residential customers | | X |
| Residential plumbing retrofit | | X |
| System water audits, leak detection, and repair | X | |
| Metering with commodity rates for new and retrofit connections | X | |
| Large landscape conservation programs and incentives | | X |
| High-efficiency washing machine rebate programs | | X |
| Public information programs | X | X |
| School education programs | X | X |
| Conservation programs for CII accounts | | X |
| Wholesale agency programs | | X |
| Conservation pricing | X | |
| Water conservation coordinator | X | |
| Water waste prohibition | X | |
| Residential ultra-low-flush toilet replacement programs | | X |

The City, as a municipally-owned water utility, has the legal authority to implement demand management measures by ordinance or resolution of the City Council. This authority has been exercised through past implementation of demand management measure, fees, and penalties. This section describes the DMMs that are implemented within the City's service area in an effort to increase water conservation and meet the 2015 and 2020 water use targets.

Evaluation of Effectiveness

Evaluating the effectiveness of a single DMM is difficult and generally not cost-effective for the City, so 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. The City will use these countywide water savings tracked by SCVWD to evaluate the effectiveness of overall implementation efforts by both the City and SCVWD.

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 6-2**. The City actively participates in SCVWD programs through cost-sharing and partnerships. Through SCVWD program participation and partnerships, the following projected savings can be achieved.

**Table 6-2: SCVWD County-Wide Water Conservation Program Savings Goals**

| | 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.

## 6.1 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 676 were completed in the Sunnyvale City 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 the irrigation controllers for the homeowners 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. The City also implements the program and shares the cost to support this program. The City plans to continue offering free showerheads and aerators both directly and through the District's Water-Wise House Call Program.

**Description:** The City 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. The City makes low-flow showerheads and aerators available to residents free of charge and to date has directly distributed thousands of units to interested parties. 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 the City.

*C. System Water Audits, Leak Detection, and Repair*

**Implementation:** The City continuously implements water audits and leak detection and repair for the water distribution system. In addition to City staff continuously monitoring the water distribution system through SCADA technology and field inspections, the City also implements a leak detection program. The City expects this to be an ongoing program.

**Description:** In order to fulfill this measure, all accounts within the City service area are metered. The City also offers help to its residential customers in determining if a leak exists at the property. Water Meter Readers report leaky meters or water meters running when a residence does not appear to be occupied so that a technician can be dispatched to investigate and make repairs as needed.

Additionally, a leak detection company conducts annual inspections of distribution pipeline. The length of pipe inspected annually is a determined by the City. The leak detection contractor generates a condition assessment report for the inspected pipeline, and reported leaks are promptly remediated by City staff or a hired contractor. These programs have helped the City attain lower-than-average system losses.

*D. Metering with Commodity Rates for All New Connections and Retrofit of Existing Connections*

**Implementation:** The City implements metering requirements within the service area and will continue to do so. Additionally, the City implements a program to retrofit and replace meters as they age.

**Description:** The City requires that all service connections within the service area are metered. All new service connections are metered and are billed by volume of water used. There are no known connections operating without a meter. Connections to the City are governed by Chapter 12.24 of the Sunnyvale Municipal Code, which is provided as **Appendix G**.

Sunnyvale encourages all new commercial, industrial, and multi-family developments to have dedicated water meters and separate accounts and meters for landscape irrigation. As older developments are replaced with newer ones, any customers without a dedicated landscape irrigation meter will be encouraged to acquire one.

*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),

formerly known as the Irrigation Technical Assistance Program (ITAP), 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 then 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.

The City also issued Ordinance No. 19.37 regulating conservation in landscaping. This ordinance applies to all new and rehabilitated landscaping for public agency projects and private development projects that require a permit, as well as developer-installed landscaping in single-family and multi-family projects. A copy of this ordinance is included in **Appendix G**.

**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 14 audits conducted in the City's 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 the City's service area during FY 2009-2010 is provided in **Table 6-3**.

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

| Program | Landscape Surveys Completed | Equipment Retrofit Rebates | Landscape Conversion Rebates | WBIC Rebates |
|---|---|---|---|---|
| No. of Rebates/Surveys | 14 | 15 | 16 | 11 |

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

**Description of Recycled Water Program:** The City evaluated large-area landscapes for conversion to recycled water. The location of the recycled water pipeline system was selected based on the concentration of potential customers since that would make the most economic sense. To date, recycled water is used in Sunnyvale only for landscaping purposes in the northern portion of the City. Parks, golf courses, business and industrial parks, and play fields use recycled water purchased at a discounted rate. To serve this variety of customers, the City has constructed a separate distribution network of water lines in the north half of the City solely for the delivery of recycled water. Eventually, recycled water may be available city-wide and to neighboring jurisdictions with a need for a reliable, cost-effective source of water for landscaping and other non-potable purposes.

*F. High-Efficiency Washing Machine Rebate Programs*

**Implementation:** 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, 1,040 residential clothes washer rebates were issued in the Sunnyvale service area. The number of rebates distributed over the last five years within the City's service area is provided in **Table 6-4**.

**Table 6-4: High-Efficiency Clothes Washer Machines Rebate**

| | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|
| No. of Rebates | 327 | 806 | 845 | 924 | 545 |

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

*G. Public Information Programs*

**Implementation:** The City and SCVWD participate in developing and implementing public information programs. The City also implements outreach programs in the service area. The City and SCVWD will continue to implement public information programs in the future.

**Description:** The City and SCVWD have carried out various public information campaigns in the past and continue to do so. Multi-media advertising has 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 also participates by including inserts and information flyers in customer utility bills, and by distributing articles and information in newsletters and reports sent to City residents. All utility bills include a water usage chart comparing current year to previous year usage to help customers who have unknowingly increased their water consumption to check on the cause of the increase.

Sunnyvale also participates in public activities such as the Columbia Health and Safety Fair and Earth Day Celebration. Partnerships with the Public Safety and Community Services departments in activities sponsored by those departments (Pancake Breakfast, Summer Camp) provide more opportunities to reach youth and the general public with a message extolling the virtue of water conservation.

*H. School Education Programs*

**Implementation:** In 1995, SCVWD's Public Information Office hired a full-time, fully credentialed educator who holds lifetime teaching and Administrative Services credentials to coordinate their 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.

The City also has a water pollution and conservation outreach program spearheaded by Sunnyvale's Water Pollution Control Plant staff. This program offers tours of the plant, classroom presentations and a creek water education program. Plant tours teach youth about the function of wastewater treatment, water pollution prevention, and water conservation. Oftentimes, the tour is a supplement to a water study module in the classroom, and approximately 50% are repeat tours scheduled year after year by teachers.

The Creek Education program provides watershed, urban runoff, water pollution prevention, storm water, creek education, water conservation and wastewater information to Sunnyvale students at schools in the Cupertino & Sunnyvale school districts. Students take a yearly field trip to Stevens Creek at McClellan Ranch Park after studying water and structures of life courses in class.

Classroom presentations involve a watershed pollution demonstration designed to correlate with the State of California curriculum standards for earth sciences. Subjects covered include water cycle, groundwater, aquifers, water pollution and water conservation.

*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 for water efficiency outreach and education. 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:

*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 multi-family residential customers. 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 provided free of charge.

*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.

*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.

*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% per mobile home.

**Table 6-5**, below, provides a summary of the rebates and installations implemented by SCVWD in the City service area during FY 2009-2010.

**Table 6-5: Rebate Programs Implemented by SCVWD for the City (FY 2009-2010)**

| Program | WET Program | Commercial HETs | Commercial Washers | Pre-Rinse Spray Valves | Submeters |
|---|---|---|---|---|---|
| No. of Rebates/Installs | 1 | 872 | 21 | 3 | 1,154 |

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

### *J. Wholesale Agency Programs*

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

### *K. Conservation Pricing*

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

**Description:** In March 1989, in response to drought conditions, the City adopted a water conservation plan that required implementation of demand management measures such as an inverted rate structure, deterrents to water waste, landscaping restrictions and the institution of a recycled water program.

Prior to the 1976-1978 drought, the City had a traditional declining-rate block structure, which meant that the more water that was used by a customer, the lower the cost per unit. In 1977, a flat-rate block structure was established with costs fixed regardless of the quantity used. In the year following the drought, an inverted rate structure was adopted and is regularly modified to ensure water conservation and to adequately reflect the high cost of developing new water resources projects.

With the inverted rate structure, each user category has between one and seven rate blocks. The first rate block, providing up to 600 cubic feet of water, represents the lifeline rate, which is a minimum rate for basic water requirements of customers. For the other rate blocks, rates increase with increased water usage to encourage water conservation.

Sunnyvale's Fiscal Year 2010/2011 Utility Fee Schedule is attached as **Appendix H**.

*L. Water Conservation Coordinator*

**Implementation and Description:** The City established the position of Water Conservation Coordinator in 1999. The current Water Conservation Coordinator information is provided below:

| | |
|---|---|
| Name: | Dustin Clark |
| Title: | Environmental Sustainability Coordinator |
| | Department of Public Works |
| Address: | City of Sunnyvale |
| | Water Pollution Control Plant |
| | 1444 Borregas Avenue |
| | Sunnyvale, CA 94089 |
| Phone: | (408) 730-7260 |
| Fax: | (408) 747-1139 |
| Email: | dclark@ci.sunnyvale.ca.us |

It is expected that there will continue to be a staff member dedicated to water conservation programs.

*M. Water Waste Prohibition*

**Implementation:** The Water Conservation Plan adopted by the City of Sunnyvale in 1989 established a listing of non-essential water practices that were prohibited in Sunnyvale. Municipal Code Chapter 12.34 details the water conservation restrictions. The ordinance will continue to be in effect unless it is superseded or amended with a new ordinance.

**Description:** Some of the prohibitions were lifted after the drought was over, but the following is a listing of current non-essential water practices prohibited by the City (Municipal Code Chapter 12.34.020):

- Allowing or maintaining broken or defective plumbing, sprinklers, watering or irrigation systems which permit the escape or leakage of potable water.
- Using potable water in any manner which causes, allows or permits the flooding of any premises, or any portion thereof, or which causes, allows or permits water to escape from any premises or any portion thereof and flow into gutters, streets, or any surface water drainage system.

- Using any hose or similar device using potable water for washing automobiles, trucks, buses, boats, trailers, equipment, recreational vehicles, mobile homes or other vehicles or machinery, unless the hose or device is equipped with a positive automatic shutoff valve.
- Using potable water to wash sidewalks, driveways, filling station aprons, patios, parking lots, porches or other paved or hard surfaced areas, unless there is a positive automatic shutoff valve on the outlet end of the hose.
- The service of water by any restaurant or other eating or refreshment establishment to any patron, except upon the specific request by a patron for such services.
- Installation of any single pass cooling process in new construction.
- Any use of non-potable water not in compliance with all federal, state and local laws, rules and regulations. Use of reclaimed water from the city's water pollution control plant shall be subject to the discretion of the Director of Public Works.

Violation of these provisions may escalate to installation of a flow restricting device upon the water service lines and cumulative fines. The Water Conservation Plan and Municipal Code is included as **Appendix F** and **Appendix G**, respectively.

*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. 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, 286 HET or Dual Flush Toilet rebates were issued in the City's service area.

# Appendix A

City of Sunnyvale
2010 Urban Water Management Plan
Postings and Notifications for UWMP Preparation

January 21, 2011

Subject: Notice of Preparation of Urban Water Management Plan

Dear: Stakeholder

The Urban Water Management Plan Act requires the City of Sunnyvale to update its Urban Water Management Plan by June 30, 2011. We are reviewing our current Plan, which was last updated in 2005, and will be considering revisions to it. We invite your agency's participation in this process.

We will make proposed revisions to our Plan available for public review and will hold a public hearing later this year. In the meantime, if you have any questions about our Plan, or the process for updating it, please contact:

Brendan McCarthy
Administrative Aide
P.O. Box 3707
Sunnyvale, CA 94088-3707
TEL: 408-730-7565
Fax: 408-736-1611
E-mail: bmccarthy@ci.sunnyvale.ca.us

Sincerely,

Val Conzet
Water Operations Manager

**PUBLIC NOTICE**

**URBAN WATER MANAGEMENT PLAN**

The City of Sunnyvale is in the process of updating the 2005 Urban Water Management Plan (UWMP) for 2010. City Council will consider adoption of the 2010 UWMP at their regularly scheduled meeting on:

**Tuesday, June 28, 2011, at 7p.m.**
**City Council Chambers − Sunnyvale City Hall**
**456 W. Olive Ave.**

Beginning on Friday, June 10, 2011, copies of the draft 2010 UWMP will be available for review at the Sunnyvale Public Library, 665 W. Olive Ave., and at the One-Stop Permit Center in City Hall, 456 W. Olive Ave.. A public outreach meeting will be held with members of City staff on Wednesday, May 18, 2011, from 6 p.m. to 7 p.m. in the Heritage Building at the City's Community Center. 550 E. Remington Drive, to answer questions and gather ideas from residents and interested stakeholders regarding the contents of the final plan.

An electronic copy of the 2005 UWMP can be downloaded from the City's web site at *www.sunnyvale.ca.gov*.

To request a copy of the 2010 plan upon its completion, or if you have any questions or comments, please contact:

**Brendan McCarthy**
**P.O. Box 3707**
**Sunnyvale, CA 94088-3707**
**(408) 730-7565, TDD (408) 730-7501**
**(408) 736-1611 (FAX)**
***bmccarthy@ci.sunnyvale.ca.us***

Please note that parties requesting paper copies of the plan, above and beyond those copies already publicly available (see above), may incur associated printing costs.

Val Conzet
Public Works Supervisor

cc: City Council
Department Directors

# Appendix B

City of Sunnyvale
2010 Urban Water Management Plan
Resolution for Adoption of the UWMP

**RESOLUTION NO. 489-11**

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF SUNNYVALE UPDATING AND ADOPTING THE CITY OF SUNNYVALE URBAN WATER MANAGEMENT PLAN 2010**

WHEREAS, the California Legislature enacted Assembly Bill 797 (Water Code Section 10610 *et seq.*), known as the Urban Water Management Planning Act, during the 1983-1984 Regular Session, and as amended subsequently, which mandates that every supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre feet of water annually, prepare an Urban Water Management Plan, the primary objective of which is to plan for the conservation and efficient use of water; and

WHEREAS, the City of Sunnyvale is an urban supplier providing water to over 141,000 customers; and

WHEREAS, the City of Sunnyvale has adopted an Urban Water Management Plan in accordance with the State requirements; and

WHEREAS, the City is required to review the Plan at least once every five years and make amendments or changes to the Plan which are indicated by the review; and

WHEREAS, the Plan must be adopted by Council after public review and hearing, and filed with the California Department of Water Resources within thirty days of adoption; and

WHEREAS, the City of Sunnyvale reviewed its Plan and prepared and circulated for public review a draft updated Urban Water Management Plan, and a properly noticed public hearing regarding the Plan was held by the City Council on June 28, 2011; and

WHEREAS, the City of Sunnyvale did prepare and shall file said Plan with the California Department of Water Resources in a timely manner;

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF SUNNYVALE THAT:

1. The Sunnyvale Urban Water Management Plan 2010 is hereby adopted and filed with City Clerk;

2. The Director of Public Works is hereby authorized and directed to file the City of Sunnyvale Urban Water Management Plan 2010 with the California Department of Water Resources within 30 days after this date.

Adopted by the City Council at a regular meeting held on June 28, 2011, by the following vote:

AYES: LEE, SPITALERI, GRIFFITH, HAMILTON, MOYLAN, WHITTUM
NOES: NONE
ABSTAIN: NONE
ABSENT: SWEGLES

ATTEST:

City Clerk

(SEAL)

APPROVED:

Mayor

APPROVED AS TO FORM AND LEGALITY:

David Kahn, City Attorney

# Appendix C

City of Sunnyvale
2010 Urban Water Management Plan
City of Sunnyvale Detailed Demographic Data

**BUSINESS ECONOMIC PROFILE**
**FOR**

# SUNNYVALE

**SANTA CLARA COUNTY, CALIFORNIA**

## JUNE 2010

Sunnyvale's history is based largely on its economy. When Martin Murphy, Sr. arrived in Sunnyvale in 1845, its vast open space and fertile soil were seen as assets to farming, particularly fruit orchards. With the arrival of the railroad in 1864, the industrial base of the community was able to expand. Canneries to process the fruit from surrounding orchards were built near the rail lines. In 1906, Hendy Iron Works relocated from San Francisco to Sunnyvale, thus diversifying the industrial base.

Sunnyvale was incorporated as a city in 1912, with a population of approximately 1,800. By 1940, the population had grown to about 4,400. During World War II, Sunnyvale supplied food and equipment to the troops; the Hendy Iron Works was taken over by Westinghouse to support the war effort. After the war, defense-related industries arrived, capitalizing on the pleasant climate and the Naval Air Station. Lockheed became the city's largest employer. By 1950 the population had grown to 9,900. The 1950s and 1960s were the biggest periods of growth for the community, resulting in a 1960 population of 52,900 and a 1970 population of 96,000.

The defense era gave way to the high-tech era when the microprocessor was introduced in 1971. The population in 1980 was 106,700; 1990 was 117,200, and 2000 was 131,760, respectively. The next and most recent era was related to the internet, with technology companies in Sunnyvale undertaking research and development for this newest industry. The world is now primed for the next great wave of innovation—nanotechnology---and Silicon Valley is well positioned to lead the world in the realms of research and commercialization of this enabling technology.

## COMMUNITY

The story has it that Sunnyvale got its name from a local builder looking out over yet another sunny day, shading his eyes, and saying, "Let's call it Sunnyvale." Sunnyvale boasts a very mild climate, with temperatures varying from an average of 52 degrees in January to an average of 70 degrees in July. The rainfall of the winter months usually amounts to around 7 inches. This gorgeous climate naturally leads to an ideal environment for many outdoor activities such as golf and tennis. Sunnyvale is home to two golf courses, 20 neighborhood parks and 51 tennis courts, 16 of which are at our very own world class Municipal Center. Within close proximity are beautiful beaches, spectacular state and national parks, as well as San Francisco and San Jose. Sunnyvale has a solid economic base, and the business revenue generated each year gives us a superb quality of life. The median household income for a Sunnyvale resident is $88,297. Poverty levels in Sunnyvale have remained consistently lower than those of Santa Clara County or the state. The City offers affordable housing programs and first-time homebuyer programs. Please contact our Housing Division at *housing@ci.sunnyvale.ca.us* or (408) 730-7250 if you would like information on different housing programs.

| HOUSING CHARACTERISTICS (2010 AVERAGE) | |
|---|---|
| Average Household Size | 2.56 |
| Average Housing Price (single family homes) | $901,000 |
| Average Rental Price (3 bedrooms) | $2,093 |

| ECONOMIC BASE (2009) | |
|---|---|
| Total City Revenue | 114,000,000 |
| Issuer Credit Rating | AAA |
| Sales Tax Collected (in millions) | $25.0 |

## BUSINESS AND ECONOMICS

Sunnyvale, with its Silicon Valley location, has a solid high-tech presence. Transitioning from agricultural to defense to the current high tech economy, Sunnyvale has remained on the cutting edge of Silicon Valley innovation.

| BUSINESS (2010) | |
|---|---|
| Total Number of Businesses (inside City limits) | 7,883 |
| Employment Generated by Sunnyvale Businesses (inside City limits) – 2008 | 85,400 |
| Total Number of Jobs in the City (includes schools, military, etc.) - 2008 | 91,000 |
| Business Tax – Minimum* | $31.32 |
| Business Tax – Maximum* | $9,919.90 |

* Business Tax is renewed every 2 years. All business licenses are subject to a $61.00 processing fee.

| EMPLOYMENT BY INDUSTRY | PERCENTAGE | EMPLOYMENT BY INDUSTRY | PERCENTAGE |
|---|---|---|---|
| Information Services | 25 | Services | 8.2 |
| Retail Trade | 10 | Recreation/Hospitality | 3.5 |
| Wholesale Trade | .9 | Public Administration | 1 |
| Manufacturing | 24 | Misc./Undefined | 13.2 |
| Construction | 2.2 | | |

Note: Figures based on December **2005** Employment Development Data (www.labormarketinfo.edd.ca.gov)

| LABOR MARKET | | |
|---|---|---|
| | **Sunnyvale** | **Santa Clara County** |
| **Labor Force** | | |
| April 2010 | 74,700 | 876,400 |
| April 2009 | 76,100 | 891,700 |
| June 2007 | 73,200 | 849,600 |
| March 2006 | 69,900 | 817,300 |
| March 2005 | 69,900 | 818,800 |
| April 2004 | 73,830 | 867,300 |
| 2003 Average | 75,940 | 895,100 |
| **Employment** | | |
| April 2010 | 67,400 | 776,100 |
| April 2009 | 69,000 | 795,200 |
| June 2007 | 70,300 | 809,500 |
| March 2006 | 66,900 | 776,100 |
| March 2005 | 66,600 | 772,600 |
| April 2004 | 69,920 | 812,500 |
| 2003 Average | 70,610 | 821,600 |
| **Unemployment** | | |
| April 2010 | 7,400 | 100,300 |
| April 2009 | 7,100 | 96,500 |
| June 2007 | 2,900 | 40,100 |
| March 2006 | 3,000 | 41,200 |
| March 2005 | 3,300 | 46,200 |
| April 2004 | 3,910 | 54,700 |
| 2003 Average | 5,330 | 73,500 |
| **Unemployment Rate** | | |
| April 2010 | 9.9% | 11.4% |
| April 2009 | 9.3% | 10.8% |
| March 2008 | 4.3% | 4.7% |
| March 2006 | 4.3% | 5.0% |
| March 2005 | 4.8% | 5.6% |
| April 2004 | 5.3% | 6.3% |
| 2003 Average | 7.0% | 8.2% |

| **RENTAL LOCATIONS/ TYPES** | **HISTORICAL ASKING RATES ($/SF/MONTH)** |
|---|---|
| R&D | $1.20 |
| Industrial | $0.96 |
| Warehouse | $0.64 |
| Office | $3.05 |
| **Sunnyvale Vacancy Rate** | **16.7%** |

*Rental rates information updated 4nd Quarter 2009. Information collected by average from: Cornish & Carey – www.ccarey.com: NAI BT Commercial – www.btcommercial.com; & Colliers International – www.colliers.com. Please contact Economic Development via e-mail at econdev@ci.sunnyvale.ca.us or (408) 730-7607 for updated information

# PEOPLE

Sunnyvale is a diverse community, with a highly educated population. The population in 2010 for Sunnyvale is 140,450 and 1,880,876 in Santa Clara County. Leading research facilities and national labs in and near the city attract residents from around the world. These prestigious institutions include Stanford University, UC Berkeley, NASA Ames Research Center, Onizuka Air Force Base & Satellite tracking facility, Santa Clara University, and San Jose State University.

| **HOUSEHOLD** | |
|---|---|
| 2010 Total Population | 140,450 |
| 2005-2007 (Average) Single Parent | 4,900 |

| **RACE**<br>2008 Census Update – Community Survey | | |
|---|---|---|
| | **Sunnyvale** | **Santa Clara County** |
| **Race** | | |
| White | 60,394 (43.0%) | 916,186 |
| Black/African American | 2,388 (1.7%) | 45,356 |
| American Indian/Alaska Native | 281 (.2%) | 8,681 |
| Asian | 54,635 (38.9%) | 545,045 |
| Native Hawaiian/other Pacific Islander | 421 (.3%) | 5,945 |
| Other Race | 18,539 (13.2%) | 181,903 |
| Two or more races | 3,792 (2.7%) | 61,383 |

| **SOCIAL CHARACTERISTICS**<br>2008 Census Data | | |
|---|---|---|
| | **Sunnyvale** | **Santa Clara County** |
| **Foreign Born Population** | 58,492 | 649,753 |
| Naturalized Citizen | 22,143 | 321,883 |
| Not a Citizen | 36,349 | 327,870 |

| **LANGUAGE SPOKEN IN HOUSEHOLD**<br>2008 Census Data | |
|---|---|
| English* | 59,414 |
| Spanish* | 16,972 |
| Other Indo-European language* | 14,789 |
| Asian/Pacific Islander language* | 29,518 |
| Other language* | 2,342 |

| EDUCATIONAL ATTAINMENT (FOR POPULATION 25 YEARS AND OLDER)<br>2008 Updated Census Data –Community Survey | | |
|---|---|---|
| | **Sunnyvale*** | **Santa Clara County** |
| Population 25 years and older | 97,260 | 1,175,219 |
| Less than High School Diploma | 9,329 | 168,836 |
| High School Graduate | 13,174 | 192,073 |
| Some College | 14,134 | 210,905 |
| Associate Degree | 7,014 | 85,701 |
| Bachelor Degree | 28,004 | 287,886 |
| Graduate or Professional Degree | 25,605 | 229,818 |
| % High School Graduate or higher | 90.4% | 85.6% |
| % Bachelor Degree or higher | 55.1% | 44.1% |
| % Graduate/Professional Degree | 26.3% | 19.6% |

* Data was obtained by calculating percentages of County estimate

| DISABLED POPULATION<br>2008 Census Update | | |
|---|---|---|
| | **Sunnyvale** | **Santa Clara County** |
| Total Population 16 – 64 years | 9,279 | 141,149 |

**Prepared by the**
**CITY OF SUNNYVALE**
**www.sunnyvale.ca.gov**

The information contained in this profile was obtained from a variety of sources including the 2010 Census Update, the 2008 American Community Survey (Average), the California Employment Development Department, and the City of Sunnyvale. For more detailed information about sources, please contact:

Economic Development: (408) 730-7607
email: econdev@ci.sunnyvale.ca.us
www.sunnyvale-econdev.com

Planning Division: (408) 730-7440
email: planning@ci.sunnyvale.ca.us

# Appendix D

City of Sunnyvale
2010 Urban Water Management Plan
Projected Demands Provided to Wholesale Agencies

**Twenty Year Water Supply Forecast**
**Summary**
**FY 2012 - 2031**

| Fiscal Year | Actual 2009 | Actual 2010 | Plan 2011 | Plan 2012 | Plan 2013 | Plan 2014 | Plan 2015 | Plan 2016 | Plan 2017 | Plan 2018 | Plan 2019 | Plan 2020 | Plan 2021 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Citywide Projection** | | | | | | | | | | | | | |
| Total Demand (AF/YR) | 24,076 | 21,475 | 21,475 | 21,690 | 21,907 | 21,929 | 21,973 | 22,038 | 22,127 | 22,237 | 22,371 | 22,527 | 22,708 |
| Growth | | -10.8% | 0.0% | 1.0% | 1.0% | 0.1% | 0.2% | 0.3% | 0.4% | 0.5% | 0.6% | 0.7% | 0.8% |
| **San Francisco Water Supply (SFPUC)** | | | | | | | | | | | | | |
| Quantity (Acre Feet) | 11,894 | 10,954 | 10,003 | 10,003 | 10,003 | 10,003 | 10,003 | 10,003 | 10,003 | 10,003 | 10,003 | 10,003 | 10,003 |
| Cost (per Acre Foot) | $ 623 | $ 719 | $ 836 | $ 1,185 | $ 1,263 | $ 1,363 | $ 1,464 | $ 1,668 | $ 1,773 | $ 1,891 | $ 1,891 | $ 1,921 | $ 1,943 |
| Meter Charge | $ 271,368 | $ 252,329 | $ 275,268 | $ 275,268 | $ 275,268 | $ 275,268 | $ 275,268 | $ 330,322 | $ 330,322 | $ 330,322 | $ 330,322 | $ 330,322 | $ 396,386 |
| Total Cost | $ 7,361,313 | $ 8,152,989 | $ 8,641,297 | $ 12,648,268 | $ 13,058,435 | $ 14,093,872 | $ 15,074,993 | $ 17,073,296 | $ 18,011,326 | $ 19,016,248 | $ 18,861,285 | $ 19,021,307 | $ 19,157,358 |
| Percent Change in Cost | | 10.8% | 6.0% | 46.4% | 3.2% | 7.9% | 7.0% | 13.3% | 5.5% | 5.6% | -0.8% | 0.8% | 0.7% |
| **Santa Clara Valley Water District Supply (SCVWD)** | | | | | | | | | | | | | |
| Quantity (Acre Feet) | 9,330 | 7,430 | 10,409 | 9,889 | 9,889 | 9,889 | 9,570 | 9,610 | 9,674 | 9,759 | 9,868 | 9,999 | 10,155 |
| Cost (per Acre Foot) | $ 520 | $ 520 | $ 520 | $ 569 | $ 625 | $ 685 | $ 750 | $ 820 | $ 895 | $ 970 | $ 1,030 | $ 1,085 | $ 1,130 |
| Treated Water Charge (per Acre Foot) | $ 100 | $ 100 | $ 100 | $ 100 | $ 100 | $ 100 | $ 100 | $ 100 | $ 100 | $ 100 | $ 105 | $ 105 | $ 105 |
| Total Cost | $ 5,784,805 | $ 4,609,607 | $ 6,453,828 | $ 6,615,741 | $ 7,169,525 | $ 7,762,635 | $ 8,134,130 | $ 8,841,644 | $ 9,625,268 | $ 10,442,418 | $ 11,199,832 | $ 11,899,153 | $ 12,540,815 |
| Percent Change in Cost | | -20.3% | 40.0% | 2.5% | 8.4% | 8.3% | 4.8% | 8.7% | 8.9% | 8.5% | 7.3% | 6.2% | 5.4% |
| **City Wells** | | | | | | | | | | | | | |
| Quantity (Acre Feet) | 937 | 1,762 | 1,200 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 |
| Cost (per Acre Foot) | $ 520 | $ 520 | $ 520 | $ 569 | $ 625 | $ 685 | $ 750 | $ 820 | $ 895 | $ 970 | $ 1,030 | $ 1,085 | $ 1,130 |
| Power Cost (per Acre Foot) | $ 82 | $ 203 | $ 190 | $ 194 | $ 198 | $ 202 | $ 206 | $ 210 | $ 214 | $ 218 | $ 223 | $ 227 | $ 234 |
| Total Cost | $ 554,348 | $ 916,100 | $ 852,000 | $ 762,725 | $ 822,512 | $ 886,630 | $ 955,662 | $ 1,029,775 | $ 1,108,971 | $ 1,188,250 | $ 1,252,615 | $ 1,312,068 | $ 1,363,880 |
| Percent Change in Cost | | 65.3% | -7.0% | -10.5% | 7.8% | 7.8% | 7.8% | 7.8% | 7.7% | 7.1% | 5.4% | 4.7% | 3.9% |
| Total Potable Water Demand (Acre Feet) | 22,161 | 20,146 | 21,612 | 20,892 | 20,892 | 20,892 | 20,573 | 20,613 | 20,677 | 20,762 | 20,871 | 21,002 | 21,158 |
| Total Potable Water Cost | $ 13,700,466 | $ 13,678,696 | $15,947,125 | $ 20,026,734 | $ 21,050,472 | $ 22,743,137 | $ 24,164,785 | $ 26,944,716 | $ 28,745,565 | $ 30,646,917 | $ 31,313,732 | $ 32,232,527 | $ 33,062,053 |
| Percent Change in Total Cost | | -0.2% | 16.6% | 25.6% | 5.1% | 8.0% | 6.3% | 11.5% | 6.7% | 6.6% | 2.2% | 2.9% | 2.6% |
| **City Produced Recycled Water** | | | | | | | | | | | | | |
| Quantity (Acre Feet) | 1,915 | 1,329 | 1,100 | 798 | 1,015 | 1,037 | 1,400 | 1,425 | 1,450 | 1,475 | 1,500 | 1,525 | 1,550 |
| Cost (estimated per Acre Foot)[1] | $ 450 | $ 459 | $ 468 | $ 478 | $ 487 | $ 497 | $ 507 | $ 517 | $ 527 | $ 538 | $ 549 | $ 560 | $ 571 |
| Total Cost | $ 861,750 | $ 610,011 | $ 514,998 | $ 381,080 | $ 494,401 | $ 515,219 | $ 709,482 | $ 736,595 | $ 764,508 | $ 793,243 | $ 822,821 | $ 853,266 | $ 884,599 |

1. Recycled water cost is estimated based on FY 2010 production. Cost is estimated based on the incremental cost of producing recycled water plus distribution and doesn't factor in additional overhead or other costs.

**Twenty Year Water Supply Forecast**
**Summary**
**FY 2012 - 2031**

| Fiscal Year | Plan 2022 | Plan 2023 | Plan 2024 | Plan 2025 | Plan 2026 | Plan 2027 | Plan 2028 | Plan 2029 | Plan 2030 | Plan 2031 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Citywide Projection** | | | | | | | | | | |
| Total Demand (AF/YR) | 22,912 | 23,141 | 23,396 | 23,676 | 23,984 | 24,320 | 24,685 | 25,080 | 25,506 | 25,968 |
| Growth | 0.9% | 1.0% | 1.1% | 1.2% | 1.3% | 1.4% | 1.5% | 1.6% | 1.7% | 1.8% |
| **San Francisco Water Supply (SFPUC)** | | | | | | | | | | |
| Quantity (Acre Feet) | 10,003 | 10,003 | 10,003 | 10,003 | 10,003 | 10,003 | 10,003 | 10,003 | 10,003 | 10,003 |
| Cost (per Acre Foot) | $ 1,959 | $ 1,975 | $ 1,992 | $ 2,008 | $ 2,025 | $ 2,042 | $ 2,059 | $ 2,076 | $ 2,093 | $ 2,110 |
| Meter Charge | $ 396,386 | $ 396,386 | $ 396,386 | $ 396,386 | $ 475,663 | $ 475,663 | $ 475,663 | $ 475,663 | $ 475,663 | $ 475,663 |
| Total Cost | $ 19,147,362 | $ 19,151,337 | $ 19,156,919 | $ 19,162,503 | $ 19,247,365 | $ 19,252,952 | $ 19,258,540 | $ 19,264,130 | $ 19,269,722 | $ 19,275,316 |
| Percent Change in Cost | -0.1% | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| **Santa Clara Valley Water District Supply (SCVWD)** | | | | | | | | | | |
| Quantity (Acre Feet) | 10,334 | 10,538 | 10,768 | 11,023 | 11,306 | 11,617 | 11,957 | 12,327 | 12,728 | 13,165 |
| Cost (per Acre Foot) | $ 1,164 | $ 1,199 | $ 1,235 | $ 1,272 | $ 1,310 | $ 1,349 | $ 1,390 | $ 1,431 | $ 1,474 | $ 1,519 |
| Treated Water Charge (per Acre Foot) | $ 120 | $ 120 | $ 120 | $ 125 | $ 125 | $ 125 | $ 130 | $ 130 | $ 130 | $ 130 |
| Total Cost | $ 13,267,661 | $ 13,897,684 | $ 14,587,669 | $ 15,397,607 | $ 16,223,998 | $ 17,126,492 | $ 18,171,219 | $ 19,247,390 | $ 20,420,666 | $ 21,703,533 |
| Percent Change in Cost | 5.8% | 4.7% | 5.0% | 5.6% | 5.4% | 5.6% | 6.1% | 5.9% | 6.1% | 6.3% |
| **City Wells** | | | | | | | | | | |
| Quantity (Acre Feet) | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 |
| Cost (per Acre Foot) | $ 1,164 | $ 1,199 | $ 1,235 | $ 1,272 | $ 1,310 | $ 1,349 | $ 1,390 | $ 1,431 | $ 1,474 | $ 1,519 |
| Power Cost (per Acre Foot) | $ 241 | $ 248 | $ 256 | $ 263 | $ 271 | $ 279 | $ 288 | $ 296 | $ 305 | $ 314 |
| Total Cost | $ 1,404,796 | $ 1,446,940 | $ 1,490,348 | $ 1,535,059 | $ 1,581,110 | $ 1,628,544 | $ 1,677,400 | $ 1,727,722 | $ 1,779,554 | $ 1,832,940 |
| Percent Change in Cost | 3.0% | 3.0% | 3.0% | 3.0% | 3.0% | 3.0% | 3.0% | 3.0% | 3.0% | 3.0% |
| Total Potable Water Demand (Acre Feet) | 21,337 | 21,541 | 21,771 | 22,026 | 22,309 | 22,620 | 22,960 | 23,330 | 23,731 | 24,168 |
| Total Potable Water Cost | $ 33,819,818 | $ 34,495,961 | $ 35,234,936 | $ 36,095,168 | $ 37,052,473 | $ 38,007,988 | $ 39,107,159 | $ 40,239,242 | $ 41,469,942 | $ 42,811,789 |
| Percent Change in Total Cost | 2.3% | 2.0% | 2.1% | 2.4% | 2.7% | 2.6% | 2.9% | 2.9% | 3.1% | 3.2% |
| **City Produced Recycled Water** | | | | | | | | | | |
| Quantity (Acre Feet) | 1,575 | 1,600 | 1,625 | 1,650 | 1,675 | 1,700 | 1,725 | 1,750 | 1,775 | 1,800 |
| Cost (estimated per Acre Foot)[1] | $ 588 | $ 605 | $ 624 | $ 642 | $ 662 | $ 681 | $ 702 | $ 723 | $ 745 | $ 767 |
| Total Cost | $ 925,832 | $ 968,744 | $ 1,013,397 | $ 1,059,857 | $ 1,108,193 | $ 1,158,475 | $ 1,210,777 | $ 1,265,174 | $ 1,321,746 | $ 1,380,573 |

1. Recycled water cost is estimated based on FY 2010 production. Cost is estimated based on the incremental cost of producing recycled water plus distribution and doesn't factor in additional overhead or other costs.

Santa Clara Valley Water District

# ANTICIPATED MONTHLY WATER DELIVERY SCHEDULE (In Acre-Feet)

FCE 264 (1-29-10)

| Contractor's Name: | CITY OF SUNNYVALE | | | | | |
|---|---|---|---|---|---|---|
| Month | Anticipated Monthly Schedules | | | | | |
| | **2010-2011** | 2011-2012 | 2012-2013 | 2013-2014 | 2014-2015 | 2015-2016 |
| July | 1290 | 1139 | 1139 | 1139 | 1080 | 1080 |
| August | 1290 | 1139 | 1139 | 1139 | 1080 | 1080 |
| September | 1290 | 1139 | 1139 | 1139 | 1080 | 1080 |
| October | 816 | 804 | 804 | 804 | 780 | 780 |
| November | 792 | 804 | 804 | 804 | 756 | 756 |
| December | 792 | 804 | 804 | 804 | 756 | 756 |
| January | 792 | 804 | 804 | 804 | 756 | 756 |
| February | 792 | 804 | 804 | 804 | 756 | 756 |
| March | 792 | 804 | 804 | 804 | 756 | 756 |
| April | 815 | 804 | 804 | 804 | 779 | 779 |
| May | 815 | 804 | 804 | 804 | 779 | 779 |
| June | 1290 | 1139 | 1139 | 1139 | 1080 | 1080 |
| **Total** | **11,566** | **10,988** | **10,988** | **10,988** | **10,438** | **10,438** |
| Peak day deliver (Million Gallons) | 18.59 | 17.66 | *17.61 | 17.66 | 16.77 | 16.77 |

| Submitted by (contractor's Representative): | Val Conzet | Date: | 03/29/10 |
|---|---|---|---|

*Leap year = 366 days

NOTE: The estimate monthly quantities shall include the total deliveries to all turnouts of each contractor.

The District will provide executed copies to: Water Retailers' Agency
Financial Planning and Management Division
Financing and Revenue Collection Unit
Treated Water Operations and Maintenance Division
Water Quality Unit
Water Supply Operations Division

**From:** Nicole Sandkulla [mailto:NSandkulla@bawsca.org]
**Sent:** Thursday, February 24, 2011 3:04 PM
**To:** Levin, Ellen
**Cc:** Art Jensen; Allison C. Schutte; Anona Dutton; Petrick, Molly; Alan Kurotori (akurotori@santaclaraca.gov); Alex Ameri (alex.ameri@hayward-ca.gov); Art Morimoto (amorimoto@burlingame.org); Cari Lemke; Carrasco, Anthony; cathya@midpeninsulawater.org; David Dickson (ddickson@coastsidewater.org); dbarrow@westboroughwater.com; eric.cartwright@acwd.com; Flegel, Elizabeth; Gregg Hosfeldt (gregg.hosfeldt@mountainview.gov); Henry Young (henryy@midpeninsulawater.org); James Craig; Jerry Flanagan; Justin Ezell (jezell@redwoodcity.org); smtp:kphalen@ci.milpitas.ca.gov; Klara Fabry (kfabry@sanbruno.ca.gov); koconnell@nccwd.com; ksteffens@menlopark.org; M. L. Gordon (acmoffice2415@yahoo.com); Nasser, Mansour; Marty Laporte (martyl@bonair.stanford.edu); Marvin Rose (mrose@ci.sunnyvale.ca.us); mdebry@hillsca.org; Patrick Sweetland (psweetland@dalycity.org); Patrick Walter (pwalter@purissimawater.org); paulr@midpeninsulawater.org; Procos, Nicolas; Randy Breault; Rebecca Fotu (rlfotu@menlopark.org); rpopp@ci.millbrae.ca.us; rtowne@fostercity.org; Thomas.Niesar@acwd.com; Tim McAuliffe (tmcauliffe@burlingame.org); (mbolzowski@calwater.com); Alicia Sargiotto; Allison turner (alison.turner@mountainview.gov); Aparna Chatterjee; Brendan McCarthy; Brent Chester; Cathleen Brennan (cbrennan@coastsidewater.org); Cindy Bertsch; croyer@dalycity.org; Dana Jacobson; ECooney@HILLSBOROUGH.NET; Elvert, Catherine; gnathan@amwater.com; Howard Salamanca (hsalamanca@ci.milpitas.ca.gov); Jade Williams (jawilliams@calwater.com); Jeanette Kalabolas (jeanettek@midpeninsulawater.org); Krista Kuehnnackl; Leah Edwards; marilyn.mosher@hayward-ca.gov; Quesada, Nicole; Nina Hawk (nhawk@santaclaraca.gov); Norm Dorais (NDORAIS@fostercity.org); Shelly Reider (sreider@ci.millbrae.ca.us); Stephanie Nevins (stephanie.nevins@acwd.com); Toni Harris; Tracy Ingebrigtsen (tracyi@bonair.stanford.edu); Val Conzet (vconzet@ci.sunnyvale.ca.us); Virginia Parks; William Lai; Zach Goldberg
**Subject:** FW: Projected SFPUC Purchases for UWMP Preparation Needed by February 17, 2011

Dear Ms. Levine,

In response to the e-mail below and the SFPUC's request for purchase projections from its Wholesale Customers for use in the SFPUC's Urban Water Management Plan 2011 Update, attached is the requested information that I have received from the BAWSCA agencies. The table below provides a summary display of the responses received from the BAWSCA member agencies as transmitted in this e-mail.

If you have any further questions, please contact me at the BAWSCA office. I will forward to the SFPUC any additional responses that are received at a later date.

Sincerely,
Nicole Sandkulla

| Updated Purchase Projections for SFPUC | |
|---|---|
| **Agency Name** | **Projections Included in 2/24/11 E-Mail** |
| ACWD | x |
| Brisbane | x |
| Burlingame | x |
| Cal Water | x |
| Coastside | x |
| Daly City | x |
| East Palo Alto | |
| Estero | x |
| Guadalupe Valley | x |
| Hayward | x |
| Hillsborough | E-Mail Response Included, Projections Not Yet Available |
| Menlo Park | |
| Mid-Peninsula | x |
| Millbrae | x |
| Milpitas | x |
| Mountain View | E-Mail Response Included, Projections Not Yet Available |
| North Coast | |
| Palo Alto | |
| Purissima Hills | |
| Redwood City | x |
| San Bruno | x |
| San Jose | x |
| Santa Clara | x |
| Stanford | E-Mail Response Included, Projections Not Yet Available |
| Sunnyvale | x |
| Westborough | x |

Nicole M. Sandkulla, P. E.
Water Resources Planning Manager
Bay Area Water Supply and Conservation Agency
155 Bovet Road, Suite 302

San Mateo, CA 94402
Ph: (650) 349-3000 Fax: (650) 349-8395
EMail: NSandkulla@BAWSCA.org
Website: WWW.BAWSCA.org

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**From:** Nicole Sandkulla [mailto:NSandkulla@bawsca.org]
**Sent:** Friday, February 04, 2011 12:03 PM
**Subject:** Projected SFPUC Purchases for UWMP Preparation Needed by February 17, 2011
**Importance:** High

Dear BAWSCA Water Management Representatives,

The San Francisco Public Utilities Commission (SFPUC) has requested projections from each of its wholesale customers of purchases from the San Francisco Regional Water System (System) in five year increments from 2015 to 2030 (or 2035). The SFPUC will use this information to prepare its Wholesale Urban Water Management Plan for the System.

SFPUC's request is consistent with the requirements of Section 10631 of the California Water Code which states:

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

Historically, the SFPUC has relied on each agency's water purchase projections reported in the BAWSCA Annual Report. However, past purchase projections may not be appropriate for a variety of reasons:

- Changes in the economy and overall water use characteristics in the region
- Agencies are updating their projected needs and use of sources as they prepare their UWMP's
- Projections in the FY 2008-2009 Annual Report do not include the results of the Water Conservation Implementation Plan and the status of each agency's conservation programs

The SFPUC will need to document estimated water sales, including amounts for Wholesale Customers that are exempt from filing UWMP's. We recommend that those agencies that

are not required to prepare UWMP's provide BAWSCA with the five-year projected purchases you wish the SFPUC to use in preparing its report.

**As in the past, BAWSCA will support providing this information to the SFPUC in a coordinated fashion. To meet the SFPUC's deadline, please provide BAWSCA your projected SFPUC purchases in 5-year increments by close-of-business on Thursday, February 17, 2011. In addition to the numbers themselves, BAWSCA will forward to the SFPUC any qualifications that you wish to have associated with the data you provide at this time (e.g. that the data is draft and subject to modification as part of finalizing your agency UWMP). BAWSCA will forward information received to SFPUC on Friday, February 18th.**

BAWSCA will only send to the SFPUC data that it receives from each of your agencies specifically for this purpose. No data will be provided to the SFPUC for agencies that do not provide data to BAWSCA.

Lastly, please note that BAWSCA will also utilize these purchase projections provided by each BAWSCA agency to prepare and submit the water purchase projections through 2018 due to the SFPUC by June 30, 2011 in compliance with Section 4.05 of the 2009 Water Supply Agreement unless otherwise notified of a change in the numbers by individual member agencies.

If you have any questions, please call me or Anona Dutton.

Sincerely,
Nicole Sandkulla

Nicole M. Sandkulla, P. E.
Water Resources Planning Manager
Bay Area Water Supply and Conservation Agency
155 Bovet Road, Suite 302
San Mateo, CA 94402
Ph: (650) 349-3000 Fax: (650) 349-8395
EMail: NSandkulla@BAWSCA.org
Website: WWW.BAWSCA.org

Sunnyvale
p. 121

**Nicole Sandkulla**

**From:** Jim Craig [JCraig@ci.sunnyvale.ca.us]
**Sent:** Monday, February 07, 2011 3:25 PM
**To:** Nicole Sandkulla
**Cc:** Brendan McCarthy; Christina Uribe; Marvin Rose; Tim Kirby; Val Conzet
**Subject:** Re: Projected SFPUC Purchases for UWMP Preparation Needed by February 17, 2011

Nicole,

On behalf of the City of Sunnyvale, and Director Marvin Rose, appointed Water Management Representative for the City, I am informing you of the projection of water purchases by the City of Sunnyvale from the SFPUC from 2015 through 2035.

The projected Sunnyvale purchases from SFPUC for the requested period, at 5 year increments, are as follows:

| | |
|---|---|
| 2015 | 8.930 MGD |
| 2020 | 8.930 MGD |
| 2025 | 8.930 MGD |
| 2030 | 8.930 MGD |
| 2035 | 8.930 MGD |

If you have any questions about this projection, please call at your convenience.

Jim Craig
Superintendent of Field Services
P.O. Box 3707
Sunnyvale, CA 94088-3707

(408) 730-7558
jcraig@ci.sunnyvale.ca.us

>>> Nicole Sandkulla <NSandkulla@bawsca.org> 2/4/11 12:02 PM >>>

Dear BAWSCA Water Management Representatives,

The San Francisco Public Utilities Commission (SFPUC) has requested projections from each of its wholesale customers of purchases from the San Francisco Regional Water System (System) in five year increments from 2015 to 2030 (or 2035). The SFPUC will use this information to prepare its Wholesale Urban Water Management Plan for the System.

# Appendix E

City of Sunnyvale
2010 Urban Water Management Plan
SCVWD Groundwater Management Plan

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