

# **SAN JOSE WATER COMPANY COYOTE VALLEY WATER SUPPLY ASSESSMENT**

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**Table of Contents**

<b>Purpose</b> .....	2
<b>Background</b> .....	2
<b>Service Area &amp; Population</b> .....	3
<b>Climate</b> .....	4
<b>Past, Current and Future Water Use</b> .....	4
<b>Water Rights, Contracts and Entitlements</b> .....	9
<b>Sources of Water – SJWC System</b> .....	9
<b>Groundwater Analysis – SJWC System</b> .....	11
<b>Sources of Water – Coyote Valley</b> .....	13
<b>Groundwater Analysis – Coyote Valley</b> .....	17
<b>Water Supply Vulnerability</b> .....	18
<b>Transfer and Exchange Opportunities</b> .....	18
<b>Supply Reliability</b> .....	19
<b>Water Demand Management Measures</b> .....	21
<b>Supply and Demand Comparison</b> .....	22
<b>Summary</b> .....	23

**Appendix**

- A SCVWD’s Water Supply Availability Analysis for the Coyote Valley Specific Plan**
- B Water Demands for Coyote Valley Specific Plan by HMM Engineers**
- C SJWC’s License from the State Water Board**
- D SJWC and SCVWD 3-Year Treated Water Purchase Contract**
- E SCVWD’s Integrated Water Resource Planning Study Draft**
- F SCVWD’s 2005 Urban Water Management Plan**
- G SJWC’s Water Shortage Contingency Plan (January 1992)**
- H SJWC’s 2005 Urban Water Management Plan**

**S**an Jose Water Company (SJWC) is one of the largest privately owned water systems in the United States, providing high-quality water and exceptional customer service to nearly one million residents of Santa Clara County in Northern California since established in 1866.



## **Purpose**

With the goal of describing the relationship between existing and future water supplies for the Coyote Valley service area, this Water Supply Assessment (WSA) presents SJWC's strong ability to provide a diverse water supply to match planned build-out water demands under both normal and dry years. This comprehensive document is designed to promote collaborative planning between water suppliers, wholesalers, and local jurisdictions, and in turn, assist the San Jose City Council in making decisions related to water supply to support the Coyote Valley Specific Plan.

This WSA is written in response to California Senate Bill 610 (SB 610); legislation which requires water retailers to demonstrate whether their water supplies are sufficient for certain proposed subdivisions and large development projects subject to the California Environmental Quality Act. SB 610 requires that a WSA be prepared by the local water retailer and submitted within 90 days to the requesting agency.

SJWC provides a comprehensive water supply plan for Coyote Valley that will best meet Santa Clara Valley Water District's (SCVWD) goals and objectives for water supply management with sound engineering, a high level of service, redundancy and diversity of water supply with minimal impact to Santa Clara County and SJWC's water resources.

## **Background**



The City of San Jose requested a WSA from SJWC for the Coyote Valley area, which consists of 7,000 acres of mostly undeveloped land in southern San Jose. This area is generally bounded by Tulare Hill to the north, Highway 101 to the east, the City of Morgan Hill to the south, and the Santa Cruz foothills to the west.

SJWC has long had an interest in supplying water to Coyote Valley. SJWC purchased land in 1970 to potentially provide water to residents on Metcalf Road. The property contained a cistern well at one time for this purpose.

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Smart growth decisions for development in this area began over 20 years ago. The community and Coyote Valley Specific Plan Task Force (Task Force) have shaped the urban design concept for Coyote Valley based upon an environmental footprint sensitive to the area’s unique natural features.

The City of San Jose’s vision for Coyote Valley is a planned mixed-use community with a minimum of 25,000 housing units and 50,000 new jobs. The location and size of Coyote Valley is such that this development is essentially a new small city.

**Service Area & Population**

SJWC’s service area spans 138 square miles, including most of the City of San Jose and Cupertino, the entire cities of Campbell, Monte Sereno, Saratoga, the Town of Los Gatos, and parts of unincorporated Santa Clara County.

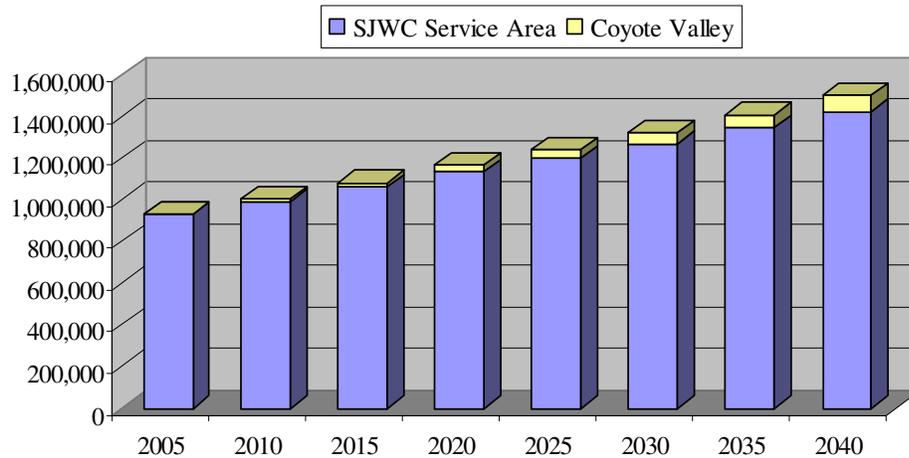


The current and projected population of SJWC’s service area is shown in the table and chart below. These population projections are based on the Association of Bay Area Governments’ (ABAG) 2003 population forecast and the Coyote Valley anticipated build-out population of 75,000, expected in the year 2040.

**Table 1: Current and Projected SJWC Service Area Population**

	2005	2010	2015	2020	2025	2030	2035	2040
<b>ABAG 2003 Population Projection</b>	935,300	995,900	1,062,500	1,137,600	1,202,100	1,273,200	1,348,500	1,428,300
<b>CV Specific Plan Population Projection</b>	-	10,700	21,400	32,100	42,800	53,500	64,200	75,000
<b>Total SJWC Service Area Population</b>	935,300	1,006,600	1,083,900	1,169,700	1,244,900	1,326,700	1,412,700	1,503,300

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**Climate**

The San Jose area experiences a low-humidity climate with an average of 14 inches of rain annually. Daily average temperatures range from the mid 60’s to the high 80’s (°F) in spring and summer and from the mid 40’s to mid 50’s (°F) in the winter. Most of the precipitation in the area occurs between November and March with December and January typically being the wettest months. Further climate data is listed in the table below.

**Table 2: Climate Data**

	Jan	Feb	Mar	Apr	May	Jun
<b>Average Max Temperature (°F)</b>	58.0	62.1	65.6	69.8	74.4	79.3
<b>Average Min Temperature (°F)</b>	41.5	44.2	45.7	47.6	51.2	54.8
<b>Average Precipitation (in)</b>	2.95	2.51	2.23	1.08	0.40	0.09
<b>Evapotranspiration (in)</b>	1.35	1.87	3.45	5.03	5.93	6.71

	Jul	Aug	Sept	Oct	Nov	Dec	Annual
<b>Average Max Temperature (°F)</b>	82.1	81.8	80.7	74.6	65.1	58.1	71.0
<b>Average Min Temperature (°F)</b>	56.9	57.0	56.2	51.9	46.0	41.7	49.5
<b>Average Precipitation (in)</b>	0.03	0.08	0.20	0.74	1.75	2.44	14.49
<b>Evapotranspiration (in)</b>	7.11	6.29	4.84	3.61	1.80	1.36	49.35

**Past, Current and Future Water Use**



The majority of connections to SJWC’s distribution system are either residential or commercial. SJWC also provides water to industry, municipal, private fire services, and fire hydrant connections.

According to “Santa Clara Valley Water District’s Water Supply Availability Analysis for the Coyote Valley Specific Plan” (Appendix A), anticipated demands are broken into four categories: residential, employment, greenbelt and community uses.

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The Coyote Valley development has the opportunity to become a model for conservation. City regulated aggressive conservation in this development would translate into water usage savings beyond the anticipated demand predicted in this WSA. This water supply assessment will show the benefits and results of using aggressive conservation, and assumes aggressive conservation measures are used for Coyote Valley. Future residential demand by SCVWD, based on full build-out of 25,000 homes with a demand assumption of 300 gallons per home per day, will be approximately 8,400 AF/yr (one acre-foot of water is about 325,000 gallons). Future employment demands based on 50,000 new jobs with a demand assumption of 70 gallons per employee per day, results in an anticipated demand of approximately 4,000 AF/yr.

**Table 3: Build-Out Demand By SCVWD**

Demand Type	Acre-ft/yr
Residential	8,400
Employment	4,000
Greenbelt	4,000
Community Uses	4,000
<b>Total</b>	<b>20,400</b>

The City of San Jose 2020 General Plan identifies the Greenbelt as a permanent non-urban buffer with demand usage expected to remain consistent with existing conditions for approximately 4,000 AF/yr. Community uses, identified as large landscape areas, parks, schools, right-of-ways and open spaces are estimated to be approximately 4,000 AF/yr in Coyote Valley.

Projected water demands provided by HMM Engineers for the Coyote Valley Specific Plan (Appendix B), differ slightly from SCVWD’s total anticipated demand. HMM Engineers present water demands for the Coyote subbasin as being associated with four categories: Coyote Valley Specific Plan, Greenbelt, outside planned area, and the Metcalf Energy Center. HMM Engineers projects 26,400 homes at build-out and 55,800 new jobs.

Anticipated water demands for the Coyote Valley Specific Plan include: residential, employment, retail, public facilities, schools, parks, landscaping, libraries, fire stations and Coyote Lake. In the Coyote Valley Specific Plan, HMM Engineers calculate this demand to be approximately 12,100 AF/yr. The Greenbelt as identified by HMM Engineers is expected to require up to 4,200 AF/yr, and includes the planned open space preservation and agricultural strategies which may be implemented in conjunction with development in Coyote Valley, as well as existing uses by the Coyote Creek Golf Courses. The City of Morgan Hill’s Sphere of Influence includes a portion of the Coyote Valley subbasin and will need approximately 1,800 AF/yr. At full build-out the Metcalf Energy Center is forecasted to use 600 AF/yr of potable water, and an additional 3,700 AF/yr of recycled water.

**Table 4: Build-Out Demand By HMM Engineers**

Demand Type	Acre-ft/yr
Coyote Valley Specific Plan	12,100
Greenbelt	4,200
Outside Planned Area	1,800
Metcalf Energy Center - Potable Water	600
<b>Potable Water Total</b>	<b>18,700</b>

SCVWD demand assumptions project an anticipated usage of approximately 20,400 AF/yr of potable water at build-out, while the Coyote Valley Specific Plan as prepared by HMM Engineers forecasts a potable water demand of approximately 18,700 AF/yr.

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**Coyote Valley Water Supply Assessment**

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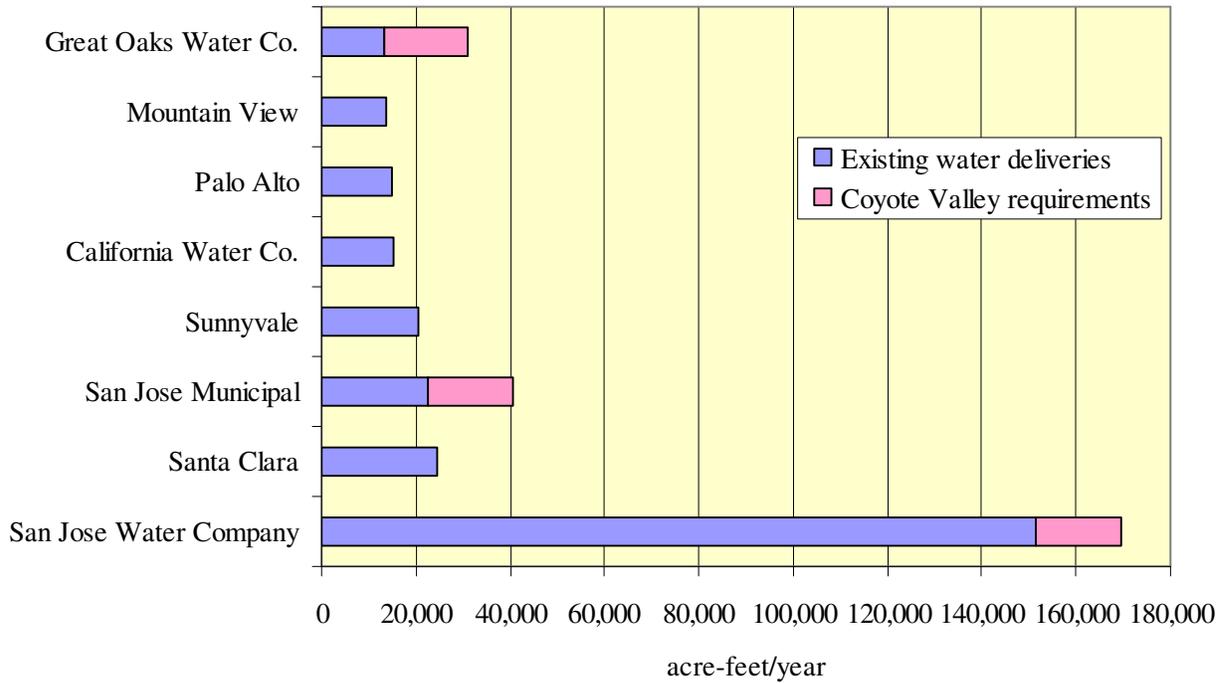
To be conservative, SJWC has applied the more recent population and employment projections to SCVWD's methodology to obtain Table 5. SJWC will be able to provide 21,300 AF/yr of potable water to Coyote Valley from several reliable sources. SJWC can also facilitate distribution and metering of recycled water throughout Coyote Valley.

**Table 5: Build-Out Demand Used By SJWC**

<b>Demand Type</b>	<b>Acre-ft/yr</b>
Residential	8,900
Employment	4,400
Greenbelt	4,000
Community Uses	4,000
<b>Total</b>	<b>21,300</b>

As shown in the following graph, the anticipated 21,300 acre-feet/year (AF/yr) demand associated with Coyote Valley represents only about 14% of the existing SJWC supply. A water company the size of SJWC can most readily absorb this increase in usage while continuing to provide high-quality water and exceptional customer service to the rest of SJWC's service area.

***Largest Water Retailers in Santa Clara County (2005)***



The total number of SJWC future connections is calculated using historical trends for new service connections and the anticipated demand figures in the Coyote Valley development. SJWC foresees a 0.4% annual service connection growth rate in the existing SJWC service area and an additional 26,400 residential units by 2040 in Coyote Valley. Under the City of San Jose’s vision for 55,800 industry driving jobs, SJWC assumes a 90/10 water usage split within the employment category between business and industry. At build-out this assumed split will create an additional 1,676 business and 48 industrial service connections in Coyote Valley.

For this WSA, SJWC assumes the number of connections per customer type follows a linear path between 2006 and 2040. A more rapid growth would accelerate the recommendations made in this document. The table below breaks out the number of connections based on customer type, inclusive of planned Coyote Valley connections.

**Table 6: Number of Water Use Connections For SJWC Including Coyote Valley**

Customer Type	2005	2010	2015	2020	2025	2030	2035	2040
<b>Residential</b>	193,106	200,771	208,514	216,336	224,243	232,229	240,302	248,464
<b>Business</b>	19,626	20,261	20,904	21,555	22,215	22,883	23,560	24,245
<b>Industrial</b>	69	77	86	94	102	111	119	127
<b>Public Authority</b>	1,677	1,711	1,745	1,780	1,816	1,853	1,890	1,928
<b>Resale</b>	30	31	31	32	32	33	34	34
<b>Other</b>	266	271	277	282	288	294	300	306
<b>Total</b>	214,774	223,122	231,557	240,081	248,696	257,403	266,205	275,104

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The following table shows the estimated amount of water supplied to SJWC’s distribution system from each source in 2005 as well as projections until 2040. Future usage was calculated using: the projected ABAG 2003 population forecast; Task Force population figures; and the water use sectors number of connections listed in the table above. The anticipated future usage includes the additional 3,267 AF/yr needed for the North First Street project scheduled for development between 2010 and 2025. The 21,300 AF/yr associated with Coyote Valley is assumed to increase linearly to build-out between 2006 and 2040.

**Table 7: SJWC Water Use by Customer Type (acre-feet/year)**

Customer Type	2005	2010	2015	2020	2025	2030	2035	2040
<b>Residential</b>	86,772	94,322	102,430	111,326	119,241	127,108	136,055	145,488
<b>Business</b>	46,377	50,012	53,945	58,298	62,124	66,215	70,809	75,660
<b>Industrial</b>	645	846	1,050	1,262	1,464	1,576	1,719	1,868
<b>Public Authority</b>	8,387	8,931	9,528	10,201	10,780	11,417	12,143	12,914
<b>Resale</b>	774	824	880	942	995	1,054	1,121	1,192
<b>Other</b>	218	1,376	2,534	3,695	4,852	6,011	7,173	8,336
<b>Total</b>	143,173	156,311	170,367	185,724	199,456	213,381	229,020	245,458

SJWC total demand is not limited to the above metered customer use. Between six and seven percent of the water produced (pumped, treated, or purchased) is unaccounted for, and as a result, is not billed. Unaccounted for water includes authorized unmetered uses including fire fighting, main flushing and public use. The remaining unaccounted for water is attributed to meter reading discrepancies, reservoir cleaning, malfunctioning valves, leakage and theft. The following table shows the actual amount of total system demand in 2005 and projects the amount through 2040.



**Table 8: SJWC Total System Demand (acre-feet/year)**

	2005	2010	2015	2020	2025	2030	2035	2040
<b>Customer Metered Demand</b>	143,173	156,311	170,367	185,724	199,456	213,381	229,020	245,458
<b>Unaccounted for Water</b>	9,767	10,942	11,925	13,000	13,962	14,937	16,032	17,182
<b>Total System Demand</b>	152,940	167,253	182,292	198,724	213,418	228,318	245,052	262,640

**Water Rights, Contracts and Entitlements**

SJWC has “pre-1914 surface water rights” to raw water in Los Gatos Creek and local watersheds in the Santa Cruz Mountains. Prior to 1872, appropriative water rights could be acquired by simply taking and beneficially using water. In 1914, the Water Code was adopted and it grandfathered in all existing water entitlements to license holders. SJWC filed for a license in 1947 and was granted license number 10933 (Appendix C) in 1976 by the State Water Resources Control Board to draw 6240 AF/yr from Los Gatos Creek. SJWC has upgraded the collection and treatment system that draws water from this watershed which has increased the capacity of this entitlement to approximately 11,200 AF/yr for an average rain year.



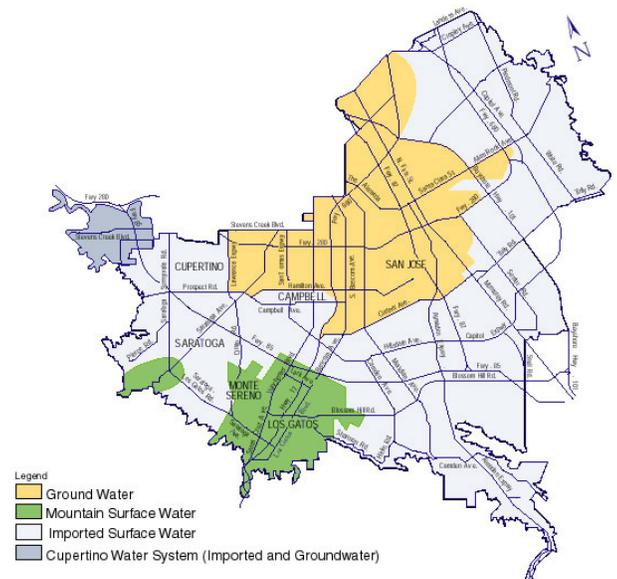
In 1981, SJWC entered into a 70-year master contract with SCVWD for the purchase of treated water. The contract provides for rolling three-year purchase schedules establishing fixed quantities of water to be purchased during each period. The maximum peak day rate for delivery of water from SCVWD under the 2004 - 2005 schedule is 108 MGD. The water is treated at one of the three SCVWD-operated treatment plants (Rinconada, Penitencia and Santa Teresa). SJWC and SCVWD currently have a three year treated water contract (Appendix D) that covers 2005 – 2008, with contract supply ranging from 67,504 AF/yr in 2005 to 69,039 AF/yr in 2008.

SJWC asks for and receives underground water rights in conjunction with new developments. SJWC has the right to withdraw groundwater from aquifers below said property when in compliance with SCVWD’s permitting requirements. In Santa Clara County, this right is subject to a groundwater extraction fee levied by SCVWD based on the amount of groundwater pumped into SJWC’s distribution system. SJWC generally uses the most economically source of water, which is largely determined by SCVWD’s groundwater extraction fee rates and contracted water rates.

**Sources of Water – SJWC System**

SJWC has three sources of supply: groundwater, imported treated surface water and local surface water. A map of where each source is the predominant source is shown to the right.

On average, groundwater comprises just over one third of SJWC’s water supply. Ninety-four active and ten stand-by wells pump water from the major water-bearing aquifers of the Santa Clara Valley subbasin. These aquifers are recharged naturally by rainfall and streams, and artificially mainly by recharge ponds operated by SCVWD.



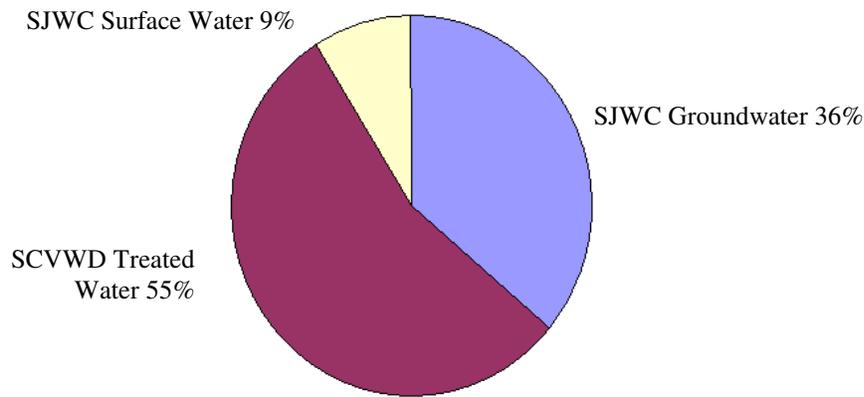
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SJWC is under contract with SCVWD in the purchase of just over fifty percent of the needed water supply. This water originates from several sources including local reservoirs, the State Water Project and the federally funded Central Valley Project San Felipe Division. Water is piped into SJWC's system at various turnouts after it is treated at one of the three SCVWD water treatment plants (Rinconada to the west side pipeline and Penitencia and Santa Teresa to the east side pipeline).



SJWC's final source of supply is from surface water in the local watersheds of the Santa Cruz Mountains. It provides approximately five to ten percent of the water supply depending on the amount of annual rainfall. A series of dams and automated intakes collect the water released from SJWC's lakes. The water is then sent to SJWC's Montevina Filter Plant (shown in the photo to the left) for treatment prior to entering the distribution system. SJWC's Saratoga Treatment Plant draws water from a local stream which collects water from the nearby Santa Cruz Mountains. The pie chart below shows SJWC's 2004 supply source breakdown.

**SJWC Sources of Water for 2004**



The following table shows the actual amount of water supplied to SJWC's distribution system from each source in 2005 as well as projections until 2040. The amount of surface water for 2005 and forward is based on a long term average for the past 23 years. The groundwater and SCVWD Treated Water projections include SJWC's plan to acquire additional water needed for development projects by installing production wells within the distribution system, by purchasing additional treated water from SCVWD and recycled water from the South Bay Water Recycling Program. The overall long-term strategy for groundwater as discussed in the 2003 SCVWD Integrated Water Resource Planning Study (IWRP) Draft (Appendix E) is to maximize the amount of water available in the groundwater basins to protect against drought and emergencies. SCVWD seeks to maximize the use of treated local and import water when available.



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**Table 9: Current and Planned Water Supply – With Additional Conservation (AF/yr)**

	2005	2010	2015	2020	2025	2030	2035	2040
<b>SCVWD Treated Water</b>	84,258	92,618	101,703	112,181	120,921	129,868	140,648	152,303
<b>Groundwater - S.C. Valley Subbasin</b>	57,389	60,911	64,433	67,956	71,478	75,000	78,522	82,044
<b>Groundwater - Coyote Subbasin</b>	0	1,860	3,720	5,580	7,440	9,300	11,160	13,000
<b>Recycled Water – Coyote Valley</b>	0	571	1,143	1,714	2,286	2,857	3,429	4,000
<b>Local Surface Water</b>	11,293	11,293	11,293	11,293	11,293	11,293	11,293	11,293
<b>Total w/out Conservation</b>	152,940	167,253	182,292	198,724	213,418	228,318	245,052	262,640
<b>Additional Conservation</b>	0	-4,886	-10,098	-15,679	-21,260	-27,506	-34,006	-40,506
<b>Total with Conservation</b>	152,940	162,367	172,194	183,045	192,158	200,812	211,046	222,134

Additional conservation assumes an overall increase in conservation of 3% every 5 years throughout the existing SJWC service area beginning in the year 2010. Additional conservation will lower the actual groundwater and SCVWD treated water needs as appropriate. Added conservation is anticipated due to an increase in the use of ultra low flush toilets, low flow showerheads, individual conservation, and the reduction in landscaping due to development. This conservation is assumed to be spread among the residential and business categories in proportion to their anticipated usage. The groundwater quantities in the Santa Clara Valley and Coyote subbasins were capped at 75,000 in 2030, and 13,000 AF/yr (assuming maximum recharge) in 2040 respectively based on meetings with SCVWD.

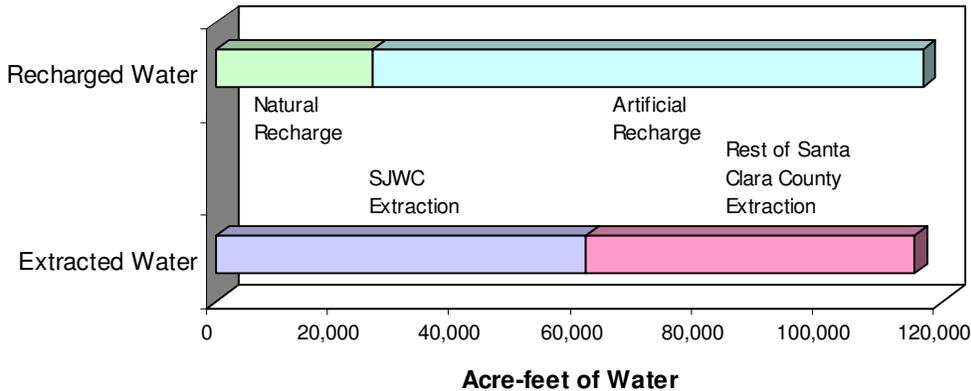


**Groundwater Analysis – SJWC System**

SJWC draws water from the Santa Clara Valley subbasin (basin) in the north part of Santa Clara County. The basin extends from Coyote Narrows at Metcalf Road to the County’s northern boundary. It is bounded on the west by the Santa Cruz Mountains and on the east by the Diablo Range; these two ranges converge at the Coyote Narrows to form the southern limit of the basin. The basin is 22 miles long and 15 miles wide, with a surface area of 225 square miles.

According to SCVWD, 115,358 acre-feet of groundwater were extracted from the basin in 2001. SCVWD estimates that 26,000 acre-feet were naturally recharged to the basin and 90,700 acre-feet were artificially recharged to the basin, mainly through recharge ponds. The following chart shows the water balance of the basin in 2001.

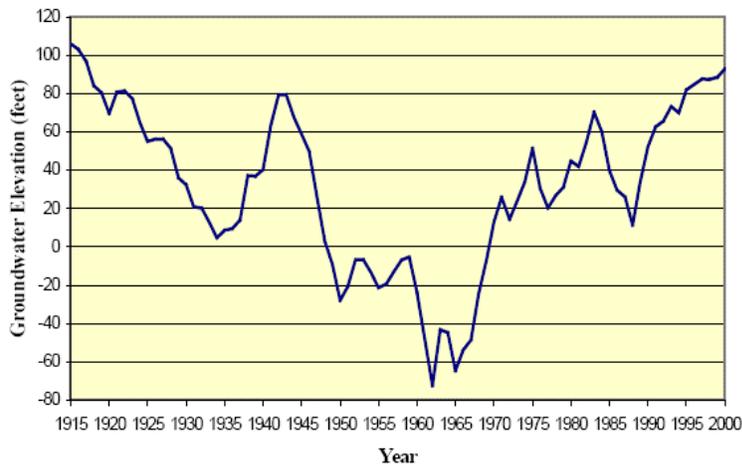
**Santa Clara Valley Groundwater Basin Water Balance (2001)**



The groundwater elevation in the basin has been steadily on the rise for the past 40 years under the management of the SCVWD. The following chart shows the groundwater elevation since 1915 using mean sea level as the datum. SCVWD has set up a successful artificial recharge system employing local reservoirs, percolation ponds, and an injection well to supplement the natural recharge of the basin to prevent overdraft. The water table in the northern portion of the basin is so close to the surface, some buildings with basements or parking garages have been flooded.

High groundwater levels are a result of: less pumping, an increased use of imported water, and recharge of water into the aquifer by SCVWD. The groundwater basin is currently “full” and prepared for the effects of a multi-year drought. The shallow groundwater level varies annually with the peak usually occurring around May, a few months after the typical peak monthly rainfall in January.

**Groundwater Elevations in San Jose Index Well**



SCVWD has advised SJWC against significantly increasing groundwater use in the future. SJWC has discussed the projected increases in supply from groundwater and district treated water with SCVWD. The SCVWD’s 2005 UWMP (Appendix F) states operational storage capacity of the basin is estimated to be 350,000 acre-feet and groundwater pumping in the basin should not exceed a maximum of 200,000 AF/yr to avoid land subsidence. SCVWD’s 2003 IWRP

states “although supplies are adequate to meet needs in wet and average years, the expected dry-year shortages will grow over time from approximately 50,000 AF/yr in 2010 to 75,000 AF/yr in 2040.” SCVWD’s IWRP also states additional recharge capacity is needed to maintain groundwater as a reliable source now and in the future. Based on this, SCVWD has suggested groundwater pumped by SJWC not exceed 75,000 AF/yr in 2030 in the basin. Currently SJWC is pumping about 58,000 AF/yr from the Santa Clara Valley subbasin.

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**Coyote Valley Water Supply Assessment**

Groundwater from the basin is a substantial source of water for SJWC’s entire distribution system. In the past five years, groundwater has been the source for approximately one third of SJWC’s total supply. The following table shows the groundwater SJWC pumped from the basin for 2000 – 2004.

**Table 10: Amount of Groundwater Pumped (AF/yr)**

Basin Name	2000	2001	2002	2003	2004
Santa Clara Valley Subbasin	60,707	65,545	56,475	49,594	55,519
% of Total Water Supply	39.2%	42.4%	36.3%	33.6%	36.6%

Based on SJWC’s projections, groundwater will continue to be a vital source of supply, comprising just about 37 percent on average of the total water supply by 2040. The following table shows groundwater pumping projections and groundwater as a percentage of total supply until 2040.

**Table 11: Amount of Groundwater Projected to be Pumped (AF/yr)**

Basin Name	2005	2010	2015	2020	2025	2030	2035	2040
Santa Clara Valley Subbasin	57,389	60,911	64,433	67,956	71,478	75,000	78,522	82,044
% of Total Water Supply	37.5%	37.5%	37.4%	37.1%	37.2%	37.3%	37.2%	36.9%

**Sources of Water – Coyote Valley**

SJWC will work closely with SCVWD in implementing a plan consistent with their goals and objectives. The “Water Supply Availability Analysis for the Coyote Valley Specific Plan” dated April 2005 prepared by SCVWD outlines several alternatives as summarized in the table on the next pages.

**WATER SUPPLY AVAILABILITY OPTIONS SUMMARY**  
**From Santa Clara Valley Water District's**  
**"Water Supply Availability Analysis for the Coyote Valley Specific Plan"**

<b>Option</b>	<b>Title</b>	<b>Summary</b>	<b>Advantages</b>	<b>Disadvantages</b>	<b>SJWC Comments</b>
1	Recycled water for irrigation and non-potable uses	There is the potential capacity for 4,000 ac-ft/year of recycled water for public landscape irrigation, and an additional 1,000 ac-ft/year for the greenbelt area. Dual plumbing of residential yards and businesses would create even more demand.	Offsets demand for groundwater, available in dry years, environmental benefits	Needs piping system to feed users, need expensive advanced treatment of recycled water, may need added feed pipe and/or local scalping plant for full potential	SJWC will fully support all efforts to use recycled water. SJWC already is a recycled water retailer for the City of San Jose.
2	Surface water delivery with a new water treatment plant	A new water treatment plant to serve South County.	Alternative to groundwater, redundancy of water source	High cost to build and maintain, source water would be from Coyote Creek or raw water from Central Valley Project (CVP) - both susceptible to drought	Assuming SCVWD does not want to build a plant, not a preferred option by SJWC due to cost, but option is open. SJWC currently operates two water treatment plants.
3	Diversion of groundwater from the Santa Clara subbasin	Install new pumps in the Santa Clara subbasin to pump groundwater to be delivered to Coyote Valley.	Provides access to larger water basin, a redundant source of groundwater	Impacts users of Santa Clara subbasin, provides lower reliability for the North County	If SJWC was the sole water purveyor, we would intend to install a pipe connecting our diverse system to Coyote Valley for redundancy. This would equalize the impact throughout North County.

**WATER SUPPLY AVAILABILITY OPTIONS SUMMARY**  
**From Santa Clara Valley Water District's**  
**"Water Supply Availability Analysis for the Coyote Valley Specific Plan"**

<b>Option</b>	<b>Title</b>	<b>Summary</b>	<b>Advantages</b>	<b>Disadvantages</b>	<b>SJWC Comments</b>
4	Additional groundwater pumping from additional recharge	Install percolation ponds for recharge in the vicinity of the District's Cross Valley Pipeline for possible raw water recharge from the federal Central Valley Project (CVP). In addition, piping could be installed to allow recharge from advanced treated recycled water.	Diverts only 6,000 ac-ft/yr of 127,700 ac-ft/yr from CVP – this provides up to 5,000 ac-ft/yr in added groundwater capacity	Not reliable during dry years, reduces reliability of CVP water to North County, high cost for implementing advanced treated recycled water, need additional piping	SJWC would fully support this option to increase groundwater capability. CVP water would be cheaper than treating the water in North County and pumping to Coyote.
5	Treated water deliveries from Santa Teresa Water Treatment Plant	Supply water to Coyote Valley by expanding the Santa Teresa Water Treatment Plant (if needed) and pumping the water to Coyote Valley.	Access varied sources of supply, provides redundancy	Impacts North County supplies, need water pipeline and possible expansion of the water treatment plant	As in Option 3, a SJWC pipeline connected to Coyote Valley would bring a wide variety of District water supply sources to Coyote Valley, primarily from the Santa Teresa plant.
6	Additional water use efficiency measures in the Coyote Valley Specific Plan	Meeting the water needs of Coyote Valley assumes that water use efficiency measures are used to the maximum extent practicable.	Reduces demand from all sources of water, ideal environmental benefits	Requires stricter planning and construction restrictions, relies on conservation by the public	SJWC provides a full range of water conservation services, including free water audits.

In addition to the six options presented by SCVWD, there are other possible sources of water:

1. The possibility exists to install new wells in the Llagas subbasin south of Cochrane Road and pump the water north to the Coyote subbasin. This alternative is less preferred since water in this area is mostly designated for agriculture and Morgan Hill/Gilroy growth. There is also potential for perchlorate and nitrate contamination from the Llagas subbasin groundwater supply.
2. SJWC can evaluate implementing a water conserving rate structure for Coyote Valley, which influences usage above a predetermined amount as development moves forward in order to ensure more aggressive conservation in Coyote Valley. Although this isn't a source of water, it can potentially lower the demand from all water sources.

The eight options presented are open to SJWC, and other options may be considered as they are identified. After evaluating SCVWD's goals for Coyote Valley, SJWC is proposing to do the following:

- Install approximately six new wells at 3 – 6 well sites spaced in cooperation with SCVWD's groundwater model. This would be the primary source of water until full build-out, with about 20 – 100% of the water coming from groundwater depending on the conditions of the basin and whether drought conditions exist. A maximum of 13,000 AF/yr of water will be drawn from the Coyote subbasin assuming 6,000 AF/yr of recharge.
- Provide reclaimed/recycled water to Coyote Valley. SJWC is currently an active retailer of recycled water for the City of San Jose. SJWC can continue in that capacity, while encouraging the use of recycled water. According to the SCVWD, 4,000 AF/yr or more of water can come from recycled water. This water could be used for public and private irrigation and dual plumbing of businesses. Excess water could also be used to supply water to recharge ponds.
- Tap into the Cross Valley Pipeline which provides water from the federal Central Valley Project and from SCVWD's Anderson Reservoir. Preferably, this water would be used to provide raw water supply to recharge ponds planned in South Coyote Valley. Alternatively but less preferable due to cost, in the future SJWC could provide a water treatment plant to treat raw water directly for distribution.
- Water main extension of SJWC's pipe along McKean Road to Bailey Road will be evaluated as development in Coyote Valley progresses. SJWC is perfectly positioned to provide water from SCVWD's Santa Teresa Water Treatment Plant, the closest SCVWD surface water treatment plant to the project. This would provide redundancy of water supply to ensure Coyote Valley will have water during all drought conditions.
- Work with the SCVWD and the City of San Jose on water conservation concepts and standards.



The build-out anticipated supply shown in the table to the right assumes aggressive water conservation. However, if either the conservation goals fall short or if groundwater availability is short, SJWC anticipates meeting the requirement from the diverse sources of SJWC’s system.

**Table 12: Build-Out Anticipated Supply**

Source of Supply	Acre-ft/yr
Groundwater w/Recharge	6,000 – 13,000
Recycled Water	4,000
SCVWD – Santa Teresa Water via SJWC System	4,300 – 11,300 <sup>+</sup>
<b>Total</b>	<b>21,300</b>

SJWC is in the unique position to work with SCVWD in implementing the SCVWD groundwater management plan to best meet SCVWD’s goals and objectives for water supply management with strong planning and engineering, a high level of service, redundancy and diversity of water supply. In addition, SJWC may be willing to negotiate some cost sharing or other financing options for all of these options with developers and other agencies.

### Groundwater Analysis – Coyote Valley

According to SCVWD, the Coyote subbasin is an unconfined basin extending from Metcalf Road south to around Cochrane Road, where it joins the Llagas subbasin at a slightly moving groundwater divide. The Coyote subbasin is approximately seven miles long and ranges in width from a half mile at the Coyote Narrows to three miles. The subbasin has a surface area of approximately 15 square miles.

Demand assumptions in Coyote Valley are estimated to be 21,300 AF/yr. According to the “Santa Clara Valley Water District’s Water Supply Availability Analysis for the Coyote Valley Specific Plan” the Coyote basin can support 13,000 AF/yr of pumping if an additional 6,000 AF/yr is recharged into the basin. The Coyote subbasin is very shallow and sensitive to contamination because of its proximity to the surface. To ensure no long-term groundwater impacts due to recharge, SCVWD defines fully advanced treated recycled water as an acceptable recharge alternative available to Coyote Valley.

Operational storage capacity of the Coyote subbasin is estimated to be 23,000 – 33,000 acre-feet. Based on demand projections groundwater will be a vital source of supply in Coyote Valley. The 21,300 AF/yr associated with the Coyote Valley development at build-out is assumed to increase linearly between 2006 and 2040.



**SAN JOSE WATER COMPANY**  
**Coyote Valley Water Supply Assessment**

Groundwater will ideally comprise 61 percent of the total water supply in 2040. The table below shows groundwater pumping projections and groundwater as a percentage of total supply until 2040 for non-drought years in Coyote Valley. During a drought, recycled water and other SJWC sources would provide full redundancy. SJWC assumes recycled water will be available in 2006 and will increase linearly until build-out in 2040.

**Table 13: Amount of Groundwater Projected for Coyote Valley (AF/yr)**

Basin Name	2005	2010	2015	2020	2025	2030	2035	2040
Coyote Subbasin	0	2,500	5,000	7,500	10,000	12,500	13,000	13,000
% of Total Water Supply	0.0%	82.2%	82.2%	82.2%	82.2%	82.2%	71.2%	61.0%

**Water Supply Vulnerability**

Groundwater by itself will not be sufficient to serve Coyote Valley at build-out. Diversity and redundancy in water supply, and the possibility to have emergency water supplies available in the event of disaster is crucial to the sustainability of the proposed development, the environment, and existing agricultural and recreational areas in Coyote Valley. SJWC has identified multiple sources of water for Coyote Valley which would provide a high quality, diverse and redundant source of supply. For added backup, SJWC incorporates diesel fueled generators into its facilities system which will operate wells and pumps in the event of power outages.

SCVWD’s 2003 IWRP predicts shortages in water supply, and the frequency and magnitude of these shortages will be increased due to this development. Since SCVWD has influence over approximately 90% of SJWC’s annual water supply, SJWC will continue to work with SCVWD to ensure water supply for Coyote Valley is reliable, while the impact to the existing Santa Clara Valley subbasin is minimal.

SCVWD recommends in their 2003 IWRP that water supply sources be maintained at 95% reliability during significant water shortages that occur during multiyear droughts. To accomplish this, SJWC can use less groundwater in certain areas or zones to achieve the overall balance which best meets the SCVWD’s and SJWC’s operational goals.

**Transfer and Exchange Opportunities**

SJWC’s distribution system has interties with the following retailers in the San Jose area: City of Santa Clara, City of San Jose Municipal Water, Great Oaks Water and the SCVWD West Pipeline in Cupertino. The connection to the SCVWD West Pipeline allows SJWC to provide water to the Cupertino leased system that SJWC operates. SJWC currently has no plans to use these interties for normal system operation as they are exclusively used for potential emergency sources.

**Supply Reliability**

SJWC applied the base years SCVWD used for the average water year, single-dry water year and multiple-dry water years in the 2005 UWMP. The water years used by SJWC are listed in the table below.

**Table 14: Basis of Water Year Data**

Water Year Type	Base Year(s)
Average Water Year	1985
Single-Dry Water Year	1977
Multiple-Dry Water Years	1987-1991

Documented in the following table is the quantity of water SJWC received from each source of water during the average water year, single-dry water year and multiple-dry water years. SCVWD added the 100 MGD Santa Teresa Water Treatment Plant in 1989 to increase capacity and redundancy in their source of supply.

**Table 15: Supply Allocation (AF/yr)**

Water Source	Average Water Year	Single-Dry Water Year	Multiple-Dry Water Years				
	Year (1985)	Year (1977)	Year 1 (1987)	Year 2 (1988)	Year 3 (1989)	Year 4 (1990)	Year 5 (1991)
SCVWD Treated	47,061	36,220	57,879	65,935	81,405	64,143	63,093
Local Surface	5,410	1,364	4,576	3,548	6,500	3,719	6,435
Groundwater	94,853	72,962	92,257	81,964	37,020	55,363	42,513
<b>Totals</b>	<b>147,325</b>	<b>110,545</b>	<b>154,712</b>	<b>151,447</b>	<b>124,925</b>	<b>123,225</b>	<b>112,042</b>

The following table takes the supply received in each of the drought years and divides it by the supply received in the average water year to generate a percentage of normal supply SJWC may expect to see during a future drought period.

**Table 16: Supply Allocation as a Percentage of Normal Water Year (1985)**

Water Source % of Normal	Single-Dry Water Year	Multiple-Dry Water Years				
	Year (1977)	Year 1 (1987)	Year 2 (1988)	Year 3 (1989)	Year 4 (1990)	Year 5 (1991)
SCVWD Treated	77.0%	123.0%	140.1%	173.0%	136.3%	134.1%
Local Surface	25.2%	84.6%	65.6%	120.1%	68.7%	118.9%
Groundwater	76.9%	97.3%	86.4%	39.0%	58.4%	44.8%
<b>Totals</b>	<b>75.0%</b>	<b>105.0%</b>	<b>102.8%</b>	<b>84.8%</b>	<b>83.6%</b>	<b>76.1%</b>

Besides a drought, other factors which could cause SJWC's sources of supply to become inconsistent are summarized below.

**Table 17: Causes of Supply Inconsistency**

Supply	Legal	Environmental	Water Quality	Climatic	Mechanical
Local Surface			x	x	x
Ground Water		x	x	x	x
SCVWD Treated Water	x	x	x	x	x

All sources of water require some mechanical equipment to bring the water to the public. Mechanical failures may cause water service shutdowns until repairs are made. The quality of the groundwater in the basins, the Santa Cruz Mountains, or the raw water supply to SCVWD’s treatment plants could decrease or be contaminated such that existing treatment facilities are not adequate to meet current drinking water standards. Contamination could cause a source of supply to become unusable until further treatment techniques are utilized, or the contamination is no longer a threat to the source of supply. SCVWD contracts with the State of California to receive raw water from the California Central Valley through the State Water Project (SWP). Water supplied through this aqueduct (which originates from the Sacramento-San Joaquin Delta) may be limited because of subsidence problems which are beginning to occur in that area. Subsequently, SCVWD has contracted with the Federal Central Valley Project (CVP) to supply raw water from the San Joaquin Valley via the Santa Clara Conduit. The reliance of water from inland sources through the SWP or the CVP is very critical; the loss of any or all of these sources due to pipe failure, earthquake, or human intervention can have an extreme effect on SJWC’s water supply. Given the above factors which could result in an inconsistent water supply, it is crucial that SJWC have sufficient backup wells and pumping capacity to supply customers for as long as several months solely from groundwater sources.



SCVWD is responsible for managing water resources in Santa Clara County, including the long-range planning for additional supplies and/or conservation needed to meet future water demands. SJWC and other retailers work closely with SCVWD to coordinate the purchase of treated imported water and the extraction of groundwater from retailer-owned wells. This activity is important to the operation of the countywide water supply and distribution system and the retailers are dependent on SCVWD’s long-range resource planning.

In determining the long-range availability of water, considerations must also be given to decisions at the state or federal level that are out of the SCVWD’s control. The SCVWD has contracts for water deliveries with both the SWP and the federal CVP. Due to flow restrictions for the protection of water quality and the habitat of fish and wildlife in the Delta, water deliveries may be reduced from previous levels. During critical dry periods the SCVWD can expect additional reductions in water deliveries. Long-range planning success depends on the SCVWD’s ability to obtain adequate imported water supplies and on proper management of the local groundwater basin.

**Water Demand Management Measures**

SJWC provides a full range of water conservation services to both residential and commercial customers, the cornerstone of which is our water audit program. In 2005, SJWC's three Water Conservation Inspectors performed over 1,900 water audits. These water audits consist of a SJWC Water Conservation Inspector doing a thorough investigation of the customer's home or business. The inspector carefully inspects the property for leaks and measures the flow rates of all showers, faucets and toilets. The program targets the top 10% of users in each water use sector. Actual water savings as a result of audits performed in 2005 were estimated to be 310 AF/yr. The goals of this program are to identify the source of the customer's water consumption and recommend more efficient water use methods.

SJWC participates in SCVWD's residential clothes washer rebate program in which customers can receive a \$100 - \$150 rebate for qualifying high efficiency washing machines. SJWC informs the customers of this program through the water audits, at retail outlets where washing machines are sold, and through the SJWC website. SJWC also augments its water audit program by providing customers with free low flow showerheads and faucet aerators which are purchased by SCVWD. These fixtures are distributed during water audits, at times during customer visits to SJWC's main office, and during customer participation in public events.

SJWC is the wholesale retailer for the South Bay Water Recycling Program which takes treated wastewater that would normally be discharged into the San Francisco Bay and pipes it back for non-potable uses such as landscape irrigation.

SJWC has a regular schedule of meter calibration and replacement for all meter types in the distribution system. Larger meters are routinely replaced, repaired and tested based on consumption. Meters 1" and smaller are replaced according to the manufacturer's recommended service life. If a customer believes the water meter is faulty, the meter is removed and tested. The customer is invited to witness the test in accordance with California Public Utility Commission (CPUC) regulations.



SJWC provides and participates in numerous consumer education programs. SJWC has encouraged water conservation to its customers in many ways, including: providing water-efficient plumbing fixture brochures in conjunction with the City of San Jose, providing a landscape irrigation brochure encouraging efficient outdoor water use, and providing annual water quality reports as a bill insert. SJWC also attempts to reach the community in ways that go beyond the development and distribution of written materials. These methods include speaking to service groups, civil clubs, school groups and participating in annual Water Awareness Month activities. SJWC also participates in school education programs including: San Jose Unified School SCVWD's "Adopt a School" program, classroom presentations, and funding for annual science-related field trips.



**SAN JOSE WATER COMPANY**  
**Coyote Valley Water Supply Assessment**

**Supply and Demand Comparison**

SJWC’s projected supply and demand for normal water years is listed in the following table. The table shows that SJWC’s projected supply is sufficient to supply the projected demand for the Coyote Valley development.

**Table 18: Supply and Demand Comparison – W/out Additional Conservation (AF/yr)**

	2005	2010	2015	2020	2025	2030	2035	2040
<b>Supply</b>	152,940	167,253	182,292	198,724	213,418	228,318	245,052	262,640
<b>Demand (Including Coyote Valley)</b>	152,940	167,253	182,292	198,724	213,418	228,318	245,052	262,640
<b>Difference (Including Coyote Valley)</b>	0	0	0	0	0	0	0	0

Listed in the following tables are comparisons between the 2005 and 2040 projected supply and demand during normal, single-dry and multiple-dry year droughts. These numbers were generated by multiplying the current and 2040 demands (including conservation) by the percentages of normal water supply SJWC experienced during the 1977 single year and the 1987-1992 multi-year droughts. During these drought times, SJWC may experience shortages of supply and will enact the current Water Shortage Contingency Plan (Appendix G). Although there appears to be shortages during droughts, in reality voluntary and involuntary water conservation greatly reduces demand. SJWC foresees meeting all demands in the future.

**Table 19: Current supply and demand for normal, single-dry and multiple-dry years (AF/yr)**

2005 Supply & Demand	Normal Water Year	Single-Dry Water Year	Multiple-Dry Water Years				
			Year 1	Year 2	Year 3	Year 4	Year 5
<b>Supply Total</b>	152,940	114,705	160,587	157,222	129,693	127,858	116,387
<b>Demand Total</b>	152,940	114,705	160,587	157,222	129,693	127,858	116,387
<b>Difference</b>	0	0	0	0	0	0	0

**Table 20: 35-year projected supply and demand for normal, single-dry and multiple-dry years (AF/yr)**

2040 Supply & Demand	Normal Water Year	Single-Dry Water Year	Multiple-Dry Water Years				
			Year 1	Year 2	Year 3	Year 4	Year 5
<b>Supply Total</b>	222,134	166,601	233,241	228,354	188,370	185,704	169,044
<b>Demand Total</b>	222,134	166,601	233,241	228,354	188,370	185,704	169,044
<b>Difference</b>	0	0	0	0	0	0	0

## Summary

San Jose Water Company is the largest water retailer in Santa Clara County, and has the widest range of available water sources. SJWC has a long and successful relationship working with the development community in Santa Clara County and SCVWD, and is fully capable of implementing SCVWD's objectives. If SJWC were the sole water retailer, all of the main SCVWD objectives would be met:

- ◆ Ensuring supply reliability – SJWC could provide a link to its large and diverse system, providing complete redundancy of the requirement of Coyote subbasin groundwater.
- ◆ Ensuring supply diversity – SJWC would use all available diverse water supplies in Coyote Valley (groundwater, recycled water, and surface water) and provide redundancy and emergency water from a diverse water supply network, the SJWC system.
- ◆ Ensuring water quality – SJWC is very experienced in ensuring water quality for the approximately 1,000,000 population in our service area. For Coyote Valley, SJWC would work with SCVWD to maximize the quality of groundwater, and install additional treatment where needed for potential problems such as nitrate or iron/manganese.
- ◆ Minimizing cost impacts – SJWC always strives to implement the lowest cost effective plan. SJWC may be willing to discuss cost sharing and financing as well.
- ◆ Maximizing adaptability to changing conditions – redundancy of supply will be very important in the Coyote Valley, especially during drought conditions. SJWC is most experienced at dealing with changing conditions.
- ◆ Implementing water conservation concepts and standards – SJWC is already working closely with SCVWD on this and will continue to expand SJWC's involvement.
- ◆ Protecting the environment/flood protection and recreation – SJWC will comply with all local and state regulations, and support water plans of the City of San Jose and SCVWD.

In summary, San Jose Water Company has the experience and resources to best meet all of the water supply objectives for Coyote Valley.

