

SECTION 2

System Description

Section 2 describes the City's existing water system. It contains a description of the service area and its climate and population projections. This chapter also includes a brief description of the City's water supply facilities, including groundwater wells, surface water supply, treatment facilities, and the distribution system.

2.1. Service Area Physical Description

2.1.1 Description of Service Area

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

2.1.2 Climate

The service area experiences cool and humid winters and hot and dry summers. The City's weather is similar to the City of Sacramento which is in close proximity. Based on the historical data obtained from the Western Regional Climate Center, Sacramento's average monthly temperature ranges from 39 to 92 degrees Fahrenheit; but, the extreme low and high daily temperatures have been 17 and 114 degrees Fahrenheit, respectively. Data is shown in Table 2-1. The historical annual average precipitation is approximately 18 inches. The rainy season begins in November and ends in March. Average monthly precipitation during the winter months is about 2 to 3 inches. Relative humidity in the region ranges from 29 percent to 90 percent. Low humidity usually occurs in the summer months, from May through September. The combination of hot and dry weather results in high water demands during the summer.

Table 2.1					
Climate Data					
Month	Average precipitation (in.)	Average monthly ETo	Average temperature (°F)	Average Maximum temperature (°F)	Average Minimum temperature (°F)
January	3.68	1.59	46.5	53.4	39.6
February	3.21	2.2	51.4	59.7	43.2
March	2.62	3.66	55.3	64.9	45.7
April	1.41	5.08	59.7	71.1	48.4
May	0.62	6.83	65.4	78.3	52.5
June	0.16	7.8	71.4	85.9	56.9
July	0.01	8.67	75.4	91.7	59.2
August	0.03	7.81	74.6	90.5	58.7
September	0.3	5.67	71.6	86.2	57
October	0.93	4.03	64.1	76.7	51.6
November	1.98	2.13	54.3	64.1	44.5
December	3.18	1.59	47	54	39.9
Annual	18.15	57.06	61.4	73	49.8

Above data obtained from the Western Region Climate Center, Sacramento 5 ESE (047633) Year 1877 to Year 2010. ETo was obtained from the CIMIS website: <http://www.cimis.water.ca.gov/cimis/welcome.jsp>. ETo averages were based on the Fair Oaks site.

2.2 Water Supply Facilities

This section provides a brief description of the City’s existing water treatment and distribution facilities including raw water and potable water systems.

2.2.1 Potable Water Treatment

The City of Roseville operates a 100-million-gallon-per day (mgd) water treatment plant (WTP). The City’s WTP is located on Barton Road in the Granite Bay community of Placer County. Raw (untreated) surface water from Folsom Lake is conveyed from the United States Bureau of Reclamation (USBR) facilities to the City’s WTP. USBR raw water delivery facilities are described in the Water Distribution section below. Raw water treatment consists of these primary processes: flocculation/sedimentation, clarification, filtration and disinfection. Treated water is also fluoridated prior to distribution to City water customers.

2.2.2 Water Distribution

The City's water distribution system includes raw water facilities to deliver surface water supplies to the City's water treatment plant and the potable water facilities that deliver potable water to City water customers. In addition to the potable water system, the City also owns and operates wastewater treatment facilities which produce recycled water. This resource is delivered through a City owned and operated recycled water distribution system. These facilities are described in further detail in Section 4 of this Plan.

The raw water facilities consist of both infrastructure owned and operated by the USBR and infrastructure owned and operated by the City of Roseville. USBR facilities include an 84-inch intake pipeline and pumping plant. The pumping plant has sufficient capacity for SJWD, Roseville and portions of the City of Folsom. Roseville pumping capacity limits are 150 cubic feet per second (96.9 mgd). Once through the pumping station, water is conveyed through twin pipelines; 84-inch pipeline installed with original construction of Folsom facilities and a 72-inch pipeline constructed by Roseville and SJWD to provide required redundancy for facility maintenance. These common facilities convey raw water to the "Hinkel Y" where the flows to SJWD and Roseville are split. Raw water for Roseville then flows through parallel 60-inch and 48-inch raw water pipelines to the City's WTP. The raw water is then introduced at the influent portion of the Barton Road plant for treatment.

The City's potable water supply system is comprised of pipes, storage facilities, booster pumping stations, groundwater wells and pressure regulating stations. Distribution piping in the City ranges from as large as 66-inch diameter pipe to as small as 4-inch diameter pipe. The City designs its distribution system to meet various pressure and velocity criteria under average day, maximum day and peak hour delivery scenarios. In general, the City's system meets the maximum day demand criterion of 6 feet per second (fps) for transmission main velocity (i.e., the rate at which water flows through the pipelines) and the water pressure criterion of 50 pounds per square inch (psi). There are a few locations where these criteria are not met, but these discrepancies are minimal and do not adversely affect water service to customers.

The City has six storage tanks with a combined total storage capacity of 32 million gallons (mg) as identified in Table 2.2. Water storage is necessary in order to manage flow fluctuations on a daily basis, and to maintain sufficient storage to address emergency needs such as water main breaks and high water needs such as fire fighting activities.

Table 2.2 Roseville Storage Tank Summary

Facility	Pressure Zone Served	Capacity, MG	Type	Year Constructed
WTP 2 MG	1, 2, 4, 5	2	Steel	1971
WTP 4 MG	1, 2, 4, 5	4	Pre-stressed	1990
WTP 6 MG	1, 2, 4, 5	6	Pre-stressed	2004
Northeast 7.25 MG	1-5	7.25	Pre-stressed	2009
Northeast 10 MG	1-5	10	Pre-stressed	1998
Halverson 2.9 MG	2	2.9	Pre-stressed	2008

Note: MG = million gallons

The City currently has two pumping stations currently in the City, with plans for two more. The existing stations are the Dual Purpose Pump Stations (DPPS) and the Highland Reserve North Pump Station (HRNPS). As the name implies, the DPPS provides two distinct functions. The first is that it provides the ability to fill the City’s North East Storage Reservoirs during off-peak demand periods and the second is that it boosts water pressures into higher elevation areas in and adjacent to the Stoneridge Specific Plan area of the City. This area is designated as Pressure Zone 2 which includes a 2.9 MG reservoir completed after submittal of the 2005 UWMP. The HRNPS allows the City to boost water pressures into higher elevation portions of the Highland Reserve North Specific Plan area, also designated as Pressure Zone 5. Existing pump stations are identified in Table 2.3. Future water storage tanks and pump station are planned for construction within the West Roseville Specific Plan and the Sierra Vista Specific Plan areas to service customers in the western portion of the City.

Table 2.3 Roseville Booster Pumping Station Summary

Facility	Service	Pump No.	Rated gpm, each	Constructed
Tank Fill (DPPS)	Fill 6 MG and 10 MG reservoirs	1-5	3,300	1998
Zone 2 (DPPS)	Boost pressure to Zone 2	1-5	2,015	1998
Highland Reserve North Pump Station	Boost pressure to Zone 5	1 - 2 (with 1 additional backup)	1,100	2007

Note: gpm = gallons per minute

2.2.3 Interties

Roseville maintains interties with surrounding jurisdictions for water sharing and transfer opportunities. Most times these are utilized for emergency transfers between agencies for a short duration but they can also be used for long term water sharing arrangements between agencies

for a variety of reasons. The current interties are listed in Table 2.4 with a description of the transfer intent following.

Table 2.4 Roseville Intertie Summary

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

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

Placer County Water Agency (PCWA) Intertie

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

San Juan Water District (SJWD) Intertie

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

California American Water Company Intertie

Three interties exist between Roseville and California American Water Company. Due to low

operating pressures in the California American distribution system, one small intertie is only good for emergency zonal use within Roseville and cannot be relied upon as a continued source of water. The second intertie is used to service a development adjacent to Roseville and is capable of delivering up to 10 mgd. This intertie goes into a closed California American service area with no water source. This connection does not provide an opportunity for Roseville to receive water at this point.

Citrus Heights Water District Intertie

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

Sacramento Suburban Water District Intertie

One intertie is being developed between Roseville and the Sacramento Suburban Water District (SSWD). As part of regional development of conjunctive use programs a 24-inch connection is being developed to connect Roseville and SSWD water service areas. At this time the actual operations or capacity has yet to be developed. It is planned, however, to be used to fully utilize Roseville water treatment and conveyance but will not result in any additional water supply as water contracts are currently sufficient for planned growth. This project would, however, increase reliability of water delivery capacity.

2.2.4 Groundwater Wells

The City currently operates five groundwater wells, and has plans to construct seven more. The existing wells are capable of delivering a total of approximately 12,000 AFY of water supply if run full-time, which is the equivalent of approximately 33 AF per day. With construction of the additional wells, the City's groundwater facilities would allow for delivery of up to 73 AF per day or 27,500 AFY if run on a continuous basis. The City's groundwater wells are currently maintained primarily for backup water supply and to improve water supply reliability during drought and emergency conditions. The City is in process of developing an Aquifer Storage and Recovery (ASR) program that would allow storage of surplus surface water in underground aquifers injected through these production wells. Of the five existing wells four have ASR injection capability and all future wells are planned to incorporate the same. Groundwater supplies are further discussed in Section 4.5.5.

There are five wells currently in place and operational. The existing operational well locations are summarized in Table 2.5.

Table 2.5 Roseville Well Facilities

Facility	Install/Rehab Date	Well Depth, feet	Rated Capacity, gpm	Service Zone
Darling Way (Well No. 4)	1958/1999	303	1,000	1
Oakmont (Well No. 5)	1978/1999	360	1,950	1
Diamond Creek	2002	323	2,700	4
Woodcreek North Well	2008	440	1,800	1
Atlantic Street	Pre 1958	330	800	1

Note: gpm = gallons per minute

2.3 Service Area Population

Projections for population, employment, and dwelling units within the City’s water service area were completed for build out as part of the City’s General Plan and are listed in Table 2.6. Baseline 2010 information is provided based on information from the Department of Finance for population and from information provided by the City’s Planning Department for employment and the City’s General Plan for dwelling unit count. Population, employment and dwelling units are projected through build out of the City’s General Plan based on absorption information from various studies prepared as part of the City’s standard development entitlement processes. Projections are only for the current City of Roseville Water Service Area boundary, including the newly annexed Sierra Vista and proposed Creekview Specific Plan areas. As identified in Figure 2.1, there are two areas that are within the incorporated City limits that are not with the Water Service Area boundary. These two areas are primarily residential units allowing an estimate of population served by others. Department of Finance and Roseville General Plan estimates for dwelling units were adjusted to account for areas within incorporated City but outside the City Water Service Area boundary.

Table 2.6							
Population — current and projected							
	2010	2015	2020	2025	2030	2035	Data source
Service area population¹	114,078	119,561	135,317	160,938	166,021	168,718	Department of Finance and projections developed by City of Roseville

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

2.4 Demographics affecting water supply

2.4.1 Employment, Land Use, and Population

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

2.4.2 Employment Characteristics

The City continued to see increases in commercial and office employment over the last 10 years due to the expansion of the regional mall, additional local shopping centers, and many office parks. Prior to that, a large portion of the City's total employment had been industrial employment through the railroad yard and two large industries, Renasis (formerly NEC Technologies) and Hewlett-Packard. As Renasis and HP have moved portions of their manufacturing jobs out of Roseville, the industrial workforce demand has decreased some, but has been replaced by a higher demand for professional and retail jobs. City studies indicate the employment trend will continue to move from, industrial-based workforce centered around a few, large companies, to a more diverse light-industrial, professional and research and development based workforce. Health services have increased with major expansions to Kaiser and Sutter health facilities.

2.4.3. Land Use Characteristics

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

With an increase in commercial and office related employment demands, Roseville is also planning for increased residential land use requirements. Due to high housing demands near

places of employment and recent market trends for smart growth from Sacramento Area Council of Governments (SACOG) and the market, Roseville is planning for an increase of medium and high density residential land uses in the new development areas. Overall, it is anticipated that the older residential areas of Roseville will maintain their low to medium density character, and the newer areas will respond to market demand with higher density residential units close to commercial and office space land uses. As a result, water use factors for these new development areas are anticipated to be less than previous development due to the increased density and reduction of landscape areas supporting the added population. As a condition of a new specific plan and/or amendments to existing plans, the City requires that a water conservation plan be incorporated into new plan areas.

CITY OF ROSEVILLE URBAN WATER MANAGEMENT PLAN WATER SYSTEM 2010

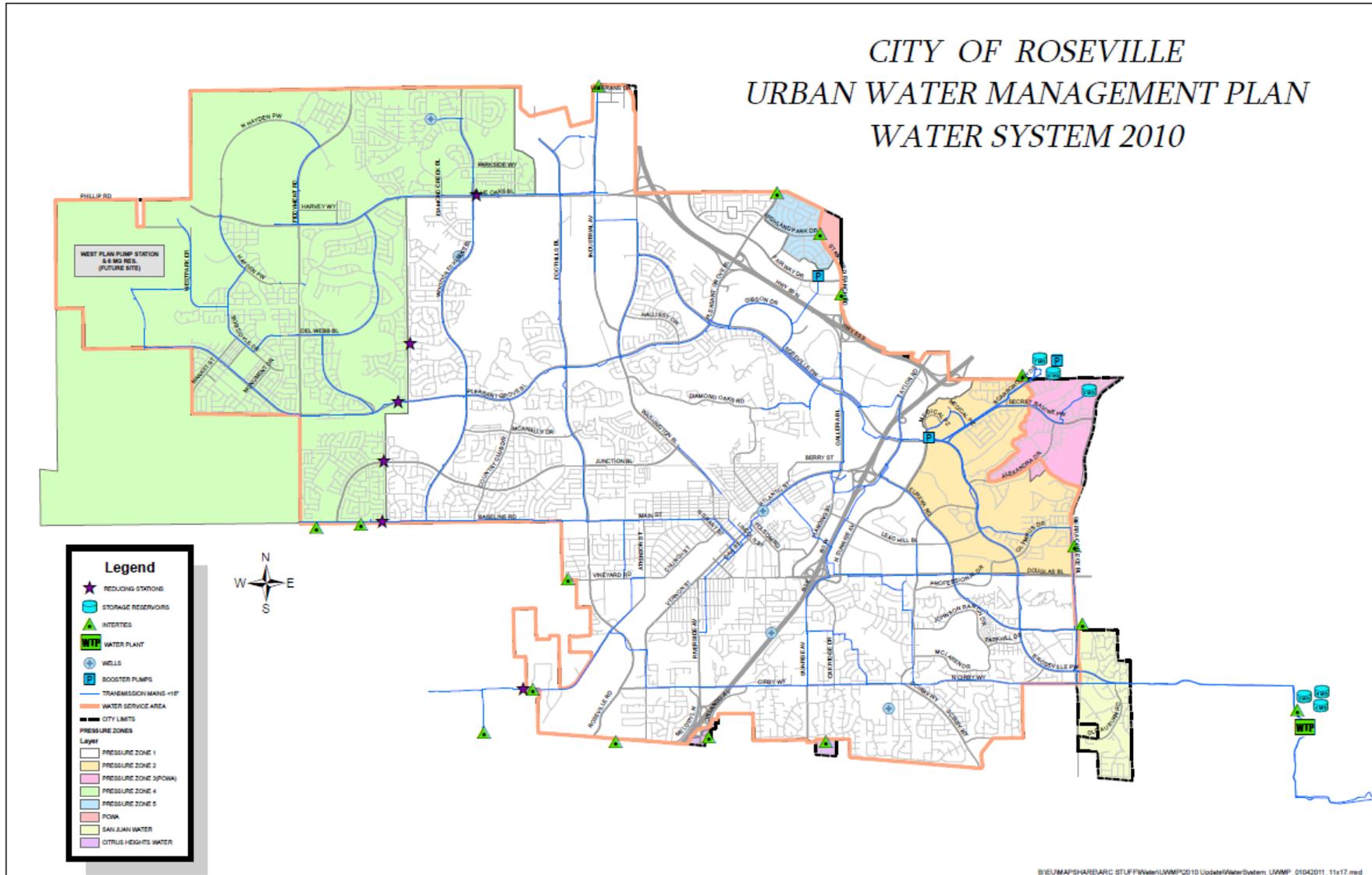


Figure 2-1