

Attachment A

Water Supply Summary Review

The City hired Schaaf & Wheeler to prepare a Water Supply memorandum to review current water supply management plans and existing City ordinances and policies to assess whether additional General Plan policies could be needed as part of the 4-Year review process. At the March 24th Task Force meeting, Schaaf & Wheeler will present findings from their “*Summary Review Regarding Water Supply for Envision San José 2040*” memo (see attached).

Key findings of the Water Supply Summary Review include:

- Water Supply Assessments completed for Envision San Jose in 2010 showed that there is enough water to serve the planned growth in the Envision San Jose General Plan
- As a result of the recent and severe multi-year drought, mandatory water demand reductions were established, which the water retailers have met or exceeded.
- While the most recent water supply assessments determined there is enough water for future growth, the three water retailers are currently updating/or will update their Urban Water Management Plans (UWMPs) to ensure that adequate supplies are available to serve future growth.
- There is not an identified need at this time for the City to update its General Plan policies related to water supply and conservation. While no new policies are proposed at this time, the updated UWMPs will inform future General Plan policies and City ordinances related to water supply.

Please see the attached Water Supply Summary Review memo for full analysis and conclusions.

MEMORANDUM

TO: Will Burns
David J. Powers and Associates

DATE: March 16, 2016

FROM: Charles D. Anderson, PE
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Andrew A. Sterbenz, PE

JOB#: DPOW.85.15

SUBJECT: Summary Review Regarding Water Supply for Envision San José 2040

Schaaf & Wheeler has been requested to prepare a summary review memorandum and a summary presentation to the Envision San Jose 2040 Task Force about water supply issues as they may affect the City's development policies and the Envision San Jose 2040 General Plan Four-Year Review.

Introduction

The City of San Jose is served by three water retailers: Great Oaks Water Company (Great Oaks), San Jose Water Company (SJWC), and San Jose Municipal Water (SJMWS). These water companies are supplied by a variety of sources as outlined in Table 1. Service areas are shown on the attached Figure 1 from the LAFCO *Santa Clara Countywide Water Service Review, 2011*. Wholesale water is obtained from the Santa Clara Valley Water District (SCVWD) and San Francisco Public Utility Commission (SFPUC).

Each water retailer prepared a Water Supply Assessment (WSA) for the Envision San Jose 2040 General Plan, as required by SB 610, which were then included in the EIR for the General Plan Update. These WSAs were published in 2010, based on the respective retailer's 2005 Urban Water Management Plan (UWMP).¹ The demand forecasts are reflected in the 2010 UWMPs for each water retailer (adopted in June 2011), which tier off of the SCVWD and SFPUC UWMPs, and are the bases for conclusions reached regarding future water supplies in the General Plan Update EIR. Table 2 summarizes projected water supplies and demands within each retailer's service area.

Table 1: Water Retailer Supply Sources

Supply Source	Great Oaks	SJWC	SJMWS
Santa Clara Valley Groundwater	✓	✓	✓
SCVWD Treated Water		✓	✓
SFPUC Treated Water			✓
Local Surface Water		✓	
Recycled Water		✓	✓

¹ *Urban Water Management Plans and Water Supply Assessments are prepared by wholesale and retail urban water suppliers, comparing 20-years projections of water supply and water demand, to identify potential shortages and water management strategies. UWMPs are prepared every 5 years. WSAs are prepared for specific projects.*

Table 2: Water Retailer Supplies and Demands (acre-feet/year)

	2010	2015	2020	2025	2030	2035
Great Oaks Water Company						
Supplies						
Santa Clara Valley Groundwater	35,000	35,000	35,000	35,000	35,000	35,000
Total Supply	35,000	35,000	35,000	35,000	35,000	35,000
Demands	10,817	9,090	10,315	10,126	9,628	9,302
Net Surplus/(Shortage)	24,183	25,910	24,685	24,874	25,372	25,698
San Jose Water Company						
Supplies						
Santa Clara Valley Water District	64,783	72,636	74,344	76,086	77,864	79,677
Santa Clara Valley Groundwater	51,107	57,187	58,340	59,516	60,716	61,940
Surface Water	15,968	12,080	12,080	12,080	12,080	12,080
Recycled Water	1,208	2,556	4,980	5,234	5,501	5,782
Total Supply	133,066	144,459	149,744	152,916	156,161	159,479
Demands	133,066	107,754	149,744	152,916	156,161	159,479
Net Surplus/(Shortage)	0	36,705	0	0	0	0
San Jose Municipal Water System						
Supplies						
SFPUC	4,592	5,039	5,039	5,039	5,039	5,039
Santa Clara Valley Water District	13,692	16,185	16,592	17,019	17,500	17,500
Santa Clara Valley Groundwater	667	5,767	7,988	10,251	12,809	15,888
Recycled Water	3,345	5,148	5,609	6,150	6,770	7,351
Total Supply	22,296	32,139	35,228	38,459	42,118	45,778
Demands	22,296	16,247	35,227	38,459	42,119	45,779
Net Surplus/(Shortage)	0	15,892	1	0	(1)	(1)
City Wide						
Total Projected Supply	190,362	211,598	219,972	226,375	233,279	240,257
Total Projected Demand	166,179	133,091	195,286	201,501	207,908	214,560
Net Surplus/(Shortage)	24,183	78,507	24,686	24,874	25,371	25,697

2010 and 2015 demands are actual, 2020-2035 are projected

2015 UWMP Changes

Guidelines for the next scheduled 2015 UWMP update (due July 1, 2016) are available as of January 2016. Summarizing the changes relative to the previous (2010) UWMP guidelines:

- Demand Management Measures
The list of 14 specific demand management measures has been replaced with 7 topic areas. Agencies will still report their conservation activities, but no longer need to include items that were not applicable to their system.
- Submittal Date
Extended from January 1, 2016 to July 1, 2016

- **Electronic Submittal**
The California Department of Water Resources (DWR) is developing an on-line database to allow agencies to upload data rather than mailing a CD
- **Standardized Forms**
DWR has developed standard tables in MS Excel that Agencies must complete and submit, allowing the state to aggregate data by county, region and statewide
- **Water Loss**
Urban water suppliers are required to prepare a water audit using the American Water Works Association (AWWA) Water Audit Tool and include the results in the 2015 UWMP.
- **Estimating Future Water Savings**
Water use projections may display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans
- **Voluntary Reporting of Energy Intensity**
Agencies may report the energy used in 2015 to produce and deliver water to customers, for inclusion in a state-wide analysis
- **Defining Water Features**
Water Shortage Contingency Plans are now required to distinguish between decorative water features receiving water (fountains, ponds, etc.) and recreational water features (pools and spas)

Note that there are no additions to the report that are specific to the recent drought. However, the multiple-dry year usage projections and the water shortage contingency planning will need to be updated to reflect the aggressive use of water conservation measures implemented in the last few years. That data will need to come from the three water retailers and be synthesized by whoever prepares the 2015 UWMPs.

City Conservation Measures

Summary of the City's Conservation Roles and Responsibilities

The City takes responsibility for water conservation and regulating future growth in response to demonstrated available water supplies through CEQA, the issuance of building permits, and through ordinance and policy. This is in response partly to the 20x2020 Water Conservation Plan (Senate Bill X7-7, 2009) to achieve a 20 percent reduction in urban per capita water use in California by 2020.

As the Lead Agency for CEQA compliance for development projects, it is the City's responsibility to ensure that each project analysis concludes sufficient water supply is available. The California Water Code Section 10910 (Senate Bill 610) requires Water Supply Assessments (WSA) for projects over a certain threshold² as part of the CEQA process. These assessments rely on data in the Urban Water Management Plans to determine whether there is sufficient water supply for the proposed development for the next 20 years.

² WSA's are required for residential projects adding 500 or more dwelling units, or commercial/industrial/mixed use projects of certain sizes anticipated to increase water demand by the equivalent of 500 dwelling units.

It is the City's job to ensure that these WSAs are performed and that their conclusions show sufficient supply before the development receives its CEQA approval. WSAs are prepared by the water supplier for the project area.

Through the issuance of building permits, the City reviews development plans for conformance with the most recent building code and plumbing code in addition to the City Municipal Code. It is the City's role to deny projects which do not conform to the codes.

The City Municipal Code Chapter 15.10 Parts 1 and 2 includes water waste prevention and water shortage measures, which are intended to be permanent water conservation measures to apply on an on-going basis. The City's role is in enforcement of the ordinance measures to ensure water conservation for the various uses (car washing, irrigation, food service, etc.).

Ordinance Chapter 15.10 Part 3 includes water shortage measures to be enacted during a Council declared water shortage of at least 10% below normal supply levels. Measures are tiered based on the shortage percentage and include further restrictions on potable use for irrigation, fountains and pools, car washing and surface washing. It is the City's responsibility to enforce these measures.

In April 2015 the City passed an urgency ordinance (No. 29555) which further limits potable water use during declared water shortages including no new overhead (spray-type) irrigated landscape installations (15.10.360), outdoor irrigation restrictions from 0 to 4 days per week (15.10.310) and limited filling of swimming pools to 1 foot (13.10.330). This ordinance was required in order to modify the Water Shortage Contingency Plans (WSCP) of the water suppliers.

In May 2015 the City Council through resolution No. 77327 declared a 30% water shortage, thereby enacting sections of the Ordinance Chapter 15.10 Part 3 and setting an outdoor watering schedule. The schedule is alternating based on property address and limits irrigation to two days per week. The resolution is effective through March 31, 2016.

Opportunities to Reduce Urban Villages' Water Demands

There are potential opportunities for reducing per capita water use associated with Urban Villages (built into the Envision San José 2040 General Plan land use patterns) based upon comparative water use for:

- Single-family residential units versus multiple-family residential units
- Lower intensity Industrial Park or Campus developments vs more intensely developed office/R&D uses, etc.

Higher density housing results in a lower per capita water demand, by reducing the amount of irrigated landscape per resident and making certain water-saving measures more cost effective. Additionally, higher density office and commercial uses have less landscaping demand than their lower intensity Park or Campus style counterparts. Additional water savings could be obtained through requirements to install alternative water sources which do not rely on the existing potable supply.

- Extending recycled water system for landscape irrigation and/or dual plumbing structures for indoor uses.
- Installing storage tanks and dual plumbing for grey water systems.
- Installing rainwater cisterns or barrels for landscape irrigation.

Planned Improvements and Conservation Initiatives

Several water supply infrastructure improvements and conservation initiatives have been planned by the water retailers and Santa Clara Valley Water District that are not evident in the 2010 UWMPs.

The water retailers, in conjunction with Santa Clara Valley Water District and other stakeholders are working to expand the recycled water system infrastructure and pipelines in their service areas. In addition, they are evaluating other sustainable water supplies such as treating wastewater to potable drinking water standards. The SCVWD launched the Silicon Valley Advanced Water Purification Center in 2014 to promote potable re-use of advanced purified water through groundwater recharge. It is the goal to expand recycled and advanced purified water to meet at least 10 percent of total water demands by 2025. This is bolstered by the 2014 voter approved State Proposition 1 Water Bond, which includes funding for potable reuse projects.

In addition to developing non-potable sources, the Santa Clara Valley Water District has initiated several programs to promote conservation.

- Laundry to Landscape: rebate program to promote the use of grey water for landscape irrigation.
- High efficiency clothes washer, toilet and urinal upgrade rebates.
- Sub-meter rebate program for mobile home parks and condo complexes.
- Landscape conversion and irrigation hardware upgrade rebates.
- Private Well Meter Rebate Program.
- Commercial, institutional and industrial rebates for projects which reduce water use by 74,800 gallons per year.

Drought Emergency Water Conservation Regulation

In January 2014 Governor Brown issued a proclamation of state emergency due to the extended drought. In July 2014 the State Water Resources Control Board adopted rules mandating certain water conservation practices and assigning water conservation targets for urban water suppliers. These rules have been updated and extended to run through October 2016. The City of San Jose's three water suppliers were assigned a 20% reduction target for residential gallons per capita per day. Each agency implemented drought conservation rules, which are reflected in their reduced water usage in 2014 and 2015. On April 1, 2015, the Governor called for 25% water use reduction statewide.

The Santa Clara Valley Water District called for a 30% water use reduction over 2013 usage levels in March 2015. This exceeds the State mandate. As a wholesale provider, the SCVWD reduction is required to be met by the local water retailers within San Jose.

San Jose Water Company initiated its water shortage contingency plan on June 15, 2015 to establish an allocation for residential customers and dedicated landscape services to achieve a 30% conservation goal based on 2013 levels. Single meter, single household residents and dedicated landscape services have been given a water use allocation based on a 30% reduction of 2013 average consumption which they must adhere to, or are billed surcharges.

Per the State Water Resources Control Board's Drought Reporting website, residential water use in San Jose for the second half of 2015 were 28.6% to 32.5% lower than in the second half of 2013 (varying by service provider), and the total water production in 2015 was 26% to 29% lower than in 2013.

Baseline Population and Employment Estimates

Table 3 charts the baseline population as provided in the 2010 UWMPs. Note that the San Jose Water Company serves communities outside the City, so it is not feasible to produce an analysis that only covers the City of San Jose General Plan area. The SJWC does not break out their demands by customer area. For the 2015 UWMPs, suppliers are required to start their population analysis with the California Department of Finance population estimates for 2015 (1,016,479 persons in the City of San Jose, and 1,889,638 persons in all of Santa Clara County).

Table 3: Population Estimates

Water Supplier	2005	2010	2015	2020	2025	2030	2035
Great Oaks	91,273	92,995	99,199	105,817	112,878	120,407	128,439
SJWC*	916,473	946,494	1,017,684	1,084,352	1,154,824	1,224,564	1,293,771
SJMWS	113,281	114,974	135,821	147,091	160,303	175,459	189,644

Population values taken from Table 2 of the respective 2010 UWMPs

* Includes SJWC service area, which extends outside of the City General Plan area.

In the Water Supply Assessments for the General Plan update, employment projections were used to estimate future commercial, industrial and institutional water demands. Non-residential water use projections were made in the WSAs based upon estimated employment city-wide of 839,450 persons by 2035. Employment and non-residential water use was then apportioned in five-year increments from 2010 to 2035. The subsequent 2010 UWMPs reflected the updated demand by usage category, but did not include employment-to-demand comparisons or current labor projections for the City.

Per Capita Water Demand

Table 4 and Figure 2 track the actual per capita water demand within each of the three water retailer's service area since 2005, based on information provided by the retailers and as reported to the State Water Board. Under the [20x2020 Water Conservation Plan](#), as codified under SB X7-7, water suppliers identified baseline average water demands during a 10-year period, used as a basis of comparison for future use reporting. Table 5 provides per capita demand projections from the UWMP and Table 6 provides comparisons to conservation goals for each of the retailers.

Table 4: Annual Per Capita Daily Demand (actual gallons per day)

Water Retailer	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Great Oaks	121	122	127	131	115	104	*	*	116	97	82
SJWC	140	133	136	135	135	126	*	*	132	115	95
SJMWS	174	195	207	207	189	173	*	*	152	131	107

2011 and 2012 unavailable. 2013, 2014 and 2015 demand omits Recycled Water.

2014 use estimated based on actual 2014 months JUN-DEC plus average of 2013 and 2015 months JAN-MAY. 2015 use estimated based on available data period NOV2014 – OCT2015.

2013-2015 populations are based on projections from the 2010 UWMP.

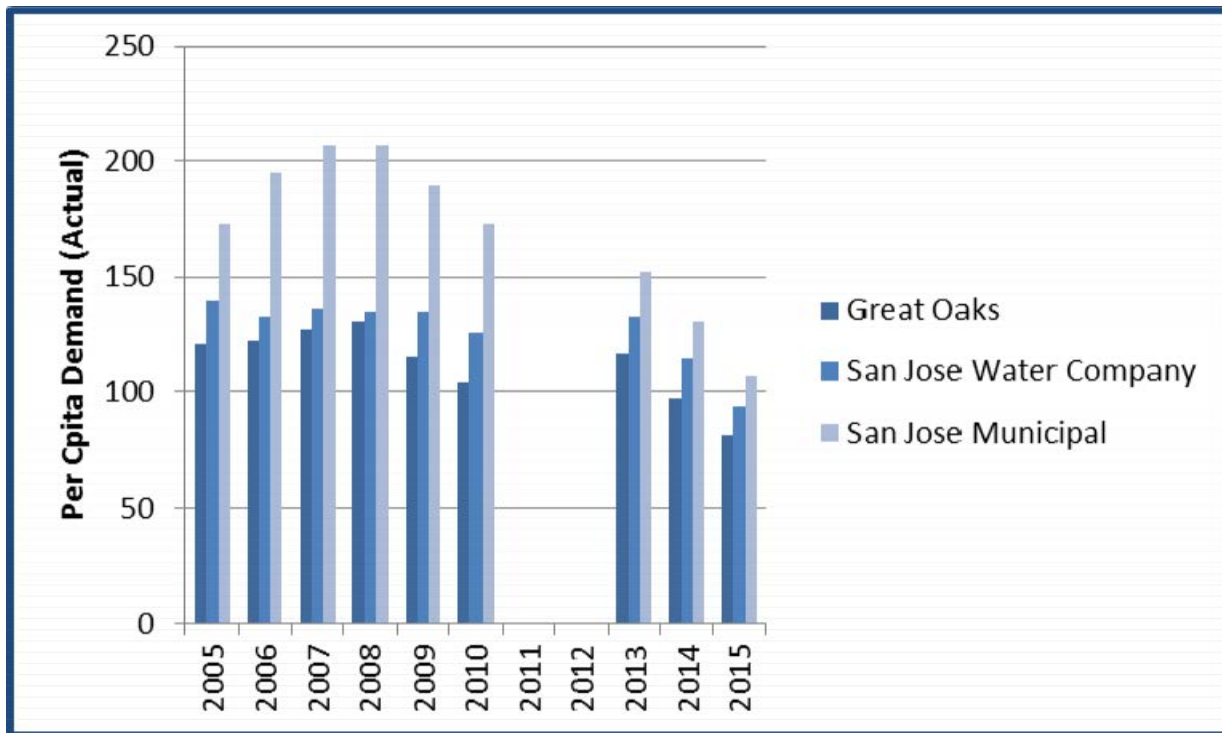


Figure 2: Annual Per Capita Daily Demand (gallons per day)

Table 5: Projected Annual Per Capita Daily Demand (gpcd)

Water Retailer	2020	2025	2030	2035
Great Oaks	87	80	71	65
SJWC	123	118	114	110
SJMWS	180	180	180	181

Per2010UWMPtables

Table 6: Projected Annual Per Capita Daily Goals (gpcd)

Water Retailer	10-year Baseline	2020 Goal	2015 actual
Great Oaks	121	97	82
SJWC	144	111	95
SJMWS	180	144	107

Per2010UWMPtables

2010 UWMP Drought Prediction Accuracy

Table 7 is a comparison of the multiple year drought water use assumptions in the 2010 UWMPs and the recorded water use by retailer during the drought experienced since 2012. Note that the SFPUC did not implement the full percentage reductions to wholesale customers anticipated in the UWMP, and groundwater production has been able to adequately meet all needs after urban conservation measures were implemented.

Table 7: UWMP Demand Predictions vs. Actual Drought (AFY)

Water Supplier	Year 1		Year 2		Year 3		Year 4	
	UWMP 2012	Actual 2012	UWMP 2013	Actual 2013	UWMP 2014	Actual 2014	UWMP 2015	Actual 2015
Great Oaks	12,145	-	11,684	12,609	9,530	10,663	9,861	9,090
SJWC	136,935	-	136,264	146,771	114,313	128,767	114,556	107,754
SJMWS	18,905	-	21,703	21,755	17,359	19,254	17,359	16,247

2011 and 2012 unavailable. 2013, 2014 and 2015 demand omits Recycled Water.

2014 use estimated based on actual 2014 months JUN-DEC plus average of 2013 and 2015 months JAN-MAY.

2015 use estimated based on available data period NOV 2014 – OCT 2015.

Table 7 demonstrates that actual water usage generally exceeded projected demand within each water retailer service area until the fourth year of the drought (2015) when demand fell below projections, likely due to aggressive water conservation measures being implemented and followed.

SJWC has 18 small surface water rights on Saratoga Creek, Los Gatos Creek and various tributaries to Los Gatos Creek, which contribute 15,000 to 20,000 acre-feet per year of raw water supply to the system. Due to the drought, the Year 2014 yield from those rights declined to just under 8,400 ac-ft and required the increased use of other water supplies. Given the lack of available surface water supplies, reserve sources such as groundwater are more heavily used during drought periods.

The City of San Jose holds a water right for 500 AFY from Upper Penitencia Creek, which is not addressed in their UWMP. The City impounds winter flows and uses them to maintain year-round flows for habitat maintenance, but does not use this source for municipal water supply and therefore this source does not substantially affect water supply during drought conditions.

Conclusions

The new 2015 UWMPs prepared by the District and three water retailers will reflect the conditions of the current drought within the multiple dry year projections. The updated UWMPs will also include projected water savings associated with state and local code, standards and policy changes. Consistent with Action Item MS-3.6 of the Envision San José 2040 General Plan,³ updates to the 2015 UWMPs will provide a basis and foundation for City measures related to water conservation. While some of these measures are temporary and in place due to the drought, the City may need to consider extending or developing new water conservation measures to plan for reducing per capita water usage.

The key summary conclusions are:

1. A Water Supply Assessment was completed for Envision San Jose in 2010 that showed there is enough water to serve planned growth based on the General Plan Update.
2. As a result of the recent and severe multi-year drought, mandatory water demand reductions were established, which the water retailers have met or exceeded.

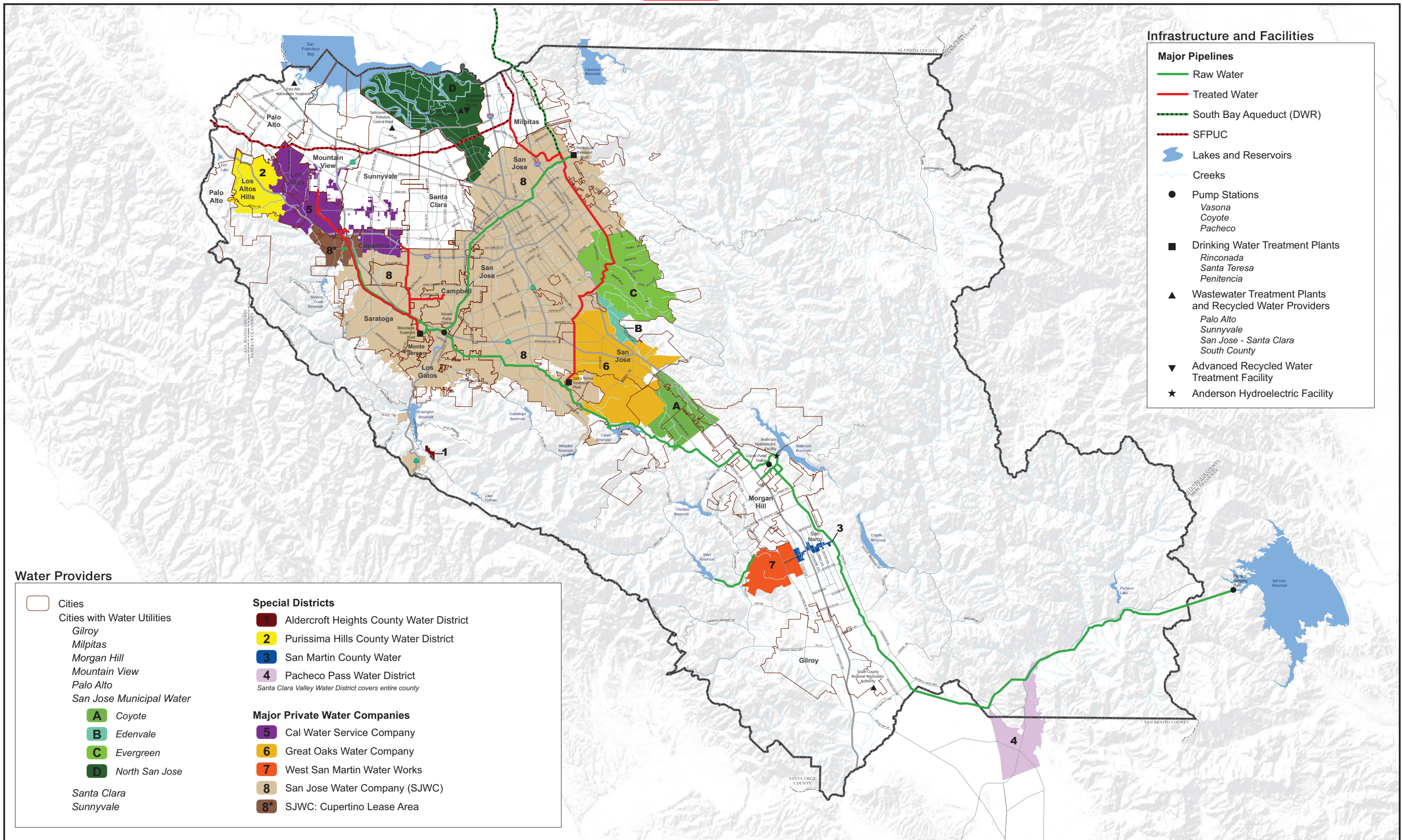
³ General Plan Action Item **MS-3.6**: Develop and maintain policies, ordinances, and guidelines that require reduced use of potable water and that reduce water pollution.

3. While the most recent water supply assessments determined there is enough water for future growth, the three water retailers are currently updating/or will update their UWMPs to ensure that adequate supplies are available to serve future growth.
4. Based on the analyses summarized herein, there is not an identified need at this time for the City to update its policies related to water supply and conservation. While no new policies are proposed, General Plan policy and City ordinances have and will continue to steer conservation efforts. The updated UWMPs will inform future related General Plan policies and City ordinances.

References

1. Bay Area Water Supply and Conservation Agency, Annual Survey, Fiscal Year 2013-14, May 2015
2. Great Oaks Water Company, 2010 Urban Water Management Plan, June 2011
3. LAFCO of Santa Clara County, Santa Clara Countywide Water Service Review, December 2011
4. Santa Clara Valley Water District, 2010 Urban Water Management Plan, May 2011
5. Santa Clara Valley Water District, 2010 Urban Water Management Plan, May 2011
6. Santa Clara Valley Water District, Rebates, <http://www.valleywater.org/programs/rebates.aspx>, accessed February 4, 2016.
7. San Francisco Public Utilities Commission, 2010 Urban Water Management Plan for the City and County of San Francisco, June 2011
8. San Jose Municipal Code Chapter 15.10, Water Waste Prevention and Water Shortage Measures, accessed January 29, 2016
9. San Jose Municipal Water System, 2010 Urban Water Management Plan, June 2011
10. San Jose Ordinance No. 29555, April 4, 2015
11. San Jose Resolution No. 77327, May 12, 2015
12. San Jose Water Company, Drought 2015 Monthly Status Report, November 2015
13. State Water Resources Control Board, June 2014 – October 2015 Urban Water Supplier Report Dataset, http://www.waterboards.ca.gov/water_issues/programs/conservation_portal/conservation_reporting.shtml
14. State Water Resources Control Board, Electronic Water Rights Information Management System (eWRIMS), http://www.swrcb.ca.gov/waterrights/water_issues/programs/ewrims/
15. City of San Jose, Envision San Jose 2040 General Plan, November 2011

Figure 1



Infrastructure and Facilities

Major Pipelines

- Raw Water
- Treated Water
- South Bay Aqueduct (DWR)
- SFPUC

Lakes and Reservoirs

Creeks

Pump Stations
Vasona
Coyote
Pacheco

Drinking Water Treatment Plants
Rinconada
Santa Teresa
Penitencia

Wastewater Treatment Plants and Recycled Water Providers
Palo Alto
Sunnyvale
San Jose - Santa Clara
South County

Advanced Recycled Water Treatment Facility

Anderson Hydroelectric Facility

Water Providers

Cities
 Cities with Water Utilities
Gilroy
Milpitas
Morgan Hill
Mountain View
Palo Alto
San Jose Municipal Water

Special Districts

- 1 Aldercroft Heights County Water District
- 2 Purissima Hills County Water District
- 3 San Martin County Water
- 4 Pacheco Pass Water District

Santa Clara Valley Water District covers entire county

Major Private Water Companies

- 5 Cal Water Service Company
- 6 Great Oaks Water Company
- 7 West San Martin Water Works
- 8 San Jose Water Company (SJWC)
- 8* SJWC: Cupertino Lease Area

Major Private Water Companies (continued)

- A Coyote
- B Edenvale
- C Evergreen
- D North San Jose

Santa Clara
Sunnyvale