2015

Urban Water Management Plan

Camrosa Water District

7385 Santa Rosa Road

Camarillo, California 93012

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TABLE OF CONTENTS

Contents

LIST OF TABLES

LIST OF ACRONYMS

AF	Acre feet
AFD	Acre feet per day
AFY	Acre feet per year
ASR	Aquifer Storage and Recovery
BMP	Best Management Practice
CamSan	Camarillo Sanitation District
CDPH	California Department of Public Health
CIS	Customer Information System
CFS	cubic feet per second
CSUCI	California State University Channel Islands
CVP	Central Valley Project
CUWCC	California Urban Water Conservation Coalition
CWC	California Water Code
CWRF / WRF	Camrosa Water Reclamation Facility
DHS	Department of Health Services
DMM	Demand Management Measures
DWR	California Department of Water Resources
ETo	Evapotranspiration
FCGMA	Fox Canyon Groundwater Management Agency
GIS	Geographic Information System
GPCD	Gallons Per Capita Per Day
GPM	gallons per minute
HCTP	Hill Canyon Wastewater Treatment Plant
HET	High-Efficiency Toilets
ICS	Incident Command System
LAS	Lower Aquifer System
M&I	Municipal & Industrial
MCL	Maximum Containment Level
MGD	Million Gallons per Day
MS	Meter Station
MSA	Metropolitan Statistical Area
MSL	mean sea level
PHG	Public Health Goal
PVB	Pleasant Valley Basin
PVCWD	Pleasant Valley County Water District
PWS	Public Water System
RMWTP	Round Mountain Water Treatment Plant
RO	Reverse Osmosis
RWRMP	*Renewable Water Resource Management Plan*
SEMS	Standard Emergency Management System
SOAR	Save Open Space and Agricultural Resources
SRGMP	Santa Rosa Groundwater Management Plan

SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids
UAS	Upper Aquifer System
ULFT	Ultra Low Flush Toilet
UWMP	*Urban Water Management Plan*
VCOG	Ventura Council of Governments
VC-Rule	Ventura County Regional Urban Landscape Efficiency Program
WBIC	Weather-Based Irrigation Controllers
WSDM	Water Surplus and Drought Management

1 Introduction

The UWMP provides a framework for, and informs the public of, an urban water supplier's plans for long-term resource planning that ensures adequate water supplies for existing and future demands. Over the years, the UWMP Act has evolved in response to State water shortages due to drought and other environmental factors. The Water Conservation Act of 2009, also known as SB X7-7, requires water agencies to establish and report Baseline, 2015 Interim, 2020, and Compliance water use targets that will result in statewide savings of 20 percent by 2020. Urban water suppliers must have a current UWMP on file with DWR in order to be eligible for any State-funded grants or loans. Recent changes in California law have expanded loan and grant funding requirements to include that an agency must meet its 2015 Interim urban water use target and report compliance in the 2015 UWMP.

The goal of the 2015 Urban Water Management Plan is to report, describe, and evaluate:

- Water system deliveries and uses
- SB X7-7 Baseline and Targets
- Water supply sources
- System Reliability
- Water shortage contingency planning
- Local agency coordination
- Efficient water uses
- Demand management measures

Along with these primary goals, the Camrosa Water District's 2015 UWMP also seeks to:

- Build and update upon the 2010 UWMP
- Extend the District's planning horizon for an additional five-year period
- Provide comprehensive assessment of Camrosa's water resource needs for a 20-year planning period through 2035
- The UWMP has been coordinated with several other local agencies to ensure that data and issues are presented accurately.

Finally, a note regarding the formatting of this document; for clarity, the sections of the District's 2015 Urban Water Management Plan have been aligned to match the sections of the DWR 2015 UWMP Guidelines. The plan follows the outline given in Appendix F (UWMP Checklist) of the guidelines. Except in cases describing flow, volume of water is described in acre feet. Annual data is provided on a fiscal-year basis of July 1 to June 30.

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2 Plan Preparation

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California Water code, Division 6, Part 2.6 Urban Water Management Planning, Section 10617 et seq.

10617. "Urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,0000 acre feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems…"

10620 (b). Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.

10620 (d) (2). Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.

10621 (b). Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days before the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan.

10642. Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan. Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area. After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

2.1 Basis for Preparation

The Urban Water Management Planning Act of 1983 requires urban water suppliers with 3,000 or more customers or supplying 3,000 or more acre feet of water per year to prepare and submit to the Department of Water Resources (DWR), an Urban Water Management Plan (UWMP) every five years. In 2015, The Camrosa Water District provided approximately 8,500 active service connections composed of 8,100 potable water and 400 nonpotable and recycled water connections. During the same period, the District produced over 8,300 acre feet of potable water and approximately 7700 acre feet of nonpotable and recycled water for resale to District customers. The 2015 UWMP updates and builds upon the District's 2010 UWMP adopted by Camrosa's Board of Directors on June 8, 2011.

2.2 Regional Planning

The Camrosa Water District has chosen to report as an "Individual Urban Water Supplier" for the 2015 UWMP. However, the District continues to be an active participant in other regional planning efforts. In June 2006, the District adopted the *Integrated Regional Watershed Management Plan for the Calleguas Creek Watershed*. The District developed the IRWMP in coordination with the Watersheds Coalition of Ventura County: the Cities of Thousand Oaks, Camarillo, and Simi Valley; Calleguas Municipal Water District, Ventura County Water Works Districts 1 and 19, Ventura County Resource Conservation District; and Santa Monica Mountains Recreation and Conservation Agency. The broader Watershed Plan seeks to

reduce reliance on imported water and over-drafted, confined groundwater aquifers by reclaiming poor quality, unconfined groundwater supplies and otherwise expanding water recycling projects.

The Watershed Plan, developed by a broad cross-section of stakeholders, provides an umbrella under which this Urban Water Management Plan has been developed. A *Renewable Water Resources Management Plan* (RWRMP), prepared through consensus of the stakeholders involved in the Watershed planning effort, outlines an integrated set of facilities necessary to achieve the regional goals contained in that plan. The facilities envisioned in the plan reduce reliance on imported water supplies while improving water quality through the managed transport of salts out of the watershed. The goals and objectives of the RWRMP are reflected in the projections and projects incorporated in this UWMP.

Camrosa also participates in the working groups associated with the implementation of the various Total Maximum Daily Load (TMDL) requirements of various entities within the watershed. When TMDLs were first being implemented, responsible agencies within the Calleguas Creek Watershed proposed to deal with TMDLs on a watershed basis, forming an affiliation, organized under various memoranda of understanding, with subgroups pertaining to specific TMDLs. As a POTW and importer of SWP water, Camrosa participates on the Salts TMDL subcommittee.

2.3 Individual Compliance

As noted in Section 2.2, the Camrosa Water District has chosen to report as an "Individual Urban Water Supplier" for the 2015 UWMP. Coordination with other regional agencies and constituents in the development of this plan is discussed further ahead.

Table 2-2: Plan Identification

X	Individual UWMP
	Regional UWMP (RUWMP)

2.4 Fiscal/Calendar Year and Units of Measure

Table 2-3: Agency Identification	
Type of Agency	
	Agency is a wholesaler
X	Agency is a retailer
Fiscal or Calendar Year	
	UWMP Tables Are in Calendar Years
X	UWMP Tables Are in Fiscal Years
If Using Fiscal Years Provide Month and Day that the Fiscal Year Begins (dd/mm)	
01/07	
Units of Measure Used in UWMP	
Units	Acre feet
NOTES:	

2.5 Coordination and Outreach

Of the approximately 30 square miles within the Camrosa Water District's boundaries, about seven square miles lie within the City of Camarillo city limits, approximately 1.5 square miles lie within the boundaries of the City of Thousand Oaks and 21.5 square miles lie within the unincorporated area of Ventura County.

Camrosa serves two distinct classes of nonpotable water—nonpotable surface water diverted from Conejo Creek and augmented with groundwater, and Title-22 recycled water produced at the Camrosa Water Reclamation Facility (CWRF). While the two waters are regulated differently (as required by California Water Code) and delivered via separate distribution systems, they are both comprised primarily of tertiary-treated product from wastewater treatment plants, and for the purposes of this UWMP, in order to streamline calculations and condense explanation, the volume of nonpotable water from the CWRF and the volume diverted from Conejo Creek are considered together and referred to collectively, and interchangeably, as recycled water and nonpotable irrigation water since both are used to meet irrigation demand within the District.

In 2015, 16,111 acre feet (AF) of water was produced or imported by the District and delivered to District customers for both potable and nonpotable use. Approximately 32 percent of Camrosa's total water supply was recycled water purchased from the City of Thousand Oaks and diverted from Conejo Creek for use as nonpotable irrigation supply; eight percent recycled water produced from the Camrosa Water Reclamation Facility; 26 percent pumped from local groundwater aquifers; and the rest was imported from Calleguas Municipal Water District. Of the volume of surface water diverted from Conejo Creek, 2,758.51 AF was delivered to Pleasant Valley County Water District (PVCWD), a neighboring agricultural water district.

2.5.1 Wholesale and Retail Coordination

The remaining 34 percent of potable water produced in 2015 was imported through the Metropolitan Water District and its wholesale agency, Calleguas Municipal Water District.

Table 2-4 Retail: Water Supplier Information Exchange
The retail supplier has informed the following wholesale supplier(s) of projected water use in accordance with CWC 10631.
Wholesale Water Supplier Name
Calleguas Municipal Water District
NOTES:

2.5.2 Coordination with Other Agencies and the Community

Camrosa overlies the eastern portion of the City of Camarillo, a small portion of the City of Thousand Oaks, unincorporated areas of Ventura County, primarily in the Santa Rosa Valley, and state land encompassing California State University Channel Islands (CSUCI). A portion of the Santa Rosa Basin, the entirety of which falls within Camrosa boundaries, and the Pleasant Valley Basin, the northeastern portion of which Camrosa overlies, fall under the jurisdiction of the Fox Canyon Groundwater Management Agency (FCGMA), which was established December 21, 1982.

Copies of the draft 2015 Urban Water Management Plan have been circulated to the following agencies with direct interests in the District's plan:

- Calleguas Municipal Water District (wholesaler)
- City of Camarillo
- City of Thousand Oaks
- California State University Channel Islands
- County of Ventura
- Pleasant Valley County Water District
- Ventura Local Agency Formation Commission

Table 2.4a below summarizes the efforts Camrosa Water District has taken to include various agencies and citizens in its planning process.

Table 2-4a Coordination with Other Agencies & Community

Coordinating Agencies	Participated in UWMP Development	Contacted for Assistance	Received Copy of Draft	Commented on the Draft	Sent a Notice of Intention to adopt	Attended public meetings
Wholesaler (Calleguas MWD)		X	X		X	
Retailer (City of Camarillo)			X		X	
Retailer (City of Thousand Oaks)			X		X	
County of Ventura			X		X	
Cal State Univ. Channel Islands			X		X	
Santa Rosa Valley Municipal Advisory Committee			X		X	
General Public			X		X	

In addition to coordination with other agencies, Camrosa Water District has solicited input from a range of District customers and the public at large. Over the course of the past several years, the District has conducted a series of public meetings with groups of constituents which include the California State University at Channel Islands, the Santa Rosa Valley Municipal Advisory Committee, the Leisure Village retirement community, various homeowner associations, other local water suppliers, ranchers, and farmers to discuss priorities relative to water quality, reliability, and cost, and to gauge public opinion on issues related to water conservation, recycling, and reuse. Pertinent information from public interface has been used in the preparation of this Plan.

The District prepared this update to its Urban Water Management Plan over a period of several months from January through March of 2016. Prior to the public hearing to review the plan and accept public input, notices were published in a local newspaper of general circulation within the District. Copies of newspaper publications are attached in Appendix A pursuant to requirements of Section 6066 of the Government Code. Information regarding the public hearing to adopt the 2015 UWMP was also advertized in monthly bills and on the District's Web site.

The updated UWMP was adopted by the Board of Directors on June 9, 2016 and submitted to the California Department of Water Resources, the California State Library, the County of Ventura and cities within the District's service area within 30 days of adoption as required by the Urban Water Management Planning Act. This UWMP will be available for public review at Camrosa Water District headquarters during normal business hours. A copy of the resolution adopting the Urban Water Management Plan is attached in Appendix A. This plan includes all information necessary to meet the requirements of California Water Code Division 6, Part 2.6 (Urban Water Management Planning).

This plan relies upon relevant information contained in following plans and studies:

- August 2013, *Santa Rosa Groundwater Management Plan*
  Montgomery, Watson, Harza
- December 2010, *Aquifer Pumping Test of Camrosa Water District University Well*
  Norman N. Brown, PH.D., P.G.
- December 2009, *Groundwater Geology and Yield Analysis of the Tierra Rejada Basin*
  Norman N. Brown, PH.D., P.G.

- April 2005, *Shallow Groundwater of Eastern Pleasant Valley Basin*
  Norman N. Brown, PH.D., P.G.
- 1998, *Hydrogeology of the Tierra Rejada Groundwater Basin*
  J.P. Schaaf's CSU-Northridge MS thesis,

2.5.3 Notice to Cities and Counties

Pursuant to CWC 10621(b), On January 13, 2016 the District notified by email both the cities of Camarillo and Thousand Oaks, with whom Camrosa provides a portion of these cities' water supplies, with a Notice of Preparation of the District's 2015 Urban Water Management Plan. On February 5, 2016 the District notified by email, the County of Ventura with a Notice of Preparation of the District's 2015 UWMP. A copy of each Notice of Preparation is included in Appendix A.

3 System Description

LAW

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:

10631 (a). Describe the service area of the supplier, including climate, current and projected population (population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier [and] shall be in five-year increments to 20 years or as far as data is available.

3.1 General Description

Camrosa Water District, a special district formed under Division 13 of the California Water Code, has been providing water service to eastern Camarillo and the Santa Rosa Valley since 1962. Its original purpose was to supply potable water within its established boundaries, though the District subsequently expanded its boundaries and operations to include wastewater treatment services. Camrosa is now among the largest water districts in Ventura County in number of connections and population served. The District's name has changed twice, first, to the Camrosa County Water District in 1965 and then to its present name in 1987. In 2000, Camrosa absorbed the Santa Rosa Mutual Water Company, which had previously served a small pocket of customers in the Santa Rosa Valley in the center of the District service area. Carmosa built new potable pipelines to serve the new customers, and converted the existing distribution system to Camrosa's first nonpotable water distribution system, supplied by local groundwater.

The District is located, as shown in Figure 3-1, in the southeastern portion of Ventura County, surrounded by the cities of Camarillo, Simi Valley, Moorpark, and Thousand Oaks. In terms of geographic features, the District is bounded by Calleguas Creek on the west, the Las Posas Hills on the north, the Simi Hills on the east and the Conejo Hills on the south. Some of these features help define the Terra Rejada, Santa Rosa and Pleasant Valleys. The District serves three classes of water and provides wastewater services to various portions of this area. Of the approximately 31 square miles encompassed by the Camrosa Water District's boundaries, about seven square miles are within the City of Camarillo, 22 lie in unincorporated Ventura County, and 1.5 square miles are attached to the City of Thousand Oaks (T.O.). Each of these areas has a general plan with land use and zoning classifications. In addition, CSUCI has full land-use authority over its 750-acre campus at the District's southwestern boundary.

Parcels within the District's service area comprise a broad mix of agricultural and urban uses, which complicates current water use pattern analysis and future demand projections. To facilitate demand analysis, parcels are grouped into three planning divisions that are generally aligned with the land use and zoning classifications contained in the respective general plans that govern the areas: the Campus Area, the Camarillo Area, and the Unincorporated Area.

Campus Area

The Campus Area is the discontiguous portion of the District south of the Camarillo city limits and east of Lewis Road. Land in this planning division is zoned for Agricultural and Public Use. The CSUCI campus currently consists of 750 acres: 640 acres are on the site of the former California State Hospital, and the remaining 110 acres are comprised of acquired farmland open space. At full build-out, the campus will accommodate 15,000 full-time equivalent students. Ventura County owns several parcels just north of the CSUCI campus that provide institutional housing for individuals within the county social services network. The remainder is agricultural. Camrosa provides potable water service

to the County parcels and to CSUCI. The County parcels also receive nonpotable surface water for irrigation needs. CSUCI and the surrounding agricultural properties receive nonpotable recycled water from Camrosa's WRF.

Camarillo Area

The Camarillo Area includes the portions of the District within the City of Camarillo boundaries, primarily Mission Oaks. The area is composed of low- and medium-density residential housing, master-metered residential housing (Camarillo Springs and Adolfo Camarillo mobile home parks, Leisure Village, some HOAs), some general commercial development, and a large area of light industrial development. There are two golf courses in the area and several landscaped common areas maintained by HOAs and the City of Camarillo. In addition to potable water service provided within this planning division, nonpotable water service is provided to several large agricultural parcels near the Conejo Creek Diversion Structure, to parcels surrounding the industrial park, to city medians, and to Leisure Village. There are four schools in the area: St. John's Seminary, Camarillo High School, Las Colinas Middle School, and Tierra Linda Elementary. The Camarillo Sanitation District provides wastewater service to the area below the freeway; north of the freeway, Camrosa sewers areas within city limits.

Unincorporated Area

A large swath of designated greenbelt covers the southeastern portion of the District, directly east and wholly outside of Camarillo City limits. It extends from the US-101 Highway north to Hilltop road and eastward to Hill Canyon Road on both sides of Conejo Creek. The greenbelt's land use is zoned Agriculture Exclusive and Open Space, and much of it is served nonpotable surface water for irrigation needs.

The Santa Rosa Valley is the unincorporated area of Ventura County extending east from Hill Canyon Road to the intersection of Moorpark Road and Santa Rosa Road, then south and east to Olson Road. The area is rural-residential with lots ranging from 2.0 to 40.0 acres. There is some agriculture in the area, but most operations are small. Approximately 240 parcels encompassing approximately 550 acres in the western portion of this planning division, formerly served by the Santa Rosa Mutual Water Company, absorbed by Camrosa in 2000, have dual service with potable water available for domestic use and nonpotable surface water available for irrigation needs. The Santa Rosa Valley is entirely within the unincorporated limits of the County and relies on permitted septic systems for wastewater disposal.

Most of the Tierra Rejada Valley is also in the unincorporated area of Ventura County. However, a small area, north and east of the intersection of Moorpark Road and Santa Rosa Road, is within the City of Thousand Oak's city limits. This planning division is primarily zoned Open Space and Agriculture, although there is a golf course and a number of rural-residential developments of multi-acre parcels. This area relies on permitted septic systems for wastewater disposal with the exception of the Cornell Ranch tract; Camrosa sewers that area, and operates a lift station that deposits wastewater in the T.O. system. Water use in the portions of T.O. within Camrosa's boundaries is fairly stable, and for the purposes of urban water management planning, they are included in the Unincorporated Area.

Because the SOAR initiative and other similar legislation restricting land-use practices dominate Ventura County, the areas of the District's service area zoned for M&I are relatively fixed. The zones are near build-out, and apart from a small number of small- to medium-size developments, which are expected to account for approximately six percent of future residential demands, the District does not expect significant growth in the near term. The larger of those developments will not convert agricultural land, and the reduction of farmed acreage due to smaller developments is expected to be negligible, and it is not expected that the agricultural service area will reduce significantly after that. Population is expected to continue growing, so M&I zones may become more dense; such projections are included in Section 3.4. As all new development is subject to supply mitigation, which includes installing dual plumbing and the use of nonpotable water where feasible, any offset of or increase in the volume of water used on the land being converted is

mitigated; land conversion and changes in land-use planning are not anticipated to adversely affect the District. See Section 8.4 for an extended discussion about Camrosa's moratorium on new demand and developer supply mitigation.

3.2 Service Area Boundary Maps

Digital copies of maps, including shape files, will be uploaded to the DWR Web site at the time of submittal. Exhibits are included here for readability.

3.2.1 Service Area

The Camrosa Water District boundary is fixed and requires petition of and approval by LAFCO and Camrosa to be adapted. Only in extraordinary cases would the district entertain such proposals, and changes to the service area boundary are not included in planning projections or strategy.

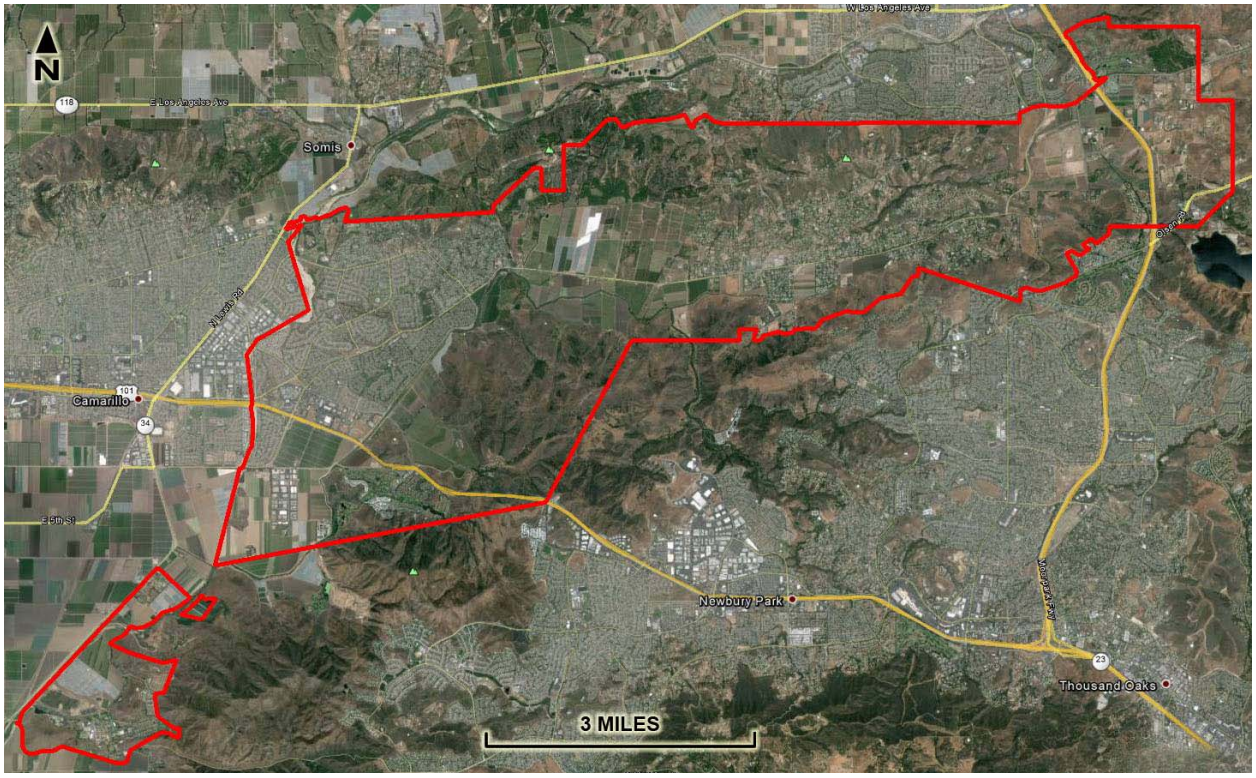

Figure 3-1 Camrosa Water District Service Area

Service was extended by agreement to California State University Channel Islands (CSUCI), located in the discontiguous area southwest of the main District boundaries, in 1981. Water is provided to CSUCI through a master meter located at the CSUCI property line, and CSUCI owns and operates its own storage tanks and distribution system for the campus property.

In 2000, Camrosa acquired the distribution system of the Santa Rosa Mutual Water Company and began providing both potable and nonpotable service to approximately 240 large parcels in Santa Rosa Valley. With the exception of the CSUCI system, Camrosa owns and operates all potable water distribution facilities within the District boundaries.

3.2.2 Nonpotable Water Distribution Systems

Camrosa Water District has two distinct nonpotable water distribution systems; one that distributes tertiary-treated, Title-22 recycled water produced at Camrosa's Water Reclamation Facility (CWRF), and the other that delivers what is termed "nonpotable" water and comprises a blend of nonpotable surface water diverted from Conejo Creek and local groundwater. Due to significant differences in health code regulations and legal definitions between diverted surface water and Title-22 recycled water, the two systems are completely separate within the District; each has its own distribution system and storage facilities. The current service area for Title-22 recycled water from the CWRF is highlighted in purple in Figure 2 below. The service area encompasses all of the parcels adjacent to and surrounding CSUCI, including the campus itself and neighboring farmland, with the exception of the County-owned parcels in the northwest of the Campus Area.

The Conejo Creek Diversion Project was inaugurated in 2000. Nonpotable surface water, originally discharged from the City of Thousand Oaks's Hill Canyon Wastewater Treatment Plant (HCTP) 6.8 miles upstream from the diversion structure, is diverted from Conejo Creek and used for both landscape and agricultural irrigation in the areas highlighted in green in Figure 3.2. In the Santa Rosa Valley, the nonpotable surface water system is augmented with groundwater.

Areas that receive nonpotable surface water include the County-owned property near CSUCI, farmland surrounding the Adolfo Industrial Park, farmland near the diversion structure and adjacent to the nonpotable irrigation system pipeline into Santa Rosa Valley and the large agricultural area that lies within the Santa Rosa Valley Greenbelt area. Approximately 240 residential parcels, formerly a part of the Santa Rosa Mutual Water Company, receive both potable water as well as nonpotable surface water to meet outdoor irrigation needs. In 2008, Leisure Village, a 415-acre retirement community, transferred over 550 AFY of landscape irrigation to the nonpotable distribution system. Nonpotable irrigation water surplus to the District's needs is delivered to PVCWD and stored in the PVCWD reservoir located near the Camarillo airport.

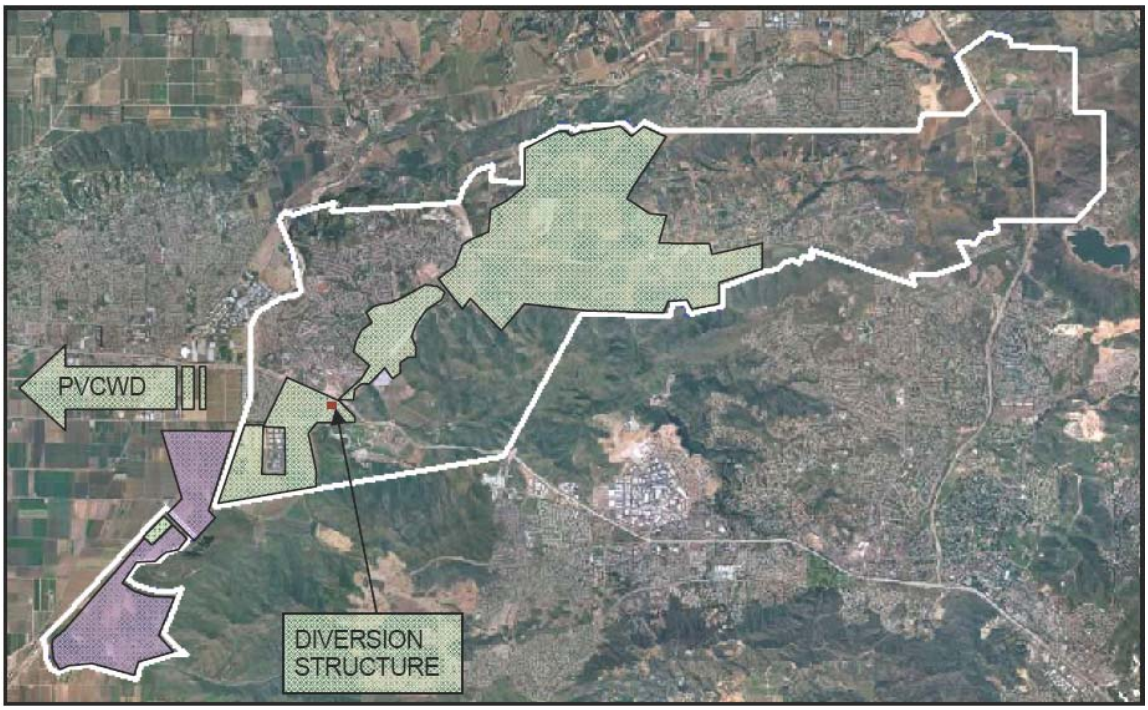

Figure 3-2 Nonpotable (green) and Recycled (purple) Water Systems

Although the two classes of nonpotable water Camrosa serves are distinct and are delivered via separate distribution systems, they are both comprised primarily of tertiary-treated product from wastewater treatment plants and are therefore extremely reliable sources of nonpotable irrigation water supply, even in the driest of years. For the purposes of this UWMP, in order to streamline calculations and condense explanation, the volume of nonpotable water from the CWRF and the volume diverted from Conejo Creek are considered together and referred to collectively, and interchangeably, as recycled water and nonpotable irrigation water since both are used to meet irrigation demand within the District.

3.2.3 Wastewater Collection and Treatment within Camrosa Boundaries

Wastewater service areas for the Camrosa Water District and the City of Camarillo are the result of an agreement negotiated between the agencies more than 50 years ago. Both City and District boundaries have changed several times in the intervening years, resulting in service areas which do not necessarily comport to political boundaries (see Figure 3-3). In the portions of Camrosa that fall within the City of Camarillo boundaries, Camrosa collects wastewater and sends it to the Camrosa Water Reclamation Facility (CWRF), while in the portions of the Camrosa service area south of US Highway 101 (not including the Campus Area), wastewater is collected by the Camarillo Sanitary District (CamSan) and treated at their facility, which is located within Camrosa boundaries.

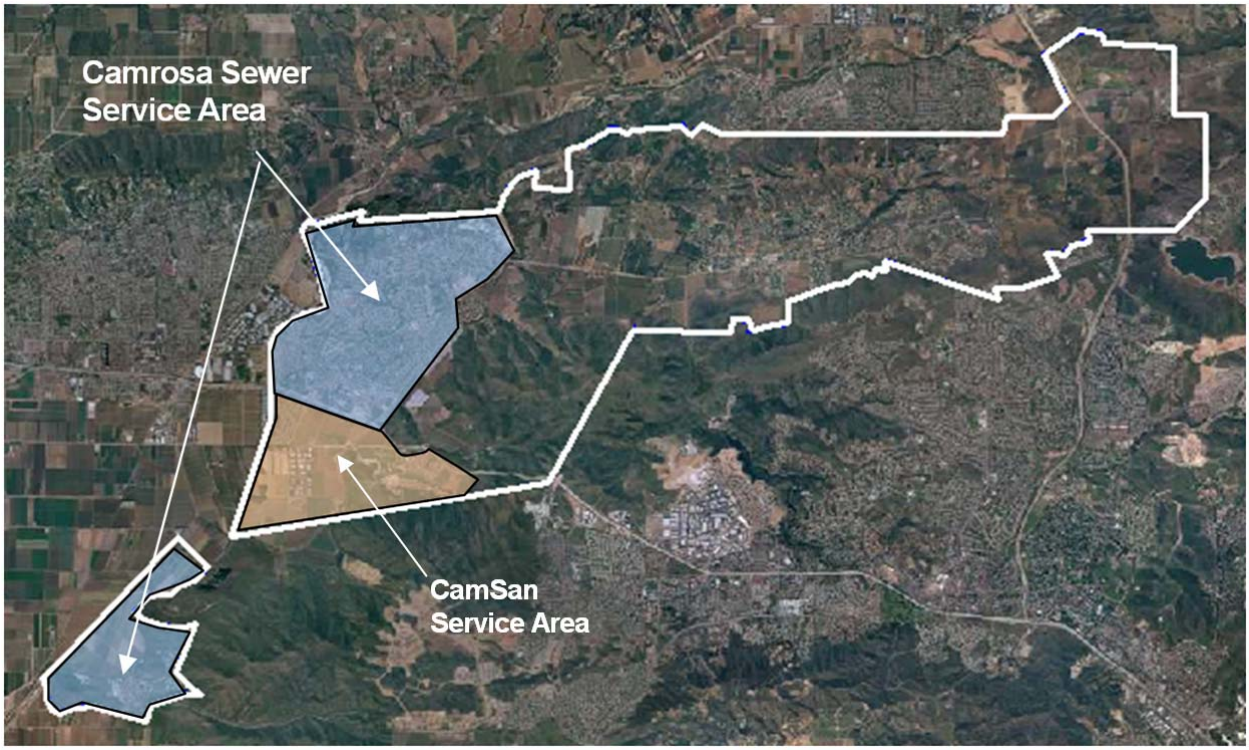

Figure 3-3 Camrosa and Camarillo Sanitation District Service Areas

See Chapter 6.5 for detailed descriptions of the wastewater treatment plant and distribution systems.

3.3 Service Area Climate

Camarillo has a temperate coastal southern California/Mediterranean climate, with approximately 275 sunny days a year, mild summers and winters, and moderate rainfall. On average, more than 90 percent of the annual rainfall occurs during the six-month period extending from October through March. The average temperature fluctuates between an average low of about 43 degrees (January) and an average high of about 78 degrees (August). Weather data in the following tables is taken from the California Irrigation Management Information System (CIMIS) station located at Leisure Village, within the Camrosa service area.

Table 3-1 Summary Climate Characteristics, 2000-2015

Climate Characteristic	Value
Avg. Annual Precipitation (inches)	10.37
Annual Min. Precipitation (inches)	2.82
Annual Max. Precipitation (inches)	18.16
Avg. Annual Min. Temp. (°F)	26.67
Avg. Annual Max. Temp. (°F)	99.61

Table 3-2 Detailed Climate Characteristics Averages, 2000-2015				
Month/Time	**Avg. Precip. (in)**	**Avg. ET (in)**	**Avg. Max Temp. (°F)**	**Avg. Min. Temp. (°F)**
Jan	2.26	2.53	68.33	43.80
Feb	2.16	2.54	67.03	43.73
Mar	1.58	3.61	68.64	44.92
Apr	0.69	4.37	69.22	46.27
May	0.22	5.23	71.53	49.66
Jun	0.017	5.17	73.23	53.56
Jul	0.045	5.71	77.20	57.03
Aug	0.004	5.33	77.58	56.39
Sep	0.047	4.31	78.39	54.96
Oct	0.73	3.30	75.67	51.63
Nov	0.7	2.66	72.5	46.85
Dec	1.89	2.11	66.88	43.11
Wet Season	1.55	2.79	69.84	45.67
Dry Season	0.17	5.02	74.53	52.98
* Wet Season is Oct-Mar; Dry Season is Apr-Sep. Values are monthly average over each season.				

3.4 Service Area Population and Demographics

3.4.1 Demographic Factors

Since the City of Camarillo's inception in 1964, the number of connections and volume of water served within the District has grown steadily. Ventura County was predominantly an agricultural area when the District was formed and has struggled to maintain a viable agricultural economy in spite of pressures to develop agricultural acreage into more intensive urban uses. Primarily in response to these pressures, the voters of Ventura County and the City of Camarillo approved separate Save Open Space and Agricultural Resources (SOAR) initiatives designed to protect and preserve the community's agricultural and greenbelt resources. In accordance with the initiatives and the resulting adopted ordinances, any lands designated as Agricultural, Open Space or Rural within the Ventura County's General Plan or within the City of Camarillo General Plan Map will remain so designated at least until December 31, 2020, unless the redesignation is approved by a vote of the people. Within Camrosa Water District, SOAR will have its greatest impact by preserving the Santa Rosa Valley and Tierra Rejada greenbelts. This UWMP assumes that existing zoning designations and land uses will continue through the year 2020; in the unlikely event that the SOAR initiative lapses, existing land use and zoning designations are not likely to change appreciably in the 15 years between 2020 and 2035.

Development within the City of Camarillo and Unincorporated Ventura County

In 1981, voters in the City of Camarillo approved a ballot measure limiting residential development to 400 units per year. Overall, the growth rate for the City of Camarillo is projected by the *Ventura Cities and County 2040 Population Forecast* (Appendix G) to average approximately 1.2 percent per year through 2025, falling off significantly after that, once it reaches build-out, to less than a quarter of a percent a year. Camarillo demonstrates slightly faster growth than the unincorporated areas of the County of Ventura that make up the remainder of the District service area, excepting the Campus Area discussed below; the unincorporated areas of the county are expected to grow about an average of 0.40 percent per year between now and 2040.

Table 3-3 City of Camarillo and Unincorporated Ventura County Population Projections*						
	2015	**2020**	**2025**	**2030**	**2035**	**2040**
Camarillo	71,679	76,218	77,011	77,805	78,598	79,391
Growth rate (5-year)	6.76%	6.33%	1.04%	1.03%	1.02%	1.01%
Unincorporated County	99,623	101,255	103,603	105,950	108,298	110,645
Growth rate (5-year)	1.67%	1.64%	2.32%	2.27%	2.22%	2.17%
*Fields in blue are provided in *Ventura Cities and County 2040 Population Forecast*; 2025 and 2035 are interpolated.						

While projected growth rate within the city limits is bound by the city's growth ordinance, as a practical matter few parcels remain to be developed in that portion of the city that lies within the District service area, and it is assumed that those parcels will be fully developed within the timeline of this UWMP. Four small- to medium-sized developments are currently in conceptual stages: Shea Homes, Voltaire, Wildwood Preserve, and Comstock/Mission Oaks. Yearly demand, based on maximum-day potable demand, for these four developments is projected to be 368 AFY, which is less than five percent of Camrosa's annual average potable deliveries.

As mentioned in section 3.1, between fixed zoning boundaries within Camrosa and projected growth within the city, urban portions of the District are expected to become denser. Potable water demands projected in Section 6 are based off growth projections provided in this section.

Population Growth at the Campus Area

California State University at Channel Islands (CSUCI) will continue to increase its student count as the institution reaches full build out over the next 10-15 years. While the university's students do not factor into official population projections, they are considered as part of CSUCI's total water demand when estimating future usage. However, over the past several years starting in 2010, CSUCI has shown a gradual decrease in potable demand while at the same time a gradual increase in recycled water demand as shown in Table 4.1b. These trends demonstrate the university's commitment to both reducing their potable water use and shifting demand, where possible, to recycled water.

District Population Projections

Starting with a 2015 population estimate of 29,488, using DWR's WUE population tool, and combining growth rates in the City of Camarillo and unincorporated Ventura County with projections from CSUCI, Camrosa has developed the following population projections.

Table 3-4 Camrosa Population Projections						
	2015	**2020**	**2025**	**2030**	**2035**	**2040**
District Blended Growth Rate (5-year)		4.72%	1.45%	1.43%	1.40%	1.38%
Population Estimate	29,488	30,880	31,328	37,775	32,221	32,667

4 System Water Use

LAW

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:

10631 (e) (1). Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors including, but not necessarily limited to, all of the following uses:

(A) Single-family residential; (B) Multifamily; (C) Commercial; (D) Industrial; (E) Institutional and governmental; (F) Landscape; (G) Sales to other agencies; (H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof; and (I) Agricultural.

10631 (2). The water use projections shall be in the same 5-year increments described in subdivision (a).

10631 (J). Distribution system water loss.

10631 (3)(A). For the 2015 urban water management plan update, the distribution system water loss shall be quantified for the most recent 12-month period available. For all subsequent updates, the distribution system water loss shall be quantified for each of the five years preceding the plan update.

10631 (3)(B). The distribution system water loss quantification shall be reported in accordance with a worksheet approved or developed by the department through a public process. The water loss quantification worksheet shall be based on the water system balance methodology developed by the American Water Works Association.

4.1 Recycled Versus Potable and Raw Water Demand

The District's potable water is entirely composed of a blend of State Water Project (SWP) water imported from its wholesaler, Calleguas Municipal Water District, and raw well water from a number of local water basins and aquifers. Raw well water is chlorinated and blended with SWP water typically to reduce chlorides, nitrates, and other constituents exceeding or nearing maximum contamination levels (MCLs) in order to meet drinking water standards. The District does not use any surface or recycled water in their potable distribution system, but has separate distribution systems for nonpotable surface water and recycled effluent. The nonpotable distribution system is supplied from surface water originating from the City of Thousand Oaks's Hill Canyon Wastewater Treatment Plant (HCTP) and diverted from the Conejo Creek, while the recycled distribution system is supplied by effluent from the District's Water Reclamation Facility (CWRF). In Table 4-3 below, "Recycled Water" is the only CWC option available for reporting quantities of nonpotable water delivery, thus for reporting purposes the District has combined its nonpotable surface and recycled effluent water deliveries and presented the sum in Table 4-3 as "Recycled Water."

4.2 Water Uses by Sector

The District's total (AWWA adjusted) potable water supplied in 2015, including water loss, was 8,404 acre feet. Camrosa serves potable water to a number of different water use sectors including residential, commercial & industrial, agricultural, institutional, and governmental. Within these different sectors there are various categories ranging from high-density residential condominiums and apartments to low-density, large estate-style homes, master-metered communities, business parks, and agricultural growers. Table 4-1 below provides a breakdown of usage for each potable water class served by the District in 2015.

Table 4-1 Retail: Demands for Potable and Raw Water - Actual			
Use Type	2015 Actual		
May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool	Additional Description *(as needed)*	Level of Treatment When Delivered	Volume
Single-family residential		Chlorinated	4,517
Multifamily		Chlorinated	322
Commercial and industrial		Chlorinated	617
Institutional and governmental		Chlorinated	462
Landscape		Chlorinated	745
Agricultural		Chlorinated	1,005
Distribution System Losses – Real and Apparent Losses		Chlorinated	734
		TOTAL	**8,404**
NOTES:			

4.2.1 Demand Sectors Listed in Water Code

The District's entire potable water use track with the definitions used by DWR for each of the water sectors listed in the CWC. Namely:

- Single-family residential: A single-family dwelling unit; a lot with a free-standing building containing one dwelling unit that may include a detached secondary dwelling
- Multi-family: multiple dwelling units contained within one building or several buildings within one complex
- Commercial: a water user that provides or distributes a product or service
- Industrial: a water user that is primarily a manufacturer or processor of materials as defined by the North American Industry Classification System (NAICS) code sectors 31 to 33, inclusive, or an entity that is a water user primarily engaged in research and development
- Landscape: water connections supplying water solely for landscape irrigation; such landscapes may be associated with multi-family, commercial, industrial, or institutional/governmental sites, but are considered a separate water use sector if the connection is solely for landscape irrigation
- Agricultural: water used for commercial agricultural irrigation

4.2.2 Demand Sectors in Addition to Those Listed in Water Code

Other water demand sectors not specifically listed in, nor required by the CWC include Exchanges, Surface Water Augmentation, Transfers, Wetlands or Wildlife Habitat, and other uses that may not be adequately described by the water sectors defined above. In 2014, the District entered into an agreement with the Fox Canyon Groundwater Management Authority (Appendix H1 - FCGMA Resolution 2014-01) for the transfer of Pleasant Valley County Water District's (PVCWD) pumping allocations in the northeast Pleasant Valley Basin in exchange for Conejo Creek surface water, on a one-for-one basis, for a term of forty years. Furthermore, the District has an additional 809 acre feet in annual allocations within the basin. In 2015, the District extracted only 761 acre feet of raw water from the Pleasant Valley Basin (included in the actual demands in Table 4-1 above), an amount below their allocation and therefore there were no transfers of water under the FCGMA agreement for 2015.

4.2.3 Projected Demands for Potable, Raw and Recycled Water

Future demands in the District for 2015 through 2035 were projected based on an evaluation of existing zoning, planning data and land use maps for the various areas within the District, population projections, and discussions with City, County, and Camrosa Board directives. Anticipated land use changes from current zoning were incorporated into the analysis. It must be noted that the demand projections depend on the long-term accuracy of the available planning documents. If the Cities, County, or special districts, significantly revise their land use maps or general plans, the population projections and corresponding demands may also change significantly.

It was assumed land designated on current land-use maps for commercial or residential use would be fully developed over the next 20 years and would reflect the population projections contained in Table 3-4 above. It was assumed that parcels currently in agricultural but zoned for M&I use would be developed over the next 20 years.

It was assumed that parcels currently zoned agricultural will remain in agriculture during the planning period, primarily due to the impacts of SOAR and the apparent desire of the community to maintain the greenbelt and agricultural aspect of the undeveloped land within the District. There is little undeveloped land suitable for agricultural use within the District boundaries and there is little likelihood there will be significant increases to the base irrigation demands. The current water use for 2015 is presented in Table 4-1.

Projections that were given through 2035 in the 2010 UWMP are expected to change due to a number of factors. A large development consisting of mixed commercial/residential use which was scheduled to start prior to 2020 has stalled and the future of the project is now uncertain. It was anticipated that the Conejo Creek Development project, a 2,500 single and multifamily residential and commercial development would have added an additional 439 acre feet of potable demand and at the same time produce a net decrease of 756 AFY in nonpotable demand as agricultural land was converted to urban use. The City of Camarillo, however, halted the project due to environmental concerns.

Another factor which is expected to affect projections made in the 2010 UWMP is a change of methodology in the District's goal of achieving water self-reliance. In 2010, much emphasis was placed on expansion of the District's nonpotable distribution system. Customer outdoor irrigation demands would be moved from the potable system thereby decreasing dependence on state water. In 2010 it was planned to transfer 2,658 AFY from potable to nonpotable use by 2035. In 2011, an analysis of the nonpotable system indicated that while an abundance of nonpotable surface water is available during the winter months, a shortage in supply exists during the summer months making expansion of the nonpotable system unfeasible without additional storage capability or the development of additional supply. Further, the analysis concluded expansion of the system was cost-prohibitive. With the same goal of water self-reliance, direction shifted away from expansion of the nonpotable system and focused on increasing pumping of local groundwater supplies, the treatment of nonpotable supplies to drinking water quality, and the

exchange of lower-quality water for drinking water. As stated above, in 2014 the District entered into an agreement with the FCGMA for the transfer of Pleasant Valley County Water District's (PVCWD) pumping allocations in the northeast Pleasant Valley Basin in exchange for Conejo Creek surface water, on a one-for-one basis for a term of forty years. Additionally, the District is pursuing recharge of the Arroyo Santa Rosa basin and reverse osmosis treatment of the Conejo Wellfield to increase the blend of local ground water into its potable distribution system, decrease SWP imports, and improve groundwater quality. It should be noted that the while the blend ratio of raw groundwater to state imported water will increase, the net change in demand for potable water should stay relatively constant over the planning horizon.

a. Residential Demand Projections

Four developments that are expected to move forward in the foreseeable future are shown in Table 4-1a along with their estimated completion dates and potable use. These demand estimates have been included in the projections for 2020's Single and Multifamily Residential Use in Table 4-2 below.

Worksheet 4-1a: Planned Developments Within the District

Development	Type	Completion Date	Annual Average-Day Demand (AF)
Mission Oaks	Multifamily Residential	Fall 2017	67
Wildwood Estates	Single Family Estates	Spring 2018	15
Voltaire	Single Family Estates	2020	13
Shea Homes	Multifamily Residential	2020	211

b. CSUCI Campus Projections

California State University at Channel Islands (CSUCI) will continue to increase its student count as the institution reaches full build out over the next 10-15 years. While the university's students do not factor into official population projections, they are considered as part of CSUCI's total water demand when estimating future usage. However, over the past several years starting in 2010, CSUCI has shown a gradual decrease in potable demand while at the same time a gradual increase in recycled water demand as shown in Table 4.1b. These trends demonstrate the university's commitment to both reducing their potable water use and to shifting demand, where possible, to recycled water. 2015 usage shows drastic reductions in both potable and recycled water demands, most likely due to the drought and mandatory statewide cutbacks in water usage.

Table 4-1b: CSUCI Potable and Recycled Water Demand

Water Type	2010	2011	2012	2013	2014	2015
Potable	275	234	241	235	216	217
Recycled Water	131	176	230	268	292	256

CSUCI's average potable usage makes up for more than one-half of the total average Institutional and Governmental water demand shown in Table 4-1b and it is anticipated that most fluctuations in this use sector will be attributed to the university. A one-percent increase per year is estimated for CSUCI's projected potable water use throughout the planning period.

c. Water Loss Projections

Historically, water loss has averaged approximately 4.8 percent of production, but it approached 8.7 percent in 2015. In 2015 the District initiated a leak survey program which evaluated several pressure zones within the District. The District plans to complete the leak survey on its remaining pressure zones in 2016. Water loss for future years has been projected at about five percent and is included in table 4-2. Current distribution system water losses are discussed in more detail in Section 4.3. In addition to increasing its detection program, Camrosa is also systematically reconciling production/sales disparities and instituting a meter-calibration program on both the production and delivery sides.

d. Baseline for Demand Projections

In order to assume a realistic baseline demand to more accurately project growth, the previous five years' demands were averaged. It can be assumed that the average is a higher-than-normal value, given the annual precipitation over the past five years averaged only 7.73 inches of rainfall, well below the 10.37-inch average annual precipitation for the area. However, coupled with conservation efforts, these five years are assumed to be a reasonable cross-section of demand extremes. They included the two driest years on record (2013 and 2015), two other mildly dry years (2012 and 2014), and an above-average rainfall year (2011). Table 4-1b displays the previous five years and their average, which is used as the projection baseline.

Table 4-1b: Baseline Demand for Projection: Average Demand FY 2011-2015

Potable Use Type	2011	2012	2013	2014	2015	**AVERAGE**
Single-family residential	4,498	4,683	4,954	5,279	4,517	**4,786**
Multifamily	385	384	383	384	322	**372**
Commercial and Industrial	582	605	689	710	617	**641**
Institutional and Governmental	413	391	435	411	462	**422**
Landscape	669	697	795	886	745	**758**
Agricultural	1,115	1,145	1,345	1,213	1,005	**1,165**
Distribution System Losses	704	920	743	1,043	734	**829**
TOTAL POTABLE	**8,366**	**8,825**	**9,344**	**9,926**	**8,404**	**8,973**
Recycled Water Demand	**6,296**	**6,293**	**7,416**	**8,095**	**7,280**	**7,076**

Projecting demands can be a somewhat difficult task. However, demand projection can be derived for various usage sectors by taking into account the number of connections per sector, average persons per connection (PPC), GPCD, and population projections. Using the online Water Use Efficiency (WUE) data tool provided by DWR, the District's average number of people per connection for 2015 was estimated to be 2.83 people per connection. Additionally, it was assumed that all growth in potable demand for Single

Family Residential, Multifamily Residential, and Commercial & Industrial sectors would stem from population increases within the District's service area that overlap with either the City of Camarillo boundaries or Unincorporated Areas of Ventura County. Growth in the eastern area of the District that overlaps with the City of Thousand Oaks was assumed to be negligible for Single and Multifamily Residential use sectors and very small for Commercial & Industrial. Service connections within the District were tallied for each of these two areas and factored in with the 2015 PPC (2.83) for each usage sector to yield the District's 2015 Single Family Residential, Multifamily Residential, and Commercial & Industrial populations within the City of Camarillo or Unincorporated Area of Ventura County. Population growth rates from Ventura County's General Plan (see Appendix G) for these two areas were then factored in with the 2015 GPCD (271) to yield the projected increases in demand for these three use sectors. Most of the fluctuation in demand for Institutional and Governmental use will come from the California State University Channel Islands as they reach full build out of student dormitories. While CSUCI shows a recent trend in reduction of potable demand, it is assumed CSUCI's potable demand will increase at a modest one-percent annually throughout the planning period. Finally it is assumed that Landscape and Agricultural use will remain fairly constant over the planning horizon. Demand projections are shown in Table 4-2 and 4-3 below.

Table 4-2 Retail: Demands for Potable and Raw Water - Projected

Use Type	Additional Description *(as needed)*	Projected Water Use *Report To the Extent that Records are Available*			
May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool		2020	2025	2030	2035
Single-family residential		5,068	5,148	5,394	5,475
Multifamily		516	541	567	592
Commercial and Industrial		593	595	597	598
Institutional and Governmental		433	444	456	469
Landscape		758	758	758	758
Agricultural		1,165	1,165	1,165	1,165
Distribution System Losses		408	436	450	456
TOTAL		8,941	9,087	9,387	9,513

NOTES: Future water savings are included in these projections. See section 4.4 below.
*

Table 4-3 Retail: Total Water Demands					
	2015	2020	2025	2030	2035
Potable and Raw Water *From Tables 4-1 and 4-2*	8,404	8,941	9,087	9,387	9,513
Recycled Water Demand *From Table 6-4*	6,773	7,000	6,500	6,600	6,600
TOTAL WATER DEMAND	15,177	15,941	15,587	15,987	16,113
NOTES: Future water savings are included in these projections. See section 4.4 below.					

4.3 Distribution System Water Losses

As outlined in the DWR Water Audit Manual, Appendix L of the 2015 UWMP Guidebook, water loss takes into account both apparent and real losses. Examples of apparent losses are unauthorized use, customer meter inaccuracies, and bill handling errors. Real loss involves leakages on mains, service lines and storage leaks and overflows. Using the American Water Works Association (AWWA), water audit software, the sum of real and apparent potable water loss was calculated to be 734 AF or 8.7 percent of the total usage for all demand sectors in 2015 and is presented in Table 4-4 below. All authorized usage has been classified as "Billed Meter" consumption on the Reporting Worksheet as the District has no components of "Billed Unmetered" or "Unbilled Metered" consumption. Billed metered consumption for 2015 was 7,565 AF. Camrosa has not analyzed "Unbilled Unmetered" consumption in detail and therefore has used the default value of 1.25 percent for the estimate of this component of authorized consumption, or 105 AF.

In accordance with the 2015 UWMP Guidebook reporting requirements, a completed copy of the AWWA Water Audit Reporting Worksheet has been electronically submitted using DWR's online submittal tool and is also available for review in Appendix I.

Table 4-4 Retail: 12 Month Water Loss Audit Reporting	
Reporting Period Start Date	Volume of Water Loss
07/2014	734
NOTES:	

4.4 Estimating Future Water Savings

Water savings from codes, standards, resolutions, ordinances, or transportation and land use plans are known as "passive savings." These various factors generally decrease the water use for new and future customers, compared to historical customers.

On June 10, 2009, in the wake of three consecutive years of below average rainfall and the Governor's subsequent proclamation earlier that year of a statewide emergency due to drought conditions, the District adopted Resolution 09-02 which established a moratorium on new unmitigated potable demand until June 2012. On June 27, 2012, under Resolution 12-14, the District made the moratorium permanent, requiring all new development to "bring with them" additional or "new" water supplies sufficient to offset project max-day demands.

Additionally, on May 28, 2015 responding to Governor Brown's executive order B-29-15 requiring the State Water Resources Control Board to implement mandatory water reductions in potable urban usage through February 2016, the District approved Resolution 15-07 (see Appendix D1) authorizing a 32-percent mandatory reduction (using 2013 as the baseline year) in the District's potable water use. As of this writing the executive order has been extended through October 2016.

Any authorized new development within the District is now required to meet the requirements of both resolutions. For example, a developer would be required to both provide supply equal to or greater than their projected max-day demand and reduce the District's existing potable production by the development's projected average-day demand, plus 32 percent. While both resolutions undoubtedly figure into future water savings, the District has chosen to use only the former (Ordinance 12-14) in its calculation of future water saving projections in Tables 4-2 and 4-3 above and its affirmation in Table 4-4 below. The District considers any future savings due to Resolution 15-07 as transient in nature and has excluded the savings from its long range projections.

4.5 Water Use for Lower Income Households

Camrosa Water District boundaries overlap with four jurisdictions: the City of Camarillo, unincorporated areas of Ventura County, the City of Thousand Oaks, and CSUCI. Of the approximately 31 square miles encompassed by the Camrosa Water District's boundaries, about 7 square miles are within the City of Camarillo, 22 square miles lie in unincorporated Ventura County, and 1.5 square miles are attached to the City of Thousand Oaks. Each of these municipalities has a general plan with housing element classifications.

Ventura County, the City of Camarillo, and the City of Thousand Oaks all use the Department of Housing and Urban Development income criteria for the Oxnard–Thousand Oaks–Ventura Metropolitan Statistical Area (MSA) in determining eligibility for affordable housing programs. Senate Bill 1087 requires that water use projections of a UWMP include the projected water use for single-family and multi-family residential housing for lower income households as identified in the housing element of any city, county, or city and county in the service area of the supplier. None of the housing elements of the General Plans of Ventura County, the City of Camarillo and the City of Thousand Oaks identifies the number or specific location of low income households in the City. Nor do the housing elements in any of these plans project the number or location of low-income households in the future. For this reason, it is not possible to project water use for lower income households separate from overall residential demand. The District will not deny or condition approval of water services applied for by a proposed development that includes low-income affordable housing units, unless one of the following occurs:

- the District specifically finds that it does not have sufficient water supply
- the District is subject to a compliance order issued by the State Department of Health Services that prohibits new water connections
- the applicant has failed to agree to reasonable terms and conditions relating to the provision of services.

Within the Camrosa Water District boundaries, there are currently no single or multi-family residential tracts designated as low-income housing. There are four developments scheduled for completion by 2020. Of the residential tracts that are planned for development, none are designated as low-income housing.

Table 4-5 Retail Only: Inclusion in Water Use Projections	
Are Future Water Savings Included in Projections? (Refer to Appendix K of UWMP Guidebook)	YES
If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, etc… utilized in demand projections are found.	CWD Resolution 12-14
Are Lower Income Residential Demands Included In Projections?	YES
NOTES: Housing Elements pass through from the Cities (Camarillo & Thousand Oaks) or unincorporated areas of Ventura County which Camrosa services. There are no low income housing developments planned within the District's boundaries for these municipalities. See discussion in Section 4.5 of Camrosa's 2015 UWMP above.	

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5 SB X7-7 Baselines and Targets

LAW

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:

10631 (e) (1). Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors including, but not necessarily limited to, all of the following uses:

(A) Single-family residential; (B) Multifamily; (C) Commercial; (D) Industrial; (E) Institutional and governmental; (F) Landscape; (G) Sales to other agencies; (H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof; and (I) Agricultural.

10631 (2). The water use projections shall be in the same 5-year increments described in subdivision (a).

10631 (J). Distribution system water loss.

10631 (3)(A). For the 2015 urban water management plan update, the distribution system water loss shall be quantified for the most recent 12-month period available. For all subsequent updates, the distribution system water loss shall be quantified for each of the five years preceding the plan update.

10631 (3)(B). The distribution system water loss quantification shall be reported in accordance with a worksheet approved or developed by the department through a public process. The water loss quantification worksheet shall be based on the water system balance methodology developed by the American Water Works Association.

State Water Resources Control Board Resolution 15-0032, implementing Governor Brown's Executive Order B-29-15, established what it terms "Residential Gallons per Capita per Day" (R-GPCD), for each of California's 412 urban potable water suppliers. The methodology used to develop the R-GPCD on the Urban Water Supplier Reporting Tool for submittal to the Drinking Water Information Clearinghouse (DRINC) to evaluate compliance with the conservation targets established by the SWRCB, despite similar terminology to the DWR per-capita water-use evaluation criteria, is significantly different. Among the differences is population estimates; while the DWR WUE tool taps directly into Census data, the DRINC methodology allows for adjustments based on master-metered and transient populations. Considering the large master-metered communities in the District service area the student population at CSUCI, adjusted populations in the DRINC report vary significantly from the Census-based population estimates used here.

5.1 Guidance for Wholesale Agencies

Not Applicable

5.2 Updating Calculations from 2010 UWMP

LAW

10608.20 (g) An urban retail water agency may update its 2020 urban water use target in its 2015 urban water management plan required pursuant to Part 2.6 (commencing with Section 10610).

5.2.1 Update of Target Method

Camrosa's 2010 UWMP developed its baseline, current, and target GPCD based off of gross water use, which was determined to be all potable water that entered the potable distribution system, including agricultural deliveries. Method One, an 80-percent reduction from average base daily per capita water use, was used to establish Camrosa's SBx7-7 2020 GPCD target. In the 2015 UWMP, Camrosa again uses this 80-percent-reduction method, though, employing the DWR WUE tool and attendant official 2010 census numbers, the baseline, current, and target GPCD numbers have changed slightly.

5.2.2 Required Use of 2010 U.S. Census Data

Because Camrosa did not have final, official 2010 census data for the 2010 UWMP, Camrosa recalculated baseline population using 2000 and 2010 census date, utilizing DWR's WUE tool.

5.2.3 SB X7-7 Verification Forms

As the SB X7-7 Verification Form tables were not available for the 2010 UWMP, Camrosa developed its own tables to calculate baseline, current, and target GPCD, employing Target Method One. For Camrosa's 2015 UWMP, utilizing DWR's standardized SB X7-7 tables is required to demonstrate compliance with the Water Conservation Act of 2009. Data will be uploaded through DWR's WUE tool, but are also reproduced below.

5.3 Baseline Periods

LAW

10608.20 (e) An urban retail water supplier shall include in its urban water management plan due in 2010. . . the baseline daily per capita water use . . . along with the bases for determining those estimates, including references to supporting data.

(g) An urban retail water supplier may update its 2020 urban water use target in its 2015 urban water management plan required pursuant to Part 2.6 (commencing with Section 10610).

Camrosa chose the same ten-year baseline period for the 2015 UWMP as was used in the 2010 UWMP: 1998-2007.

5.3.1 Determination of the 10-15 Year Baseline Period (Baseline GPCD)

LAW

10608.12 (b) "Base daily per capita water use" means any of the following:

(1) The urban retail water supplier's estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous 10-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

(2) For an urban retail water supplier that meets at least 10 percent of its 2008 measured retail water demand through recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier, the urban retail water supplier may extend the calculation described in

paragraph (1) up to an additional five years to a maximum of a continuous 15-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

Camrosa met 31.35 percent of its total demands with recycled water in 2008, and is therefore qualified to use a 15-year baseline, but has chosen to use a ten-year baseline.

SB X7-7 Table-0: Units of Measure Used in UWMP
Acre Feet

SB X7-7 Table-1: Baseline Period Ranges			
Baseline	Parameter	Value	Units
10- to 15-year baseline period	2008 total water deliveries	17,478	Acre Feet
	2008 total volume of delivered recycled water	5,480	Acre Feet
	2008 recycled water as a percent of total deliveries	31.35%	Percent
	Number of years in baseline period[1]	10	Years
	Year beginning baseline period range	1998	
	Year ending baseline period range[2]	2007	
5-year baseline period	Number of years in baseline period	5	Years
	Year beginning baseline period range	2003	
	Year ending baseline period range[3]	2007	

5.3.2 Determination of the 5-Year Baseline Period (Target Confirmation)

LAW

10608.12 (b) (3) For the purposes of Section 10608.22, the urban retail water supplier's estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous five-year period ending no earlier than December 31, 2007, and no later than December 31, 2010.

Camrosa's 5-Year Baseline Period will be 2003-2007.

5.4 Service Area Population

LAW

10608.20 (e) An urban retail water supplier shall include in its urban water management plan due in 2010…the baseline per capita water use…along with the bases for determining those estimates, including references to supporting data.

(f) When calculating per capita values for the purposes of this chapter, an urban retail water supplier shall determine population using federal, state, and local population reports and projections.

10644 (a)(2) The plan…shall include any standardized forms, tables or displays specified by the department.

Using DWR's WUE tool, which overlays a shape file of the District service area on the 2000 and 2010 Census Data sets, Camrosa obtained an estimate of District population of 29,488.

SB X7-7 Table 2: Method for Population Estimates	
Method Used to Determine Population (may check more than one)	
☐	**1. Department of Finance** (DOF) DOF Table E-8 (1990 - 2000) and (2000-2010) and DOF Table E-5 (2011 - 2015) when available
☐	2. Persons-per-Connection Method
☑	3. DWR Population Tool
☐	**4. Other** DWR recommends pre-review

SB X7-7 Table 3: Service Area Population		
Year		Population
10 to 15 Year Baseline Population		
Year 1	1998	25,687
Year 2	1999	25,888
Year 3	2000	25,221
Year 4	2001	25,798
Year 5	2002	26,346
Year 6	2003	26,899
Year 7	2004	27,459
Year 8	2005	28,024
Year 9	2006	28,594
Year 10	2007	29,170
5 Year Baseline Population		
Year 1	2003	26,899
Year 2	2004	27,459
Year 3	2005	28,024
Year 4	2006	28,594
Year 5	2007	29,170
2015 Compliance Year Population		
2015		29,488

5.4.1 Population Methodologies

5.4.1.3 DWR Population Tool

5.5 Gross Water Use

LAW

10608.12 (g) "Gross Water Use" means the total volume of water, whether treated or untreated, entering the distribution system of an urban retail water supplier, excluding all of the following:

(1) Recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier

(2) The net volume of water that the urban retail water supplier places into long term storage

(3) The volume of water the urban retail water supplier conveys for use by another urban water supplier

(4) The volume of water delivered for agricultural use, except as otherwise provided in subdivision (f) of Section 10608.24.

California Code of Regulations Title 23 Division 2 Chapter 5.1 Article Section 596 (a) An urban retail water supplier that has a substantial percentage of industrial water use in its service area is eligible to exclude the process water use of existing industrial water customers from the calculation of its gross water use to avoid a disproportionate burden on another customer sector.

Gross water use is considered all of the potable water that enters the potable distribution system. Recycled water, including, as discussed in Section 4.4, the nonpotable distribution system and the Title-22 recycled water produced at the CWRF, is excluded from the gross water calculation. Camrosa does not place any water into long-term storage. While Camrosa does convey surplus Conejo Creek water to Pleasant Valley County Water District, that water is not counted as part of Camrosa's gross water use to begin with, nor is PVCWD an urban water supplier (they serve exclusively agricultural parcels). The volume of water delivered for agricultural purposes is also excluded from gross water calculations, as noted in SB X7-7 Table 4. Camrosa does not account for process water.

5.5.1 Gross Water Tables

SB X7-7 Table 4: Annual Gross Water Use *								
	Baseline Year *Fm SB X7-7 Table 3*	**Volume Into Distribution System** *Fm SB X7-7 Table(s) 4-A*	**Deductions**					**Annual Gross Water Use**
			Exported Water	Change in Dist. System Storage (+/-)	Indirect Recycled Water *Fm SB X7-7 Table 4-B*	Water Delivered for Agricultural Use	Process Water *Fm SB X7-7 Table(s) 4-D*	
10 to 15 Year Baseline - Gross Water Use								
Year 1	1998	9,356			0	2,125	0	7,231
Year 2	1999	12,394			0	2,947	0	9,447
Year 3	2000	12,663			0	3,152	0	9,511
Year 4	2001	11,951			0	3,022	0	8,929
Year 5	2002	13,983			0	3,504	0	10,479
Year 6	2003	12,145			0	3,342	0	8,803
Year 7	2004	13,444			0	2,265	0	11,179
Year 8	2005	12,156			0	1,706	0	10,450
Year 9	2006	12,619			0	2,056	0	10,563
Year 10	2007	14,309			0	2,263	0	12,046
10 - 15 year baseline average gross water use								**10,004**
5 Year Baseline - Gross Water Use								
Year 1	2003	12,146			0	3,342	0	8,804
Year 2	2004	13,445			0	2,265	0	11,180
Year 3	2005	12,157			0	1,706	0	10,451
Year 4	2006	12,620			0	2,056	0	10,564
Year 5	2007	14,310			0	2,263	0	12,047
5 year baseline average gross water use								**10,609**
2015 Compliance Year - Gross Water Use								
2015		8,954			0	1,005	0	7,949
NOTES:								

SB X7-7 Table 4-A(1): Volume Entering the Distribution System(s)				
Name of Source		Imported SWP Water		
This water source is:				
☐	The supplier's own water source			
☑	A purchased or imported source			
Baseline Year Fm SB X7-7 Table 3		Volume Entering Distribution System	Meter Error Adjustment* *Optional (+/-)*	Corrected Volume Entering Distribution System
10 to 15 Year Baseline - Water into Distribution System				
Year 1	1998	6,665		6,665
Year 2	1999	8,613		8,613
Year 3	2000	9,084		9,084
Year 4	2001	8,626		8,626
Year 5	2002	10,169		10,169
Year 6	2003	7,956		7,956
Year 7	2004	9,118		9,118
Year 8	2005	8,540		8,540
Year 9	2006	8,964		8,964
Year 10	2007	10,369		10,369
5 Year Baseline - Water into Distribution System				
Year 1	2003	7,956		7,956
Year 2	2004	9,118		9,118
Year 3	2005	8,540		8,540
Year 4	2006	8,964		8,964
Year 5	2007	10,369		10,369
2015 Compliance Year - Water into Distribution System				
2015		5,566		5,566

SB X7-7 Table 4-A(2): Volume Entering the Distribution System(s)				
Name of Source		Groundwater		
This water source is:				
☑	The supplier's own water source			
☐	A purchased or imported source			
Baseline Year Fm SB X7-7 Table 3		Volume Entering Distribution System	Meter Error Adjustment* *Optional* (+/-)	Corrected Volume Entering Distribution System
10 to 15 Year Baseline - Water into Distribution System				
Year 1	1998	2,692		2,692
Year 2	1999	3,782		3,782
Year 3	2000	3,580		3,580
Year 4	2001	3,326		3,326
Year 5	2002	3,815		3,815
Year 6	2003	4,190		4,190
Year 7	2004	4,327		4,327
Year 8	2005	3,617		3,617
Year 9	2006	3,656		3,656
Year 10	2007	3,941		3,941
5 Year Baseline - Water into Distribution System				
Year 1	2003	4,190		4,190
Year 2	2004	4,327		4,327
Year 3	2005	3,617		3,617
Year 4	2006	3,656		3,656
Year 5	2007	3,941		3,941
2015 Compliance Year - Water into Distribution System				
2015		3,388		3,388

5.5.2 Indirect Recycled Water Use Deduction

Camrosa does not use indirect recycled water.

5.5.3 Process Water Use Deduction

Camrosa does not account for process water.

5.6 Baseline Daily Per Capita Water use

SB X7-7 Tables 5 and 6 establish Camrosa's baseline GPCD.

SB X7-7 Table 5: Gallons Per Capita Per Day (GPCD)

Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Annual Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use (GPCD)
10 to 15 Year Baseline GPCD				
Year 1	1998	25,687	7,231	251
Year 2	1999	25,888	9,447	326
Year 3	2000	25,221	9,511	337
Year 4	2001	25,798	8,929	309
Year 5	2002	26,346	10,479	355
Year 6	2003	26,899	8,803	292
Year 7	2004	27,459	11,179	363
Year 8	2005	28,024	10,450	333
Year 9	2006	28,594	10,563	330
Year 10	2007	29,170	12,046	369
10-15 Year Average Baseline GPCD				**326**
5 Year Baseline GPCD				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use
Year 1	2003	26,899	8,804	292
Year 2	2004	27,459	11,180	363
Year 3	2005	28,024	10,451	333
Year 4	2006	28,594	10,564	330
Year 5	2007	29,170	12,047	369
5 Year Average Baseline GPCD				**337**
2015 Compliance Year GPCD				
2015		29,488	7,949	241
NOTES:				

SB X7-7 Table 6: Gallons per Capita per Day *Summary From Table SB X7-7 Table 5*	
10-15 Year Baseline GPCD	326
5 Year Baseline GPCD	337
2015 Compliance Year GPCD	241
NOTES:	

5.7 2015 and 2020 Targets

SB X7-7 Tables 7 through 9 below establish Camrosa's 2015 actual (241), 2015 interim target (324), and 2020 target (261) GPCD. As can be seen in Table 9, Camrosa is ahead of its interim and 2020 targets. Camrosa's steadily decreasing GPCD is due in part to the transfer of potable demand off onto our nonpotable and recycled water systems, and in part to increased awareness and water consciousness among our customers. Like many urban water suppliers across the state, Camrosa has seen significant increases in efficiency—and reductions in deliveries—each of the years since the 2010 UWMP, in large part because a pattern of dry weather has evolved into drought. 2015 in particular was an exceptionally low water-demand year, as Governor Brown instituted the first-ever statewide mandatory reduction in urban potable water production. While some rebound is likely to occur should the drought end and statewide emergency regulations be lifted, it is expected that a significant amount of demand reduction accomplished during the drought will persist long term.

SB X7-7 Table 7: 2020 Target Method *Select Only One*		
Target Method		Supporting Documentation
☑	Method 1	SB X7-7 Table 7A

SB X7-7 Table 7-A: Target Method 1 20% Reduction	
10-15 Year Baseline GPCD	2020 Target GPCD
326	261

SB X7-7 Table 7-F: Confirm Minimum Reduction for 2020 Target			
5 Year Baseline GPCD From SB X7-7 Table 5	Maximum 2020 Target*	Calculated 2020 Target	Confirmed 2020 Target
337	321	332	321
** Maximum 2020 Target is 95% of the 5 Year Baseline GPCD.*			

SB X7-7 Table 8: 2015 Interim Target GPCD		
Confirmed 2020 Target	10-15 year Baseline GPCD	2015 Interim Target GPCD
321	326	324

SB X7-7 Table 9: 2015 Compliance								
Actual 2015 GPCD	2015 Interim Target GPCD	Optional Adjustments *(in GPCD)*					2015 GPCD (Adjusted if applicable)	Did Supplier Achieve Targeted Reduction for 2015?
		Extraordinary Events	Weather Normalization	Economic Adjustment	TOTAL Adjustments	Adjusted 2015 GPCD		
241	324	From Methodology 8 (Optional)	From Methodology 8 (Optional)	From Methodology 8 (Optional)	0	240.6541597	240.6541597	YES

6 System Supplies

6.1 Purchased or Imported Water

Camrosa depends exclusively upon Calleguas Municipal Water District, a Metropolitan Water District wholesaler, for its imported potable water supply. Most of the water Calleguas delivers is State Water Project from the Sacramento-San Joaquin Delta, though Colorado River water is blended in when SWP supplies are low, as was the case in the fall of 2015, as persistent drought conditions and reduced SWP allocations were threatening area storage and supply. While the quantity of imported State Water Project water Camrosa relies on to meet normal-year demands has been significantly reduced from historical levels over the last 20 years due to the development of local resources, as of 2015 SWP deliveries still constitute approximately 60 percent of the District's potable supply, making the reliability of Camrosa's potable distribution system fairly dependent upon the reliability of Calleguas, Metropolitan, and the State Water Project. Camrosa's primary strategy of reducing demand on imported water, however, should reduce that dependence to less than 50 percent by 2020, with a goal of less than 33 percent by 2025.

Since 1991, Metropolitan has made significant investments in conservation, water recycling, storage and improved supplies. Groundwater storage programs with Semitropic Water Storage District and Arvin-Edison Water Storage District increase Metropolitan's out-of-region storage capacity of state water project water by 600,000 AF. Additional groundwater storage programs have been established with the San Bernardino Valley MWD, and Kern-Delta Water District that will expand that capacity further. The completion of Diamond Valley Reservoir has added 800,000 AF of supply to southern California's mix of resources available to meet dry year needs. In addition, Metropolitan is a strong proponent of the California Water Fix, the latest development in plans to reroute Sierra Nevada mountain runoff around (in this case, under) the Delta to increase reliability of State Water Project supplies. During the 2015 drought, Metropolitan instituted its Water Supply Allocation Plan, instituting on Calleguas and its member agencies a 16.5-percent reduction in imported water allocations.

Since 1991, Calleguas Municipal Water District has implemented a strategy for meeting rising water demands in its service area by implementing both regional and local supply-augmentation and demand-management programs. The Las Posas Aquifer Storage and Recovery Project has been an ongoing project that, according to Calleguas's 2015 Urban Water Management Plan, has the goal of maintaining at least 20,000 AF of water in storage in the Las Posas Basin, with an estimated extraction capacity of approximately 70 cubic feet per second (CFS). Currently, Calleguas has 12,000 AF of groundwater stored in the East Las Posas Basin. The Lake Bard filtration plant has a treatment capacity ranging from 30 to 100 cfs. At high flow, it would empty Lake Bard in 5.5 weeks, at low flow in four months.

Despite these investments, recent allocation reductions and the ongoing drought demonstrate that improvements at the regional and local levels of the SWP distribution system only go so far, and reinforce that the primary threat to Camrosa's supply of potable water is the relative health of the Sacramento-San Joaquin Delta and the SWP's vulnerability to legislative rulings, climatic variations, and catastrophic interruptions of service. As such, and as discussed throughout this plan, Camrosa's primary strategy is to develop local alternatives to imported SWP water.

The District's imported water purchases peaked in the drought year of 1990 at 11,479 AF. Faced with dramatically rising water costs, several large agricultural customers shifted from Camrosa to alternative sources such as private wells or surface water diversion, and Camrosa began developing projects to increase its self-reliance; an effort that persists today as the driving force of the District's strategic plan.

Over the last ten fiscal years, Camrosa has purchased an average of 7,471 AFY from Calleguas, with imports as high as 10,265, in FY2007, and as low as 5,566, in FY2015. The majority of the water Camrosa imports from Calleguas goes to customers in the M&I sector; over the last seven years, since the majority of agricultural customers who were able to transfer their demand to the nonpotable system, approximately 15 percent of the water Camrosa imports from Calleguas goes to agricultural customers.

Actual and future imported water demands are provided in Tables 6-8 and 6-9, respectively.

6.2 Groundwater

Camrosa overlays four groundwater basins: the northeast Pleasant Valley, Santa Rosa, Tierra Rejada, and the Perched Aquifer. Camrosa has one well in each the Pleasant Valley and Tierra Rejada Basins, and we are in the process of constructing a second well in the PV Basin. Eight wells draw from the Santa Rosa Basin: five that are connected to the potable system, one of which is being rehabilitated after more than a decade offline; and three that contribute to the nonpotable system. The Perched Aquifer is the supply for the Round Mountain Water Treatment Plant, the 1 MGD desalination facility we constructed in 2014.

The PV Basin and the western Santa Rosa Basin (a portion approximately 20 percent of the basin's area west of the Bailey Fault) fall under the jurisdiction of the Fox Canyon Groundwater Management Agency (FCGMA). Camrosa has pumping rights in the PV Basin under an historical allocation, and no wells in the FCGMA portion of the Santa Rosa Basin. Camrosa's FCGMA allocation in the PV Basin is 806 AFY, and additional pumping allocations are accumulated through the Conejo Creek pumping program, on a one-to-one basis in exchange for nonpotable Conejo Creek surface water delivered to PVCWD (described in detail in Section 6.3 and Appendix H1). The new well being drilled in the PV Basin is being designed at 1,000 gpm; a conservative estimate puts expected capacity at 1,500 AFY, beginning in 2017. A third Pleasant Valley well, of equal size, is planned, though it's unlikely to be built before 2020, as Camrosa, Ventura County, and the FCGMA would all like to see several years of data reflecting the impact of the well currently under construction on the local groundwater area—to which end Camrosa will be drilling monitoring wells in 2017.

6.2.1 Basin Descriptions

> 10631 (b) If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:
>
> (2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater.

Pleasant Valley Basin

At 21,600 acres, the Pleasant Valley basin is one of the larger basins in the county, and is one of the seven major basins within FCGMA's jurisdiction. The northeastern portion of the PV Basin underlies the western portion of the Camrosa Water District, in general the Mission Oaks area of the City of Camarillo. The Pleasant Valley Groundwater Basin underlies Pleasant Valley in southern Ventura County. The basin is bounded on the north by the Camarillo and Las Posas Hills and the south by the Santa Monica Mountains. The eastern boundary is formed by a constriction in Arroyo Santa Rosa. The basin is bounded on the west by the Oxnard subbasin of the Santa Clara River watershed. Ground surface elevations range from about 15 feet in the west to about 240 feet above sea level in the east. The upper stratum of the Pleasant Valley Basin is composed of recent and Upper Pleistocene alluvial sands, gravels, silts and clays. The aquifers in this zone are generally unconfined and vary in thickness from a few feet to several hundred feet. The permeable lenses yield little water to wells owing to rapid thinning and predominance of fine-grained

materials. The shallow aquifers in the Pleasant Valley Basin are equivalent, but not connected with, the Oxnard aquifer lying to the West. Underlying the Pleasant Valley area at depths from 400 to 1,500 feet is a prominent zone of marine sands and gravels known as the Fox Canyon Aquifer. The Fox Canyon Aquifer is the lower most member of the Pleistocene San Pedro formation and forms the major producing zone of the Pleasant Valley Ground water Basin. The aquifer is confined and is 100 to 300 feet thick. Permeable deposits within the upper Santa Barbara Formation underlie the Sand Pedro Formation and contain fresh groundwater of only minor importance.

Camrosa operates one well (Woodcreek) within the basin. In 1975, DWR estimated the total groundwater storage capacity of the Pleasant Valley Basin to be 1,886,000 AF. Between 198,000 and 247,000 AF are recoverable. Although the perennial yield of this basin has not yet been determined, in 1999 it was estimated the applied water recharge of the basin to be approximately 11,400 AF while the average annual extractions was estimated at 18,500 AF.

The Fox Canyon GMA's allocation for the Woodcreek Well is based on an allowance for the residential development overlying the Fox Canyon Aquifer at a rate of one acre foot per acre of land developed. As of 2015, Camrosa's allocation is approximately 806 AFY (currently reduced as per FCGMA Emergency Ordinance E, which implements a phased-in limitation of 20 percent on M&I extractors). Because this is an annual allocation, water not pumped cannot be carried over from one year to the next.

The District has also operated the Woodcreek Well as an aquifer storage and recovery facility whenever surplus state water is available during the winter months. It is not likely, however, that any significant additional quantities of water will be injected until such an enterprise becomes economical again.

Perched Aquifer

The Perched Aquifer, from which the Round Mountain Water Treatment Plant draws its supply, is part of a collection of the uppermost water-bearing units overlying the eastern Pleasant Valley Basin in hydraulic connection with the surface and associated stream flow of Calleguas and Conejo Creeks. The aquifer fluctuates according to surface flows and precipitation, and as such, its exact extent is difficult to judge. It grew increasingly salty over the latter half of the 20th century and not been used or monitored regularly for several decades prior to Camrosa's development of the resource in 2014. The usable capacity of the Perched Aquifer is based on the pumping test results carried out on a specific well (the University Well) for a specific project (the RMWTP), and is not meant to apply to the entire shallow aquifer system. Due to the fact that the Perched Aquifer has not been used as a source to supply significant volumes of water for over thirty years, it is difficult to know how the aquifer will respond to renewed extraction at the proposed volumes. However, based on the *Aquifer Pumping Test of Camrosa Water District's University Well* (Brown 2010; Appendix K1), the most recent hydrogeologic investigation, extractions are planned at a level that can be sustained indefinitely.

Santa Rosa Basin

The Santa Rosa Groundwater Basin underlies about 3,800 acres (5.9 square miles) and is wholly contained within the District boundaries. It is a broad, elliptical, and flat-bottomed valley. The dominant structural element of the basis is the Santa Rosa Syncline, a downward trending fold lying east to west and extending from the east end of Tierra Rejada Valley westward into Pleasant Valley. Several major faults occur in the Santa Rosa Basin, the largest of the geologic strata of 500 to 5,000 feet along the northern edge of the basin. The other major fault, the Bailey Fault, runs northeast to southwest near the western end of the basin, and separates the northwestern third of the basin from the rest of the basin. The Bailey Fault is geologic and political boundary within the basin.

Groundwater in the Santa Rosa Basin is extracted from sediments of Holocene, Pleistocene, Upper Pleistocene, and Miocene age. There are four major water-bearing zones within the basin; conglomerate beds within the Conejo Volcanics, conglomerate and sandstone within the Santa Margarita Formation, sand and gravel in the Saugus Formation, and alluvium. Structurally, the Conejo Volcanics underlie the basin and form the base on which the formations lie. The Santa Margarita Formation is peculiar to the area of the basin lying east of the Bailey Fault and lies atop the Conejo Volcanics. Over the Santa Margarita Formation

lies a confining layer and over that, the alluvium. The area west of the Bailey Fault consists primarily of the Saugus Formation, a combination of Fox Canyon and San Pedro Formations. The Saugus Formation evident within the Santa Rosa Basin is the result of an outcropping of the larger Fox Canyon and San Pedro Formations west of the valley. This outcropping pinches off at the western end of the valley and then fans out into the valley, stopping at the Bailey Fault barrier. Due to the pinching off of the Saugus Formation, the Santa Rosa Groundwater Basin is considered to be a confined basin, separate from the larger western water bearing zones.

In 1975, the California Department of Water Resources (DWR) estimated the total groundwater storage capacity of the Santa Rosa Basin to be 94,000 AF. The voluntary AB 3030 Santa Rosa Groundwater Management Plan (SRGMP) completed in 2014 estimates safe yield at 3,320 AFY.

The presence of nitrates above acceptable drinking water regulations require that Santa Rosa Basin groundwater be blended with imported water at an average ratio of between 1:1 and 2:1 (imported:local) to improve its quality before being injected into the potable distribution system; the blend over the last five years has averaged just over 1:1. Constructing a desalination facility in the Santa Rosa Basin would allow Camrosa to produce drinking water straight from the Santa Rosa Basin, negating the need to blend imported water to control for nitrates. Coupled with increased capacity in the PV Basin, described in Section 6.2.2, and the Round Mountain Water Treatment Plant in the Perched Aquifer, Camrosa has capital improvement projects in various stages of development that will allow the District by 2020 to offset significant quantities of imported water and provide the majority of its supplies from local resources.

While Camrosa Water District does not have any wells in the portion of the Santa Rosa Basin west of the Bailey Fault, private well owners there report extractions to the GMA semiannually. Because high penalties are applied to extractions above allowed levels, pumpers normally stay within their allocations.

Pumping in the Santa Rosa Basin varies significantly year to year, from a low of 1,924 in 1998 to a high of 3,931 in 2013. Besides the eight active wells in the Santa Rosa Basin, Camrosa is currently rehabilitating an additional potable water well, the Penny Well. This potable water well was taken offline in the late 1990s in an abundance of caution when trace pesticide contamination was detected (at levels far below the MCLs) in the well product. It was originally conceived, once rehabilitated, as a nonpotable-system well, but quality testing in 2014 indicated that the contamination plume has passed, and the well will be returned to potable service, in FY2017, producing 500 AFY. As current pumping capacity exceeds the 3,320 AFY established as safe yield by the SRGMP, the addition of the Penny Well will not immediately increase production in the Santa Rosa Basin so much as provide pumping flexibility and improve our ability to adaptively manage the basin; once Camrosa completes its planned groundwater recharge projects in the Santa Rosa Basin, however, the Penny Well will contribute to the District's increased pumping capacity.

Because it is impaired by nitrates—naturally occurring, and as a result of land use, including septic systems, horse boarding, and agricultural fertilizer—the Santa Rosa Basin is listed as a medium-priority basin. Management under a groundwater sustainability plan and agency, as required by the Sustainable Groundwater Management Act, is described in Section 6.2.2 below.

Tierra Rejada Basin

According to J.P. Schaaf's 1998 MA thesis, *Hydrogeology of the Tierra Rejada Groundwater Basin*, the Tierra Rejada Basin is approximately 1,900 acres in size and is recharged by a watershed area of approximately 4,500 acres.

Rainfall provides about 85 percent of basin water supply. The peripheral drainage area is underlain by non-water bearing rocks or sediments. Groundwater is stored primarily in sandstones and conglomerates with a matrix predominantly composed of volcanic rock of the Topanga Formation, and in fractured basalts and basalt breccias of the Conejo Volcanics. Bedrock formations of marine and non-marine origin present in the basin area include the Saugus Formation, Las Posas Sand, Monterey Shale, Topanga or Calabasas Formation, Conejo Volcanic, and Sespe Formation. Surficial deposits generally overlay the bedrock

formations in the basin and include alluvium, and colluvium. The rock sequence in which fresh groundwater is present ranges in age from Oligocene (38 million years ago) to Recent.

Within the basin, the oldest Sespe Formation is water-bearing and known to generally underlie the Conejo Volcanics. The Sespe Formation outcrops on the northern and southern ridges. The compacted formation is mostly sandstone of various colors and contains metavolcanic and quartzitic rocks. This base formation is estimated to be a mile thick. The Conejo Volcanics underlie the entire basin south of the Simi Fault and were formed during the Miocene (25 to 5 million years ago) period. Thickness estimates range from 1,000 to 2,000 feet, with deeper wells penetrating fractured upper layers providing ample rates of water extraction. The upper portion has been described as predominantly andesitic-basaltic flows and breccias; gray, maroon-gray and brown aphantic porphyritic rocks, vaguely stratified, flows range from platy to massive, coherent but much fractured; deposited as flows and breccias; contain some epiclastic volcanic sediments and minor reddish, scoriaceous pyroclastic horizons; probably emplaced sub aerially" (Dibblee, 1992).

Camrosa's well encountered the fractured volcanics at 290 foot depth where brown sandstones of the overlying Topanga formation ends and the gray Conejo Volcanics begins. The well is sealed to 300 feet and produces water from 300 to 620 feet below the surface.

The Topanga Formation overlying the Conejo Volcanics was deposited during the same era. Rocks of the formation were deposited during a period of marine exposure and consist mainly of medium to course grained sandstone and volcanic pebble conglomerate. Marine influence is also seen in Monterey shale outcrops in the hills south of the basin and along the Semi fault within the northwest area of the basin. Some Los Posas sand of marine origin lies on the south side of the fault. Also in contact with the fault is the Saugus formation which runs toward the northwest. Finally, the main basin is covered by younger sediments of Holocene era (10,000 years ago to the present), with recent alluvium accumulation along stream courses with a maximum thickness of 50 to 80 feet in the central basin.

The water table elevation decreases from approximately 600 feet mean sea level (MSL) in the eastern portion of the basin to 450 feet in the western portion of the basin. The saturated thickness increases from east to west across the basin. In the north central portion of the basin the aquifer reaches a maximum thickness of approximately 700 to 800 feet.

In December 2009, Norman N. Brown, PhD, P.G., conducted a second analysis of the Tierra Rejada Basin, *Groundwater Geology and Yield Analysis of the Tierra Rejada Basin*, on behalf of the District. Brown concluded:

- Groundwater levels observed over a long-term base period including two wet-dry climatic cycles shows that the average groundwater production was within the basin yield over the period 1944-1996;
- Current and recent conditions indicate that existing production and possibly new production can be managed within basin yield. It is unknown if production from a proposed new District well would result in total basin production greater than or less than the historic average over the base period 1944-1996;
- An increase in basin yield may be possible by active management of basin storage and pumping distribution;
- Limited water quality data for the basin show increases in TDS, chloride and sulfate during the last 10 years; concentrations are within drinking water standards. Nitrates concentrations in 2008 exceeded the drinking water standards for four wells in the central portion of the basin.

Inflows and outflows for the Tierra Rejada Basin currently total about 6,200 AF in an average rainfall year. The District's well gradually reduced production from 2006 to 2015, and is currently offline awaiting rehabilitation. Construction of a second well in the basin is being considered as part of the District's Capital Improvement Plan.

6.2.2 Groundwater Management

> 10631 (b) ...If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:
>
> (1) A copy of any groundwater management plan adopted by the urban water supplier…or any other specific authorization for groundwater management.
>
> (2) …For basins that a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree.

Camrosa's groundwater basins are its primary resource for reducing reliance on imported SWP water; their health and sustainability is in the District's best interest, and they are managed accordingly. Camrosa monitors and records water levels, both static and running, of all its wells, and performs routine quality monitoring, all on a monthly basis.

Pleasant Valley Basin

The Pleasant Valley Basin is under the jurisdiction of the Fox Canyon Groundwater Management Agency, and a basin wide management plan was incorporated into the May 2007 FCMGA Management Plan update (Appendix H2). Camrosa reports groundwater extractions from the PV basin on a semiannual basis. In the spring of 2014, Camrosa renewed agreements for the sale of Conejo Creek water to Pleasant Valley County Water District. In order to accommodate the transfer of PVCWD FCGMA pumping credits in the PV Basin in exchange for Conejo Creek surface water (see Section 6.3 for details), the Conejo Creek Water Pumping Program was created. This program, codified under FCGMA Resolution 2014-01, stipulates that PVCWD retire, and Camrosa accrue, one acre foot of pumping allocations for each acre foot of nonpotable Conejo Creek surface water Camrosa delivers to PVCWD, up to 4,500 AFY. The term of the agreement is forty years, and pumping allocations do not expire. Camrosa is required to submit an annual report detailing deliveries to PVCWD, pumping allocations accumulated and retired, and the balance of pumping allocations remaining. Camrosa and FCGMA staff meet annually to review the report, and discuss any concerns. As of 2015, Camrosa had accumulated 3,385 AF under the Conejo Creek Water Pumping Program, and exercised 77 AF of its extraction allocations earned under the program. The agreement stipulates that Camrosa's historical allocation (of 806 AFY, reduced of late under Emergency Ordinance E) is to be extracted first. The District has only a single well in the PV Basin, the Woodcreek Well, which currently pumps approximately 700 gpm, but in the future, once subsequent wells have been developed, will have the ability to retire allocations at a faster rate.

Camrosa is constructing a second well in the PV Basin, a 1,000 gpm drinking water well, is projected, conservatively, to provide upwards of 1,500 AFY of a new, local supply. In order to monitor the effect this additional pumping will have on the basin, Camrosa is planning to construct two monitoring wells in FY2017. Monitoring results will be shared and discussed with FCGMA staff as they are accumulated. Camrosa has plans to construct a third well in the PV Basin to take advantage of the credits the District will be accumulating by delivering Conejo Creek water to PVCWD. Construction on such a well is not likely to begin until Camrosa has had the opportunity to monitor groundwater elevations and quality, to which end we will be constructing monitoring wells in two strategic locations within the PV Basin, most likely some time in 2017. Therefore, while Camrosa considers the third PV well imminent, timing on its construction is uncertain; likely it will not be before 2020.

Because the PV Basin is considered by the State Water Resources Control Board to be a high-priority groundwater basin in critical overdraft, the Sustainable Groundwater Management Act (SGMA) of 2014 requires that a groundwater sustainability agency (GSA) develop and implement a groundwater sustainability plan (GSP). As the FCGMA is the default and exclusive GSA for the areas under its

jurisdiction, that agency will be writing the plan. In fact, a draft of the GSP is already in development, and the FCGMA expects to have the plan completed by the end of 2016.

Perched Aquifer

Camrosa has commissioned two reports on the Perched Aquifer, *Shallow Groundwater of the Eastern Pleasant Valley Basin* (Appendix K2) and *Northeast Pleasant Valley Basin Groundwater Surface Water Study* (Appendix K3). Both indicate support for responsible pumping of the semi-confined brackish groundwater in the water-bearing units overlying the eastern Pleasant Valley Basin. Because the RMWTP is such a key facility in the District's long-term strategy to permanently reduce demand on imported water (and after more than $9 million of well rehabilitation and infrastructure construction to build it), it is in Camrosa's best interest to manage the Perched Aquifer sustainably in order to produce water from it indefinitely.

Santa Rosa Basin

Camrosa commissioned a voluntary AB3030 groundwater management plan on the Santa Rosa Basin in 2014. Although it outlines a number of management strategies, because the basin is considered a medium-priority basin by the SWRCB, SGMA requires it have a GSA and a GSP to dictate the management of the basin. The western fifth of the basin, the portion west of the Bailey Fault, falls under the jurisdiction of the FCGMA, and will likely be governed by the GSP that agency is developing. The portion east of the Bailey Fault will fall under the jurisdiction of the Santa Rosa GSA, which at the time of writing is being formed as a Joint Power Association (JPA) between Camrosa Water District, the City of Camarillo and the County of Ventura.

Among the plans Camrosa has for groundwater management projects is a groundwater recharge project in the Santa Rosa Basin, a pilot recharge project for which is being commissioned in FY2017. Santa Rosa is currently Camrosa's primary groundwater-producing basin, and the wells there, including the Penny Well currently being rehabilitated, have design capacities of approximately 7,200 AFY (original design information is missing on three wells acquired by the District with the Santa Rosa Mutual Water Company in 2000; for those wells, pump tests and/or historical production averages have been substituted). Production, however, is limited by the safe yield, established by the 2014 Santa Rosa Basin Groundwater Management Plan, of 3,320 AFY. Three of the Santa Rosa Basin wells are currently dedicated to the nonpotable system, leaving approximately 4,700 AFY of potable pumping capacity in the Santa Rosa Basin. Because Santa Rosa Basin groundwater is impacted by nitrates, Camrosa has to blend imported water at several of its sites, further reducing the functional capacity of wells dedicated to the potable system to approximately 2,300 AFY over the last 15 years. Recharging groundwater would allow Camrosa to increase the safe yield of the Santa Rosa Basin and bring the production of the District's Santa Rosa Wells up to their design capacity.

In addition to the Penny Well, Camrosa is also considering constructing a groundwater desalination facility in the Santa Rosa Basin to improve groundwater quality and allow Camrosa to discontinue blending, thereby reducing SWP imports. The project is still in the conceptual phase—a feasibility study is being commissioned for FY2017—and the size of the desalter will be determined once the pilot groundwater recharge study is complete. The basin's ability to take recharge, plus the amount of water available to use for recharge, is a critical parameter for the design of the desalter.

Worksheet 6.2.2 demonstrates the current capacity of the Santa Rosa Basin, safe yield, and the required groundwater recharge to accommodate groundwater production at full capacity.

Worksheet 6.2.2. Santa Rosa Basin Pumping Capacity and Recharge Requirements	
Well	**AFY**
Conejo 2	700
Conejo 3	1,300
Conejo 4	1,100
Santa Rosa 3	1,000
Santa Rosa 8*	1,100
Santa Rosa 9†	550
Santa Rosa 10‡	950
Penny Well	500
Total Santa Rosa Pumping Capacity	**7,200**
Safe Yield	3,320
Recharge requirement to accommodate production at full capacity	**3,380**
Design capacity not available for the following wells; capacity based on: * SR8: 15-year average since acquisition of well † SR9: 7-year average since rehabilitation of well ‡ SR10: Pump test	

Tierra Rejada Basin

Camrosa had plans to develop a voluntary AB3030 groundwater management plan on the Tierra Rejada Basin, but after the passage of the Sustainable Groundwater Management Act, only a GSP can be written. The Tierra Rejada Basin is listed as a low-priority basin in the 2014 CASGEM Basin Prioritization Results, so a GSP is not required, but should a groundwater management plan be written on the basin, it would need to conform to the GSP requirements of SGMA. At the time of writing, Camrosa's well in the Tierra Rejada Basin is offline, awaiting rehabilitation. The basin is small, and there are few other pumpers, all of whom are agricultural producers and have a long history of sustainable self-management. The Tierra Rejada Basin responds predictably to precipitation and the behavior of other pumpers, and Camrosa adjusts its extractions accordingly.

6.2.3 Overdraft Conditions

10631 (b)(2) For basins that have not been adjudicated, (provide) information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.

The Perched Aquifer, being semi-confined and influenced primarily by communication with surface water flows from Conejo Creek and surround lands, is not in overdraft, nor, because of the readiness with which it is recharged, likely to be. The CASGEM Basin Prioritization list, finalized in 2014, lists the Pleasant Valley Basin as a high-priority basin; the Final List of Critically Overdrafted Basins, published on September 25, 2015, includes the PV Basin. The Santa Rosa Basin, while listed as a medium-priority basin because of its salt impairments, is not in overdraft. The Tierra Rejada Basin is not in overdraft.

6.2.4 Historical Groundwater Pumping

> 10631 (b) ...If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:
>
> (3) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

Groundwater provides approximately 40 percent of Camrosa's potable water supply; the rest is met by imported SWP water. That 40 percent acts as a buffer against increasingly unreliable SWP supplies; not only does it help keep rates lower and more stable, compared with agencies that depend on the legislative, political, and meteorological whims that affect Delta supply, but also in the worst-case scenario of an extended interruption in importer-water service, Camrosa has more than sufficient supply from its groundwater resources to keep its customers hydrated and hygienic indefinitely. It is Camrosa's primary supply strategy to significantly increase this ratio by bringing more local projects on line, such as the RMWTP in 2015, and a Santa Rosa groundwater recharge project, a Santa Rosa desalter, and additional wells in the PV Basin.

The RMWTP, a 1 MGD reverse-osmosis brackish groundwater desalination facility, was completed in 2014, and only started producing at capacity in August of 2015. Small refinements remain to ensure the plant runs at an optimal recovery rate, and the plant is expected to produce 850 AFY. This represents 10-15 percent of the SWP water Camrosa imports from Calleguas.

The Woodcreek Well, Camrosa's well in the Pleasant Valley Basin, was out of service for 17 months between 2013 and 2014; it required significant rehabilitation to be returned to service. Pleasant Valley Well #2, which is being constructed during 2016, will add an additional 1,500 AFY of local supply to Camrosa's supply portfolio.

As Table 6-1 indicates, pumping in the Santa Rosa Basin, Camrosa's primary source of groundwater, increased dramatically in 2013 and 2014, as the drought intensified; this aligns with Camrosa's strategy of relying on the basin in times of drought and/or reduced imported supply. In 2015, Camrosa experienced operational difficulties at some of its wells in the Santa Rosa Basin, and pumping dropped off. As these operational challenges are corrected, production in the Santa Rosa Basin will increase again. The basin recharges readily, and pumping above the safe yield of 3,320 AFY when drought conditions impinge and threaten imported supplies is not a concern; as Table 6-1 demonstrates, extractions over the last five years have averaged (3,255 AFY) less than the safe yield. The 15-year average extraction rate is 3,082 AFY.

The Tierra Rejada Well in the Tierra Rejada Basin has for many years consistently produced 400-500 AFY. Towards the end of 2015, the well was taken offline for some much-needed rehabilitation. The Tierra Rejada Basin is a predictable basin that responds well to recharge.

The projects described in this section will help further Camrosa's strategy of increasing self-reliance.

Table 6-1 Retail: Groundwater Volume Pumped						
Groundwater Type	Location or Basin Name	2011	2012	2013	2014	2015
Alluvial Basin	Perched Aquifer	0	0	0	10	263
Alluvial Basin	Pleasant Valley Basin	720	809	183	295	761
Alluvial Basin	Santa Rosa Basin	2,844	2,915	3,931	3,865	2,719
Alluvial Basin	Tierra Rejada Basin	435	514	428	443	367
	TOTAL	3,999	4,238	4,542	4,613	4,110

6.3 Surface Water

The City of Thousand Oaks discharges tertiary-treated effluent from its Hill Canyon Wastewater Treatment Plan (HCTP) into the Conejo Creek. Approximately seven miles downstream, just south of the US Highway 101 overpass and through an agreement with the City of Thousand Oaks, Camrosa exercises the city's water right and diverts the creek, returning a minimum of 6 CFS via bypass pumps for downstream beneficial uses, including habitat for the southwestern pond turtle. From the diversion, creek water is pumped to Camrosa's storage ponds, then back up into the District for agricultural and landscape irrigation. Water surplus to Camrosa's needs is delivered to Pleasant Valley County Water District, an adjoining agricultural water district. This project was first conceived in the mid 1990s, as a response to the severe drought earlier that decade. Construction was complete in 2002, and operation began in 2003. Camrosa, in conjunction with Calleguas Municipal Water District, received Local Resource Program funding from Metropolitan Water District for ten years, through 2013. When that program ended, Calleguas withdrew from the agreement, and Camrosa, Thousand Oaks, PVCWD, and the Fox Canyon Groundwater Management Agency entered into new, separate agreements to extend the diversion program 40 years and provide for the transfer of PVCWD's groundwater pumping allocations in the FCGMA to Camrosa in exchange for Conejo Creek surface water Camrosa delivers to PVCWD, on a one-to-one basis. For details of the Conejo Creek Pumping Program, see the "Agreement between T.O. and Camrosa for the beneficial use of water (Contract #10116-2013)" (Appendix J) and FCGMA Resolution 2014-01 (Appendix H1).

Through the end of FY 2015, Camrosa had delivered over 64,000 AF of nonpotable water to PVCWD, offsetting demand that would have otherwise met by pumping groundwater.

When agreements were initially made for Conejo Creek water, it was generally assumed that the City of Thousand Oaks would eventually discharge 15,000 AFY of effluent from the HCTP into Conejo Creek. Historically, Camrosa has only twice diverted more than 10,000 AFY from the creek. In the earliest years of the project, nearly all the water diverted from the creek went to PVCWD, as Camrosa's nonpotable distribution system was limited. As more accounts transferred demand to the nonpotable system, in particular some of the larger agricultural users and Leisure Village, a retirement community that uses approximately 500 AFY of nonpotable water for landscape and golf-course irrigation, the amount we sent to PVCWD and the amount we kept began to even out. As can be seen in Worksheet 6.3a, this is likely due to City of Thousand Oaks conservation directly linked to the drought, but the longevity and continuity of the trend suggests that reduced water use has become a way of life in the City of Thousand Oaks. Thus, Camrosa is planning on diverting only 9,000 AFY from the creek.

While the use of nonpotable Conejo Creek surface water within in the Camrosa service area increased steadily after the Conejo Creek project came on line and customers began transferring demand off the

potable system and onto that system, Camrosa does not expect that trend to continue. The capacity of Camrosa's nonpotable distribution system has reached the limit of what we can reliably deliver to all our customers, throughout the year. On an annual basis, it would appear that Camrosa has plenty of water to expand the nonpotable distribution system, but as that water is received steadily over the year, independent of the exaggerated annual landscape-irrigation demand curve, in the hottest, driest, and therefore highest-use months of the year, Camrosa uses all the water available in Conejo Creek, sometimes going weeks without transferring so much as a gallon to PVCWD.

Camrosa expects a small rebound from current reduced levels of water use in Thousand Oaks to bring the available water in Conejo Creek back up, but, in keeping with the average annual diversion over the last ten years (8,713 AFY), we are not expecting to divert any more than 9,000 AFY at any time in the near future. Despite slightly higher use in 2014 and 2015, due in all likelihood to a minimal precipitation, Camrosa estimates our landscape and agricultural irrigation customers will continue to average 5,000 AFY of nonpotable Conejo Creek surface water once drought conditions subside and precipitation rates return to normal. Thus, we plan on having 4,000 AFY of surplus creek water to deliver to PVCWD.

This latter projection is, however, predicated on a return to normal precipitation, for as Worksheet 6.3a demonstrates, PVCWD is the entity that sees the real consequences of decreased HCTP/Conejo Creek supply availability. While Camrosa has continued to be able to divert as much as its customers can use in the last two years, decreased diversions due to decreased HCTP flows have translated to decreased transfers to PVCWD.

Worksheet 6.3a: Transfers and Exchanges of Water (AF)

Nonpotable surface water diverted from Conejo Creek and transferred to PVCWD

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Diverted from Conejo Creek	6,110	8,436	6,769	8,810	10,027	8,405	7,789	8,906	9,462	10,229	8,701	8,351	8,397
Used in Camrosa	136	1,852	2,326	2,567	3,241	3,154	4,025	4,475	3,744	4,061	4,930	5,736	5,109
Sent to PVCWD	6,218	6,518	4,756	6,561	6,802	5,590	3,561	4,273	5,610	6,112	3,563	2,107	2,759

In addition to the nonpotable water Camrosa delivers to areas within the Fox Canyon Groundwater Management Agency area via PVCWD, we also deliver approximately 4,245 AFY to areas under FCGMA jurisdiction within Camrosa boundaries.

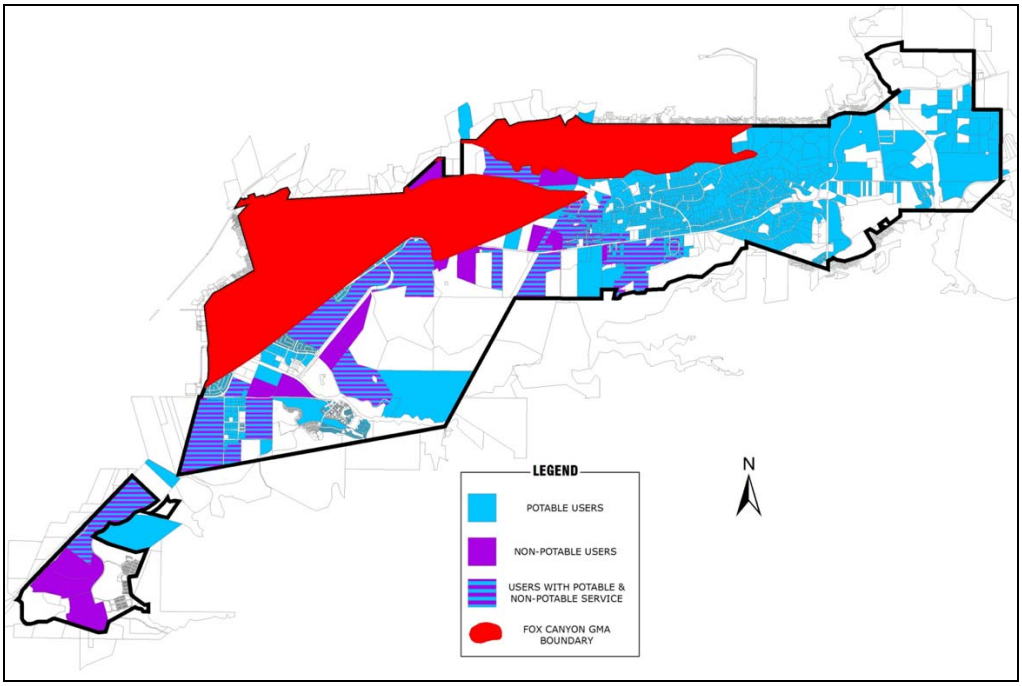

Figure 4. FCGMA area within Camrosa boundaries

Between 2008 and 2015, Camrosa imported 78,697 AF (approximately 9,837 AFY) of water into the FCGMA area, approximately 57 percent of which is delivered within the Camrosa boundaries, while the remainder is delivered to PVCWD (see Section III.F for details of the transfer and exchange program). Of that, 39,432 AF, is nonpotable, and 39,266 AF is potable (4,929 AFY and 4,908 AFY, respectively; see Worksheet 6.3b. On average, 5,728 AFY went to agricultural use, the remainder going to M&I. Over the same period of time, Camrosa has extracted only 5,376 AF (672 AFY on average) from the PV Basin via its one well there, the Woodcreek Well (see Table 6.1 for historical groundwater pumping details).

Worksheet 6.3b. Camrosa Imports into the FCGMA

	2008	2009	2010	2011	2012	2013	2014	2015	Sum	Avg.
Nonpotable Deliveries within FCGMA	6,359	4,234	5,041	6,301	6,725	4,294	2,946	3,531	**39,432**	**4,929**
Deliveries to FCGMA Area within Camrosa	769	673	768	691	613	731	839	772	**5,857**	**732**
Deliveries to FCGMA Area within PVCWD	5,590	3,561	4,273	5,610	6,112	3,563	2,107	2,759	**33,575**	**4,197**
Potable Deliveries to FCGMA (all within Camrosa)	6,308	5,561	4,655	4,329	4,443	4,849	4,914	4,206	**39,266**	**4,908**
TOTAL	**12,666**	**9,796**	**9,695**	**10,631**	**11,168**	**9,144**	**7,860**	**7,737**	**78,697**	**9,837**
Ag	**7,789**	**5,280**	**5,840**	**6,907**	**7,383**	**5,076**	**3,533**	**4,014**	**45,821**	**5,728**
M&I	**4,878**	**4,517**	**3,857**	**3,726**	**3,790**	**4,072**	**4,333**	**3,730**	**32,904**	**4,113**
Camrosa Extractions from FCGMA	820	807	862	775	567	0	735	810	**5,376**	**672**

Although the FCGMA does not account for imports into the basins under its jurisdiction, Camrosa's deliveries to customers within the FCGMA boundaries contribute to the reliability of the Santa Rosa and Pleasant Valley Basins.

6.4 Stormwater

Stormwater runoff in the westernmost portion of the District flows to the Calleguas Creek, while the rest of the District drains to the Conejo Creek. To the extent that rainfall does not overwhelm the Conejo Creek diversion structure, Camrosa captures stormwater runoff from the Santa Rosa Valley and points south, but the facility is often shut down during rain events, in part because demand falls to zero, and in part because the creek, draining such a wide, hilly expanse, is flashy, and the diversion is often inundated, even after relatively low-volume rain events.

The District is in conversation with the County of Ventura's Watershed Protection District, and other interested parties, in developing stormwater capture programs at various points in the District, primarily along the Conejo Creek in Santa Rosa Valley, but as of 2016, stormwater does not constitute a source of supply.

6.5 Wastewater and Recycled Water

> 10633 The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.
>
> (a) (Describe) the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.
>
> (b) (Describe) the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.

As described above, Camrosa Water District has two separate nonpotable distribution systems, one that serves solely Title-22 recycled water directly from the Camrosa Water Reclamation Facility (CWRF), and the other which distributes nonpotable water comprising primarily surface water diverted from Conejo Creek.

6.5.1 Recycled Water from Camrosa Water Reclamation Facility (CWRF)

Camrosa Water District owns and operates the 1.5 MGD Camrosa Water Reclamation Facility (CWRF). The tertiary-treated product is delivered directly to CSUCI and to surrounding growers as recycled irrigation supply before being sent for storage to Camrosa's storage ponds, which have a storage capacity of 300 AF.

The CWRF produces approximately 1,500 AF of tertiary-treated recycled water a year. Influent averages about 1.4 MGD. During the last half of 2015, when California was under a 25-percent reduction mandate from the Governor's office, Camrosa customers' conservation efforts reduced daily flows to about 1.3 MGD; most of Camrosa's cumulative 24-percent reduction (as of end of 2015) was likely accomplished through reductions in outdoor irrigation. About two thirds of the tertiary-treated Tittle-22 water produced at the CWRF is delivered to agricultural customers, and the rest is delivered to California State University Channel Islands (CSUCI). In addition, Camrosa provides surplus recycled water to properties outside the District boundaries. It is Camrosa's goal that all recycled water produced by the CWRF be put to beneficial use and

that none be disposed of in any other way, and Camrosa has been so successful in this that the District has had to discharge to the Calleguas Creek only once since 2000; approximately 90 AF were discharged during the severe storms of winter 2005.

It is expected that moderate growth in wastewater flows will continue on campus over the next 20 years, until the campus reaches full build-out, and that there will be modest increases in flows as the sewered area of the District continues to grow. Accordingly, forecasts for recycled water contained in this document project a recycled water availability of 1,570 AFY through 2035.

Because the District currently operates so close to its capacity, it is in the process of expanding the capacity of the CWRF up to 2.25 MGD (with peak flows at 3.24 MGD). The last of the facility modifications necessary prior to rerating was, originally, the expansion of the chlorine contact chambers. Camrosa's water quality department, however, proposed expanding the existing contact chambers' capacity by reducing the contact-time requirement. Disinfection regulations currently assume the use of chloramines, which require longer contact times, and the District's intention was to demonstrate the effectiveness of the facility, which employs free chlorine, to meet recycled water disinfection standards at a higher flow rate, eliminating the need to expand. To this end, the water quality department carried out a study to demonstrate equivalent 5-log removal of MS-2 bacteriophage virus at the existing and proposed rerated capacity, and to define an operating strategy for the plant suitable for capacities up to 3.24 MGD as required by DDW. This study consisted of three phases of testing to accomplish the objective:

1. *Tracer Testing* to measure the actual modal contact time at different flow rates;

2. *Chlorine Demand Testing* to define the relationship between chlorine dose and free chlorine residual in the contactor at different flow rates; and

3. *Virus Seeding Tests* where the contactor was seeded with MS-2 bacteriophage and the disinfection kinetics were determined at different flow rates.

In the tracer testing, the reactor was dosed with a slug addition of sodium fluoride and monitored in-situ with ion selective electrodes. The modal contact time was observed to be very close to the theoretical value at the end of the contactor for four different flow rates, which indicates effective baffling. Advective-diffusion modeling found that the reactor is characterized by a high Peclet number (>16), indicating that advection controls mass transport within the reactor.

In the chlorine demand testing, free chlorine was monitored along the contactor at three different doses, 6 mg/L, 8 mg/L, and 10 mg/L; and three different flow rates, 521 gpm, 781 gpm, and 1,125 gpm. This helped to characterize the chlorine demand and decay characteristics within the contactor under different flow conditions. The measured chlorine demand/decay ranged from 3.8 to 8.5 mg/L, leaving a final free residual from 0.7 to 5.3 mg/L. This test showed that it is possible to maintain an adequate free chlorine residual in the contactor while dosing between 6 and 10 mg/L. The range in measured demand/decay appear to be influenced by weather conditions (sunlight, temperature) and residence time.

In the virus seeding study, MS-2 bacteriophage and native total coliform bacteria were measured along the contactor, and their inactivation as a function of measured CT value was evaluated. At CT values above 25 mg-min/L, the contactor demonstrated compliance with the Title 22 requirements for disinfected tertiary recycled water. Results show >5.6 log removal of MS-2 and <1.7 CFU/100 mL total coliform for all experiments. A normalized kinetic value of 0.24 to 0.29 log-L/mg-min was observed for MS-2 removal, which is comparable to values reported in the literature.

Based on the results of this study, the disinfection process at the CWRF can produce disinfected tertiary recycled water at an average flow of 2.25 MGD and peak daily flow of 3.24 MGD. The target CT value will be 75 mg-min/L, applying a safety factor of three to the minimum value from the virus seeding data. Operating the plant at these higher flow rates and verifying compliance with applicable recycled water standards will require additional monitoring for chlorine residual at the reactor outlet box, ammonia at the

reactor influent, and turbidity at the influent and the effluent of the reactor; revisions to the chlorine dosing strategy; and provisions for diversion of off-spec water.

6.5.2 Recycled Water from Camarillo Sanitation District

The Camarillo Sanitary District (CamSan) was formed in 1955 to provide wastewater treatment for most of what is now the City of Camarillo. The treatment plant occupies a 20-acre site on Howard Road next to Conejo Creek within the Camrosa Water District boundaries. The plant currently treats about 4.0 million gallons of wastewater each day, with a maximum capacity of 6.75 million gallons. Over the years, the treatment plant has undergone several modifications to increase its capacity and to incorporate new technologies. Construction to upgrade treatment from secondary to tertiary levels, in order to meet all DHS was recently completed. After primary treatment the wastewater undergoes tertiary treatment using an activated sludge treatment process and is then sent into secondary clarifiers and tertiary filters ultimately disinfected in a contact basin using chlorine. Dechlorination is accomplished with sulfur dioxide before the effluent is delivered for agricultural purposes or discharged to the Conejo Creek.

As of 2015, CamSan has a time schedule order to comply with the salts requirement of its NPDES permit. Instead of treating the effluent and continuing to discharge to the creek, CamSan is in the process of constructing an effluent discharge pipeline to dispose of its effluent in the Salinity Management Pipeline constructed by Calleguas Municipal Water District. Camrosa plans to construct a 3,000-foot, 15-inch pipeline to tee off of CamSan's effluent discharge pipeline to receive the city's surplus recycled water. Camrosa will store that water in its storage ponds, and deliver it to customers on demand. Camrosa and the city have received a total of $3.35 million in Proposition 84 grand funding towards this project. It is expected to be complete by the end of FY2017. CamSan is only able to guarantee Camrosa 500 AFY for five years, though the city's use of their full production capacity is contingent on substantial expansion of their recycled water distribution system, and it is expected that recycled water will continue to be available during winter months beyond the five years.

Table 6-2 Retail: Wastewater Collected Within Service Area in 2015

Wastewater Collection			Recipient of Collected Wastewater		
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated?	Volume of Wastewater Collected in 2015	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area?
Camrosa Water District	Metered	1,442	Camrosa Water District	Camrosa Water Reclamation Facility	Yes
Total Wastewater Collected from Service Area in 2015:		1,442			

Table 6-3 Retail: Wastewater Treatment and Discharge Within Service Area in 2015

Plant Name	Discharge Location Name	Discharge Location Description	Method of Disposal	Does Plant Treat Wastewater Generated outside Service Area?	Treatment Level	2015 volumes			
						Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area
CWRF	Discharged to land via recycled water customers	CSUCI and four agricultural customers	Land	No	Tertiary	1,442	1,469	1,033	290
HCTP	Conejo Creek		Land	No	Tertiary			5,450	2,355
					Total	1,442	1,469	6,483	2,645

NOTES: HCTP in the City of Thousand Oaks discharges its tertiary-treated wastewater effluent to Conejo Creek, where it mixes with the North and South Forks of the Conejo Creek and becomes nonpotable surface water. That water is diverted from Conejo Creek, 7 miles downstream of HCTP, by Camrosa Water District, under a water right permit and and agreement between Camrosa and Thousand Oaks. Camrosa distributes that water within Camrosa's service area, and delivers surplus water to Pleasant Valley County Water District. Because this water originated as tertiary-treated recycled water, becomes unregulated nonpotable surface water after hitting the naturally occurring waterway of the Conjeo Creek, receives no additional treatment from the Camrosa Water District after diversion and prior to delivery, and is used entirely to offset imported potable water use, it is classified, for the purposes of this UWMP, as recycled water.

Table 6-4 Retail: Current and Projected Recycled Water Direct Beneficial Uses Within Service Area

Name of Agency Producing (Treating) the Recycled Water:	Camrosa Water District
Name of Agency Operating the Recycled Water Distribution System:	Camrosa Water District

Beneficial Use Type	General Description of 2015 Uses	Level of Treatment	2015	2020	2025	2030	2035
Agricultural irrigation (CWRF)	Row crop	Tertiary	1,067	1,210	1,210	1,291	1,291
Agricultural irrigation (Conejo Creek) [1]	Row crop	Tertiary	4,033	3,700	3,700	3,700	3,700
Agricultural irrigation (CamSan) [2]	Row crop	Tertiary		500			
Landscape irrigation (excludes golf courses) (CWRF)	CSUCI outdoor areas	Tertiary	256	260	260	279	279
Landscape irrigation (excludes golf courses) (Conejo Creek)	Various	Tertiary	1,417	1,300	1,300	1,300	1,300
Geothermal and other energy production	CSUCI cooling tower	Tertiary	0	30	30	30	30
		Total:	6,773	7,000	6,500	6,600	6,600

NOTES: 1. See note to table 6-3 R for information about Conejo Creek.

2. Camarillo Sanitary District (CamSan) expects to make available to Camrosa 500 AFY for five years, beginning in 2018. Camarillo is constructing an effluent discharge pipeline that will relocate their effluent discharge from Conejo Creek to the Calleguas Salinity Management Pipeline. Camrosa will construct a pipeline to tee off of that effluent discharge pipeline to receive recycled water from the city while the city constructs sufficient expansion to its recycled water distribution system to deliver all of its effluent, after which point Camrosa will continue to receive recycled water from the city in times of low demand.

6.5.3 Planned Versus Actual Use of Recycled Water

10633 (e) Provide a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.

Table 6-5 Retail: 2010 UWMP Recycled Water Use - Projection Compared to 2015 Actual

Use Type	2010 projection for 2015	2015 actual use
Agricultural irrigation	5,570	5,100
Landscape irrigation (excludes golf courses)	1,708	1,673
Total	7,278	6,773

6.5.4 Actions to Encourage and Optimize Future Recycled Water Use

10633 (f) (Describe the) actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre feet of recycled water used per year.

(g) (Provide a) plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

Rate Incentives

In order to encourage the use of recycled and nonpotable water within the District, significant price incentives were initially established, especially for those along the Conejo Creek who forwent their riparian rights in order to provide Camrosa a measure of predictability with regard to creek volume.

In 2012, Camrosa completed an in-depth rate study, the result of which was a five-year rate forecast, with annual increases effective July 1. Worksheet 6.5 provides rates for last year, this year, and next, the last three of the five-year structure. One intention of the rate study was to make the potable and nonpotable/recycled enterprises accurately reflect the cost of service of each enterprise by 2020, and the nonpotable/recycled water rates have increased at accelerated rates versus the potable to make that possible.

Worksheet 6.5: Rate Structure			
Potable Water Service	**July 2015**	**July 2016**	**July 2017**
Residential (first 12 units)	2.8	2.94	3.08
Residential (13 unites and up)	3.05	3.19	3.34
Commercial/Industrial/Public	3.05	3.19	3.34
Municipal/Residential Irrigation	3.05	3.19	3.34
Fire Service/Other	3.05	3.19	3.34
Agricultural Irrigation			
MWD Full Service Rate	3.05	3.19	3.34
MWD Tier 2 Rate	3.72	3.89	4.07
Temporary Construction/ Agricultural	3.05	3.19	3.34
Temporary Municipal	3.72	3.9	4.08
Emergency Water Service	4.6	4.82	5.05
Commercial/Industrial/Public Out of Bounds	3.76	3.94	4.13
Residential Out of Bounds (first 12 units)	3.19	3.34	3.5
Residential Out of Bounds (13 units and up)	3.76	3.94	4.13
Nonpotable / Recycled Water	**Jul-15**	**Jul-16**	
Nonpotable Commercial Agricultural	1.26	1.45	1.64
Nonpotable Landscape Irrigation Water	1.26	1.45	1.64
Nonpotable Residential Landscape	1.26	1.45	1.64
Nonpotable Temporary Construction	1.26	1.45	1.64
Nonpotable Contractual Agricultural	0.59	0.6	0.61
Blended Nonpotable Agricultural			
MWD Full Service Rate	2.46	2.67	2.88
MWD Tier 2 Rate	2.78	3.02	3.25
Recycled Commercial Agricultural	1.26	1.45	1.64
Recycled Landscape Irrigation	1.26	1.45	1.64
Recycled Contractual Agricultural	0.38	0.39	0.4

(1) Dual Outdoor Plumbing

Per Camrosa Board of Directors Resolution 01-07, adopted by the Board on July 12, 2001, all developments shall install a dual water system consisting of separate potable and nonpotable waterlines, in order to encourage, or at least allow for, the use of nonpotable/recycled water to meet outdoor irrigation demands. There are several housing tracts in the District that have installed dual irrigation systems that still

do not have access to nonpotable/recycled water, but the policy remains in place given how much less onerous the installation of a secondary system is prior to the installation of roads, sidewalks, lawns, landscaping, other utilities, etcetera, and the optimism that at some point the District will secure sufficient quantities of nonpotable water to provide nonpotable irrigation water to those who have secondary systems. Camrosa is currently in discussions with other water districts in the area regarding the development of additional recycled water.

Table 6-6 Retail: Methods to Expand Future Recycled Water Use

6-16	Provide page location of narrative in UWMP		
Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use
CamSan Interconnection	Camarillo Sanitary District (CamSan) expects to make available to Camrosa 500 aFY for five years, beginning in 2018. Camarillo is constructing an effluent discharge pipeline that will relocate their effluent discharge from Conejo Creek to the Calleguas Salinity Management Pipeline. Camrosa will construct a pipeline to tee off of that effluent discharge pipeline to receive recycled water from the city while the city constructs suffiencient expansion to its recycled water distribution system to deliver all of its effluent, after which point Camrosa will continue to receive recycled water from the city in times of low demand.	2018	500
		Total	500

6.6 Desalinated Water Opportunities

10631 (h) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

Camrosa currently has one brackish water desalter in operation, another at the conceptual level of planning, and is interested in the region pursuing ocean desalination. Callegus Municipal Water District's capital investment in the Salinity Management Pipeline (SMP) makes desalination within the Camrosa service area possible. Camrosa had the honor of being the first paying customer on the SMP, and has plans to build at least one more facility that will discharge its effluent into the pipe, and, eventually, the ocean.

6.6.1 Round Mountain Water Treatment Plant

The Round Mountain Water Treatment Plant (RMWTP), a 1 MGD brackish water desalination facility, produces water from the Perched Aquifer, a semi-confined collection of the uppermost water-bearing units overlying the eastern Pleasant Valley Basin. The Perched Aquifer at one time supplied area farmers and the Camarillo State Hospital, but by the late 1970s, its quality had degraded to the point that it was

unsuitable for use, for either potable or agricultural irrigation. In 1981, the state contracted with Camrosa to supply water to the site, which has since been transformed into California State University Channel Islands. With the introduction of imported water, aquifer quality degradation accelerated, and today TDS levels exceed 1,500 mg/L.

Concerns over the reliability of State Water Project water—due, most recently, to climatic, legislative, and environmental drought in the Delta—and its steadily rising cost, Camrosa has made increasing its reliance on local supply sources one of our primary strategies. In the fall of 2010, Camrosa applied for state funding for the RMWTP in Round One of The Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (Proposition 84), and received $2.3 million toward the construction of the $6.8 million plant, which began in 2013.

Raw water is pumped from the Perched Aquifer via the University Well, which Camrosa rehabilitated in 2012-2013. Naturally occurring iron and manganese require pretreatment filtration prior to the raw water entering two skid-mounted reverse-osmosis membrane arrays. Process water is mixed with a side stream from the pretreatment filters, chlorinated, injected into a tank, and ammoniated after leaving the tank before being injected into the potable distribution system. Brine concentrate is discharged to the Salinity Management Pipeline built by Calleguas Municipal Water District, which drains to an ocean outfall in Port Hueneme.

The bulk of plant construction was finished in the spring of 2014, but unanticipated startup challenges delayed the achievement of full production to the summer of 2015. We completed breaking in the pretreatment filters and bringing the facility to the operational stage on August 1, 2015. Since then, the plant has been running at approximately 96 percent of its designed recovery rate—72 percent recovery, versus the 75 percent it was designed to recover—and producing, on average, 2.36 AFD. Camrosa expects that the RMWTP will operate 340 days a year and produce at least 850 AFY once it's running regularly at full capacity.

6.6.2 Santa Rosa Basin Desalter

As discussed in Section 6.2, the Santa Rosa Basin is impaired for nitrates, and much of the groundwater Camrosa pumps from the basin is blended with imported water for quality control. Treating Santa Rosa Basin groundwater for nitrates would allow Camrosa to discontinue blending SWP water, further reducing our reliance on the Delta. New local potable resources being developed elsewhere in the District (the RMWTP, new wells in the PV Basin), would offset the volume lost by the discontinuation of SWP water. The size of the desalter will be determined once the pilot groundwater recharge study, described in Section 6.8, is complete and the feasibility of desalting Santa Rosa groundwater is better understood.

6.6.3 Ocean Desalination

In 2015, Calleguas Municipal Water District completed an initial study into a 150-200 AFD ocean desalination facility. Their initial conclusion was that at upwards of $2.3 billion, it was not a cost-effective solution to shoring up unstable SWP supplies. Instead, such undertakings as increasing local storage capacity, adding groundwater pumping capacity, stormwater capture, groundwater storage-and-recovery programs, expanding recycled water use, encouraging water use efficiency measures were all proposed as options that should be exhausted before the last resort of ocean desal is pursued further. Camrosa's philosophy, however, is that, as an entity whose sole purpose is to provide water for our customers to use however they like, securing supply and protecting it against drought and the vagaries of climatic, legislative, and political whim is of the utmost importance to Camrosa. Camrosa has no plans to pursue ocean desalination independently, but is certainly interested in any regional efforts that enhance supply stability.

6.7 Exchanges or Transfers

> 10631 (d) Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

The Conejo Creek Water Pumping Program, which provides for the transfer of FCGMA pumping credits in the Pleasant Valley Basin from PVCWD to Camrosa in exchange for Conejo Creek surface water, is described in Section 6.2.

6.8 Future Water Projects

> 10631 (g) …The urban water supplier shall include a detailed description of expected future projects and programs…that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.

The District's long-term water supply reliability planning includes increasing our groundwater management capability through groundwater recharge. Camrosa has surpluses of nonpotable surface water at various times of the year and is pursuing additional recycled supplies, and is investigating the feasibility of recharging the Santa Rosa Basin with those resources. An informal pilot recharge program was undertaken in August 2013 with discharge from the Penny Well, a potable water well currently being rehabilitated (see Section 6.2.1(3)). Well product was discharged into the Arroyo Santa Rosa, and Camrosa staff performed a rudimentary study to observe the relationship between streamflow and percolation along the arroyo. Although simple, the study showed favorable results in flow characteristics and percolation rates. Over a 30-day period, flows varied between 280 and 400 GPM, and systematically increased in length and width, but only up to a point, and did not progress farther than approximately 1,400 feet from the initial discharge point. Recharge would dramatically improve Camrosa's ability to adaptively manage the Santa Rosa Basin. While initial investigations are promising, a more comprehensive technical and environmental study would be required before pursuing a recharge project further, then a full environmental review and facility design and construction, likely putting a recharge project at least five years out.

Once groundwater recharge feasibility is assessed and a project developed, Camrosa will evaluate constructing a groundwater desalter to treat for the nitrates that impair the Santa Rosa Basin, clean up the basin, discontinue the blending with imported water that is currently necessary, and increase Camrosa's self-reliance. The size of this desalter will be dependent on the results of groundwater recharge in the Santa Rosa Basin.

In addition, as described in Section 6.2, Camrosa is currently constructing a new 1,000 GPM potable groundwater well in the Pleasant Valley Basin, expected to be done by the end of 2016, and has plans to build a third well in the basin, also 1,000 GPM, not probably not before 2020, once several years of groundwater elevation and quality monitoring can be performed.

One of the challenges posed by recycled water supplies for outdoor/landscaping/agricultural irrigation is that it continues to be available during periods of low demand, such as cool and/or wet days. Without sufficient storage to retain the constantly generated supply of recycled water, districts often lose out on potential supplies. On the other hand, they are not supplies whose production can be cranked up, so during the hot summer months, without sufficient storage demands can quickly outpace supply production. Both these situations affect Camrosa; the Conejo Creek and the CWRF continue to produce recycled water around the clock, and while we never have to discharge recycled water produced at the CWRF, we often are forced to let Conejo Creek supplies stay in the creek and bypass our diversion facility for lack of a reservoir in which

to store them. To that end, Camrosa is pursuing the construction of an additional recycled water storage pond behind the District's existing storage ponds in the proximity of CSUCI, in conjunction with the university. Initial estimates put the pond's footprint at roughly 10 acres, translating to approximately 80-100 AF of storage. Annual supply increases resulting from these ponds will depend on the availability of increased supply and the potential for heightened demand, and will likely fluctuate year to year based on the weather.

Camrosa has begun preliminary discussions with the City of Oxnard and PVCWD to receive excess water from the AWPF recycled water distribution line Oxnard is constructing across the Oxnard Plain and lower Pleasant Valley Basin. Camrosa would receive that water and store it in the new storage pond at CSCUCI.

Stormwater capture has long been a project of interest in the Santa Rosa Valley, as it is steep, narrow, and has well defined arroyos. Camrosa has begun investigating the development of a stormwater capture program, for retention, recharge or both, with various entities in the area, including the County of Ventura Watershed Protection District, and the City of Thousand Oaks. Supply augmentation would depend on a number of variables, including the size and nature of the retention, project placement, permeability of the basin, and, most critically, the number and size of rain events from year to year. Camrosa is confident, however, that it would be a beneficial project to protect and augment Santa Rosa Basin groundwater resources.

Table 6-7 Retail: Expected Future Water Supply Projects or Programs					
Name of Future Projects or Programs	Joint Project?	Description (if needed)	Planned Implementation Year	Planned for Use in Year Type	Expected Supply Increase (AFY)
Pleasant Valley Well #2	No	1,000 gpm drinking water well	2017	Average Year Single-Dry Year Multi-Dry Year	1,500
Santa Rosa Basin Groundwater Recharge	No	Pilot study FY2017	2016	Average Year Single-Dry Year Multi-Dry Year	3,380 (see Section 6.2.2)
Santa Rosa Basin Groundwater Desalination	Yes; Calleguas Municipal Water District	1 MGD Reverse-Osmosis facility	2021	Average Year Single-Dry Year Multi-Dry Year	
Pleasant Valley Well #3	No	1,000 gpm drinking water well	2021	Average Year Single-Dry Year Multi-Dry Year	1,500
Oxnard AWPF surplus	Yes; Oxnard, PVCWD	Receipt of surplus recycled water	2018	Average Year Single-Dry Year Multi-Dry Year	TBD
Recycled Water Storage at CSUCI	Yes; CSUCI	80-100 AF storage pond	2017	Average Year Single-Dry Year Multi-Dry Year	TBD
Stormwater Capture in Santa Rosa Valley	Yes; Ventura County WPD, City of Thousand Oaks, others	Retention/recharge basin	2018	Average Year Single-Dry Year Multi-Dry Year	TBD

6.9 Summary of Existing and Planned Sources of Water

10631 (b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision 10631(a).

(4) (Provide a) detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

Table 6-8 Retail: Water Supplies — Actual

Water Supply	Additional Detail on Water Supply	2015	
		Actual Volume	Water Quality
Purchased or Imported Water	SWP imported via Calleguas	5,566	Drinking Water
Groundwater		3,125	Drinking Water
Desalinated Water	RMWTP: brackish groundwater	263	Drinking Water
Recycled Water	CWRF+Conejo Creek nonpotable	6,773	Recycled Water
	Total	15,727	

Camrosa's allocation from Calleguas Municipal Water District varies slightly every year, but is usually around 9,000 AFY. The 7,900 AFY used for projected supplies in Table 6-9 is a "not-to-exceed" goal the District set for itself in 2008, the last time the District's Strategic Plan was fully updated. At that point, demands were still high, and we had yet to transfer all the demand off the potable system onto the nonpotable system that we could, and 7,900 AFY seemed like a reasonable goal. Since then, Camrosa has developed more local resources, and, combined with reduced demands especially over the last couple years of drought, has not approached purchases of 7,900 AFY. Nevertheless, Camrosa continues to use 7,900 AFY as projected available supplies; this allows us to continue recognizing the need to transfer off imported supplies, while also providing a conservative level of imports to function within.

While groundwater pumping was limited to 3,125 AF in 2015, operational difficulties kept several wells from producing at full capacity, and FCGMA Emergency Ordinance E reduced the amount Camrosa could pump in the Pleasant Valley Basin. For projected supplies, a ten-year groundwater pumping average of 4,400 AFY was used as the baseline (see Table 7-1). To that is added the new 1,500 AFY well in the Pleasant Valley Basin (PV #2), currently being constructed (2017), the 1,500 AFY PV #3 (by 2025), and the groundwater recharge project in the Santa Rosa Basin (2025). While Camrosa also plans to construct a second desalination facility, it too will be groundwater, and will not necessary *increase* supply availability. It is therefore accounted for in the groundwater line and not the desalination water line; once developed, demand can be shifted from the groundwater line item to the desalinated water.

Lastly, as described in Section 6.5.2, Camrosa expects up to 500 AFY for five years starting sometime before 2020. While it is likely that more water than 500 AFY will be made available, and for longer than five years, the terms currently being discussed can only guarantee 500 AFY for five years, so it has been added as a supply source on Table 6-9 only for 2020.

Table 6-9 Retail: Water Supplies — Projected

Water Supply	Additional Detail on Water Supply	Projected Water Supply *Report To the Extent Practicable*			
		2020	2025	2030	2035
		Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume
Purchased or Imported Water	SWP imported via Calleguas Municipal Water District	7,900	7,900	7,900	7,900
Groundwater	second PV well by 2017 (1,500 AFY); third PV well (1,500 AFY) by 2025; Santa Rosa Basin recharge (3,380 AFY) by 2025	5,900	10,780	10,780	10,780
Desalinated Water	RMWTP full capacity by 2020 (850 AFY)	850	850	850	850
Recycled Water	CWRF+Conejo Creek nonpotable; CamSan Interconnection (2020 only)	9,800	9,300	9,400	9,400
	Total	24,450	28,830	28,930	28,930

Note: The imported water volume reported here is the maximum contracted volume with the District's wholesale provider, Calleguas Municipal Water District. In April 2015, as part of its water shortage contingency planning, the CMWD adopted a Water Supply Allocation Program that reduced its retailer's allocations. For Camrosa, this reduced allocations from 7,900 AF to 5,588 AF per year. While this is most likely an interim reduction while drought conditions persist, the District has chosen to use this more conservative figure for water supply reliability assessment planning for a multiple dry year scenario in Section 7.2.

6.10 Climate Change Impacts to Supply

The Department of Water Resources' *Handbook for Regional Water Planning* describes the next 100 years as a period of increased global warming that will have significant impacts on water resources across the state. According to this climate model, Southern California is projected to warm between two and eight degrees Fahrenheit above averages seen around the year 2000. Warmer springs would lead to decreased snow accumulation in the Sierra Nevadas, the principle supply for the SWP, Camrosa's source of imported water, and earlier and faster snowmelt, rendering ineffectual the Northern California precipitation much of the state relies on and to which much of Southern California owes its very existence. Warmer summers mean higher irrigation demand, which will be increasingly difficult to meet as imported demands become more strained—and as the state's population continues to grow. Under this model, local agencies will rely more and more on groundwater resources, which will already be stressed themselves in response to longer, hotter dry periods, as recharge events are fewer and farther between. As groundwater levels fall and stay overdrafted, the quality of the water that remains often degrades, as well. Wildfires are projected to occur more frequently, and be more intense, requiring greater storage and conveyance capacity, putting watershed health could suffer as a result of increased erosion, and threatening agricultural fields themselves.

Although the District has no facilities along the coast, the Conejo Creek structure, CWRF and RMWTP are on the bank of the Conejo and Calleguas Creeks. The former is built to be submersible, and is often inundated during rain events, and the other two facilities were built at elevations above the 100-year flood line. The Conejo Creek is the only perennial stream in the Calleguas Creek Watershed, and the volume of water it carries, originating as it does at the HCTP, is unlikely to be so adversely affected by drought that the health of the stream would suffer from lower, slower levels.

Whether the changes forecasted by current models will affect the types of crops agricultural customers within the District grow, or the irrigation techniques they use to grow them, or the land-use practices regulated by the government, or cultural practices adopted and implemented by the people, is difficult to anticipate; Camrosa's position is to serve our customers as much water as they need and are willing to pay

for, and the alternatives to drought-susceptible resources we have developed over the course of the last 20 years and have planned for the next 20 will go a long way in meeting whatever future grower demands might be.

7 Water Supply Reliability Assessment

LAW

10620 (f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.

10631 (c)(1) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following:

(A) an average water year,

(B) a single dry water year,

(C) multiple dry water years,

10631 (c)(2) For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.

10634 The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.

10635 (a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional or local agency population projections within the service area of the urban water supplier.

The potential issues that could result in reduction of the amount of water supply from each of the Water Supply Sources identified in Section 6 are discussed below. Projected demands discussed in Section 4 indicate future water use will remain fairly constant over the planning horizon. Changes in available supply, however, are subject to both significant and gradual changes in environmental factors, water quality, and/or the climate. Where water contracts exist with urban wholesalers or other retailers, it is the District's policy to renew or extend these current agreements or search out alternative sources far enough in advance to offer ample opportunity to ensure supply prior to the current agreement's expiry. Large-scale conservation and other Demand Management Measures are discussed in Section 9.

7.1 Constraints on Water Sources

The District's potable water is entirely composed of a blend of State Water Project (SWP) water imported from its wholesaler, Calleguas Municipal Water District, and raw well water from a number of local water basins and aquifers. Raw well water is chlorinated, and, in some cases directly injected into the distribution system. In others, to reduce chlorides, nitrates, and other constituents that exceed or approach maximum contamination levels (MCLs) in order to meet drinking water standards, raw water is blended with imported water, or, in the case of the RMWTP, treated by reverse osmosis. Constraints for each potable source are discussed below. A discussion of potable water constraints would be incomplete without a consideration of recycled and nonpotable surface water served by the District and are therefore also included below.

7.1.1 Imported Water from Calleguas

Camrosa depends exclusively upon Calleguas Municipal Water District (CMWD) for its imported potable water supply, which currently constitutes roughly 60 percent of the District's total potable supply. Camrosa's primary strategy of reducing demand on imported water, however, should reduce that dependence to less than 50 percent by 2020, with a goal of less than 33 percent by 2025, but in the meantime, the reliability of Camrosa's potable distribution system is dependent in part upon the reliability of Calleguas. The main and primary threat to Camrosa's supply of potable SWP water imported from Metropolitan Water District via Calleguas Municipal Water District is the relative health and ability to convey water from the Sacramento-San Joaquin Delta. Camrosa's allocation of SWP water has historically amounted to approximately 7,900 AF. In April 2015, as part of its water shortage contingency planning, CMWD adopted a Water Supply Allocation Program that reduced its retailer's allocations. For Camrosa, this reduced allocations from 7,900 AF to 5,588 AF per year. While this is most likely an interim reduction while drought conditions persist, the District has chosen to use this more conservative figure for reliability planning in a multiple dry year scenario. In 2015, the District imported 5,630 AF of SWP water from Calleguas, roughly 71 percent of the District's historical annual allotment. The District's primary strategy is to reduce its dependence on imported state water, continue to develop alternative local sources of groundwater, and pursue exchanges and/or trades of nonpotable surface water for groundwater allocations or other sources of better quality water. In addition and where practical, the District continues its commitment to transfer outdoor, landscape and agriculture irrigation away from its potable demand and onto its nonpotable system.

7.1.2 Groundwater

Camrosa Water District service area covers three major groundwater basins; the Tierra Rejada Basin in the eastern portion of the District; the centrally located Santa Rosa Basin; and the Pleasant Valley Basin in the western portion of the District. A fourth groundwater source is the shallow, perched groundwater aquifer of poorer quality at the base of the Conejo and Santa Monica Mountains adjacent to the Pleasant Valley Basin. Groundwater from these basins is blended with imported SWP water, thereby increasing self-reliance and reducing demand on the Sacramento-San Joaquin Delta. Groundwater constraints and water quality of each basin are discussed below.

a. *Tierra Rejada Basin*

The watershed area that recharges the Tierra Rejada Basin covers roughly 4,500 acres. The Tierra Rejada Basin itself is 1,900 acres in size, about two-thirds of which lie within Camrosa Water District boundaries. The District operates one well within this basin and in 2015 extracted 367 AF of water. The Tierra Rejada Well water quality meets or exceeds all California Title 22 Water Quality standards and may be placed into the distribution system without any further blending or treatment beyond standard disinfection. This well lies at the far, east end of the district. The water table in this aquifer fluctuates widely in its aquifer depth. When this well is pumped too quickly, air is entrained in the water and causes water quality complaints. Due to both of the aforementioned issues, this well may only be operated about 6-8 hours per day and below the pumping threshold where entrained air appears. At the time of this writing, the Tierra Rejada Well is not in operation. A full inspection, repair, and re-development will be required to bring this well back into production. The District has considered adding a second well to the basin, however, the Tierra Rejada Basin does not currently have a groundwater management plan and without a complete analysis of safe yield the District has delayed any construction of a new well within the basin.

b. *Santa Rosa Basin*

The Santa Rosa Groundwater Basin underlies about 3,800 acres (5.9 square miles) and is wholly contained within the District boundaries. In 1975, the California Department of Water Resources (DWR) estimates the total groundwater storage capacity of the Santa Rosa Basin to between 94,000 and 103,600 AF. In its westernmost one-fifth, the Santa Rosa Basin overlies the Fox Canyon Aquifer. The area is clearly defined by the Bailey Fault, resulting in substantial differences in groundwater levels between the eastern and western areas of the basin. The area west of the Bailey Fault comes under the jurisdiction of the Fox Canyon Groundwater Management Agency. Under the Sustainable Groundwater Management Act (SGMA) the area east of the Bailey Fault will fall under the jurisdiction of the

Santa Rosa GSA, which at the time of writing is being formed as a Joint Power Association (JPA) between Camrosa Water District, the City of Camarillo and the County of Ventura.

Within the area of the basin east of the Bailey Fault, the District operates seven wells, four of which contribute to the potable system and three of which supplement Conejo Creek water in the nonpotable system. In 2015, Camrosa extracted a combined 2,719 AF of groundwater from the basin. The Santa Rosa Basin is impaired by nitrates, and groundwater extracted from the District's primary wellfield often exceeds the maximum contaminate level (MCL) for Nitrate of 45 mg/L and must be blended down with imported Calleguas Municipal Water District water. The blend ratio of imported water to groundwater at the Conejo Well Field is currently one to one. With a combination of drought, surrounding agriculture, and periodic rains, the nitrate levels in these wells can vary. To ensure continued reliability of this resource, the District is considering basin recharge and reverse-osmosis treatment of these wells. In August 2013, the District's updated its Groundwater Management Plan for the Arroyo Santa Rosa Basin. Recommendations in the revised plan included adaptive management measures and best management practices. The District is currently evaluating the placement of monitoring wells within the basin to determine suitable locations for aquifer recharge facilities which would aid in rendering this source sustainable.

The District's goal is to increase potable production from the Santa Rosa Basin through desalination and/or nitrate removal at these well facilities, thereby reducing the amount of blended imported water and inevitably reduce the District's dependence on SWP water. The plan would also provide additional supply during periods of high demand. Should water levels in the Santa Rosa Basin fall or the water quality significantly degrade, potable supply extracted from the Basin would have to be replaced with imported SWP water. With the proper management actions put in place including recharge of the basin with surplus surface water diverted from Conejo Creek and other sources being developed throughout the District, the District is confident we will safeguard the sustainability of the resource.

c. *Pleasant Valley Basin*

Camrosa retains approximately 807 AFY in allocations of groundwater from this basin (under the jurisdiction of the FCGMA) which is based on an allowance for the residential development overlying the Fox Canyon Aquifer at a rate of one acre foot per acre of land developed. In 2015, the District extracted 761 AF of groundwater from its Woodcreek well facility. A second well site, the Lynwood well facility, is currently under construction and will take advantage of a transfer of pumping allocations from the Pleasant Valley County Water District (PVCWD). Under the 40 year agreement with the FCGMA, the PVCWD agrees to trade its pumping credits in the northeast Pleasant Valley Basin to Camrosa, in the form of pumping allocations, in exchange for Conejo Creek surface water on a one-to-one basis.

The Woodcreek and Lynwood Wells lie in the Mission Oaks area of the District. They are close together and share many of the same characteristics with regard to water quality. While the Woodcreek well meets all Title 22 requirements, there are elevated levels of Iron and Manganese in its water. Due to past issues with brown water complaints in the area, import water is blended with this well in a 1:1 ratio to prevent future brown water complaints. The Lynwood Well, sampled following its initial construction in December, 2015, still awaits completion of its pump and chlorination facilities. Initial Title 22 testing of this well indicates levels of Iron and Manganese exceeding the secondary MCL of these constituents. Furthermore, an analysis of Arsenic concentrations reveals the constituent as exceeding the primary MCL. Methods of mitigation for these contaminates are being pursued. First, samples of the new Lynwood Well will be taken at specific depths to determine where the lower quality water is being produced from. If a specific depth can be identified, this area will be blocked off, if possible, to improve overall well water quality. Second, if deemed necessary, Iron/Manganese/Arsenic treatment units will be constructed to remove these contaminants. Third, if only Iron and Manganese contamination are an issue, then chemical sequestration products will be investigated.

d. *Perched Aquifer*

During the late 1930s through 1979, Camarillo State Hospital relied exclusively upon water from the perched aquifer at the base of the Conejo Hills. The aquifer provided potable water to the hospital, onsite

residences for its 1,000 patient population, and irrigation systems across the 634-acre site. In 1979, the state contracted with Camrosa to supply water to the site when state-mandated water quality standards became too difficult to meet. In August 2014, Camrosa's Round Mountain Water Treatment Plant (RMWTP) was put into production. This facility produces approximately 1 MGD of potable water which feeds directly into pressure zone 1 of the distribution system. The CSUCI well is the raw groundwater source for the RMWTP. In 2015, the District extracted 349 AF of raw groundwater and netted 263 AF of finished potable water from the facility.

The University Well lies within a perched aquifer. The water quality in this well exceeds the Title 22 MCL's in TDS, Sulfate, Iron, Manganese, Nitrate, Chloride, and Hardness. As mentioned, this well provides source water for RMWTP. The plant utilizes Reverse Osmosis (R.O.) to reduce the level of contaminants in this water to drinking water levels. The secondary use of this well is to remove salts trapped within the perched aquifer, separate the water, and export the salts to the ocean through the Calleguas Salinity management Pipeline. Since its start in August 2014, the perched aquifer has not shown a significant decrease in the water table level. Therefore the reliability of this water source is more tied to the reliability of treatment facility rather than the source of the groundwater. As long as the Round Mountain R.O. facility remains operational, this well can be utilized for drinking water. The RMWTP is run year round and has redundant systems that allow it to produce water at half capacity when one of the two treatment trains requires repair or maintenance. Additionally, the operation of the R.O. Plant relies on the reliable availability of the Calleguas Salinity Management Pipeline (SMP).

7.2 Reliability by Type of Year

Camrosa's allocation of SWP water has historically amounted to approximately 7,900 AF. In April 2015, as part of its water shortage contingency planning, CMWD adopted a Water Supply Allocation Program that reduced its retailer's allocations. For Camrosa, this reduced allocations from 7,900 AF to 5,588 AF per year. Note, this reduced figure is more in line with the 2011 average year basis of 5,805 AF used in Table 7.1 below. While this is most likely an interim reduction while drought conditions persist, the District considers the reduced allocation as a realistic goal. Local groundwater supplies in the District's service area are pumped at rates that are sustainable even in multiple-dry year scenarios.

The base years in Table 7.1 below were selected from rainfall data compiled by the California Irrigation Management Information System (CIMIS), in particular, from rain gauge stations at the Camrosa Water District, Leisure Village and Pleasant Valley County Water District. Coincidentally, the three most recent years, 2013-2015 have proven to be three of the driest consecutive years in recent history. In 2013, there was 2.97 inches of rain; 2014, 9.12 inches; and in 2015, 4.89 inches. 2011 was selected as the average base year as the amount of precipitation was normal at approximately 13.3 inches. 2007 was selected as a single dry year as the amount of precipitation for that year was 6.43 inches while the average rainfall from 2005 to 2009 was 15.27 inches. While Calleguas Municipal Water District and Metropolitan Water District project undiminished supplies even after multiple dry years, reduced allocations and demand restrictions during the current (circa 2015) drought indicate that reliability after a few dry years is in fact compromised; multiple-dry-year projections in Tables 7-1 and 7-4 take this into account. Camrosa's groundwater sources are managed to provide reliability under a variety of circumstances, and are therefore projected to produce at safe yield (Santa Rosa Basin) and production capacity under the various scenarios throughout the planning horizon. Levels of nonpotable irrigation water, dependent as they are on wastewater effluent flows, are projected to diminish slightly as dry-year scenarios continue, based on the assumption that residential water demand will fall somewhat over the course of a drought. Taken together, the District's various sources of supply are considered reliable, and do not compromise the District's ability to provide water in multiple-dry year scenarios is not adversely affected.

Table 7-1 Retail: Basis of Water Year Data

Year Type	Base Year	Supply Type					
		Imported		Groundwater		Recycled/ NP Surface	
		Volume Available	% of Average Supply	Volume Available	% of Average Supply	Volume Available	% of Average Supply
Average Year**	2011	7,900	100%	4,400	100%	11,229	100%
Single-Dry Year	2007	7,900	100%	4,400	100%	10,868	96.8%
Multiple-Dry Years 1st Year	2013	7,900	100%	4,400	100%	9,805	87.3%
Multiple-Dry Years 2nd Year	2014	7,900	100%	4,400	100%	9,600	85.5%
Multiple-Dry Years 3rd Year	2015	5,588*	70.7%	4,400	100%	9,720	86.6%

NOTES: *Reduction from Calleguas Municipal Water District due to current (circa 2015) drought condition, which coincides with the third and following years of a multiple-dry-year scenario.
**Average Year groundwater is basin yield (Santa Rosa Basin) and production capacity.

7.3 Supply and Demand Assessment

Table 7.2 through 7.4 below provide supply and demand projections through 2035 for normal year, single dry year, and multiple dry year conditions. Surplus projections show that the District can reliably sustain demand for any of the fore mentioned conditions. This is due mainly in part to the District's pro-active commitment to developing and effectively managing its local ground water resources, local inter-agency cooperation for water exchanges where practicable, increases in water use efficiency, and transfer of potable agriculture and irrigation demand to recycled water sources. As mentioned in Section 5, the year 2015 was an exceptionally low water-demand year, as Governor Brown instituted the first-ever statewide mandatory reduction in urban potable water production. While some rebound is likely to occur should the drought end and statewide emergency regulations be lifted, it is expected that some amount of demand reduction accomplished during the drought will persist long term.

Table 7-2 Retail: Normal Year Supply and Demand Comparison				
	2020	2025	2030	2035
Supply totals (*autofill from Table 6-9*)	24,450	28,830	28,930	28,930
Demand totals (*autofill from Table 4-3*)	15,941	15,587	15,987	16,113
Difference	40,391	44,417	44,917	45,043
NOTES:				

Table 7-3 Retail: Single Dry Year Supply and Demand Comparison				
	2020	2025	2030	2035
Supply totals	24,450	28,830	28,930	28,930
Demand totals	15,941	15,587	15,987	16,113
Difference	8,509	13,243	12,943	12,817
NOTES:				

Calleguas and Metropolitan both project 100-percent reliable supplies in future multiple-dry-year scenarios, but given the reductions Camrosa has seen during the current drought from its wholesalers, Camrosa has determined to work into its projections a reduction in imported water reliability after the second year of drought; considering that Camrosa's demands were approximately 70 percent of the District's 7,900 AFY goal allocation from Calleguas, third-year projections in the multiple-dry-year scenario are reduced by 30 percent. Because Camrosa has more than sufficient supply to meet normal demands, even with reductions in imported water, and especially as the five-year increments of the planning horizon are met and more and more local resources come online, demand is kept constant over the course of the multiple-dry-year scenarios. Current (circa 2015 and following) reductions in urban potable water use within the District are a direct result of Governor Brown's Executive Orders B-29-15 and 8-36-15, establishing and extending, respectively, drought emergency regulation, rather than a necessity on our part with regard to the sufficiency of Camrosa supplies to meet our customers' demands. Being as it is unknown how severe multiple years of drought may be in the future, or whether any future regulation akin to what has been imposed in the current drought would provide latitude for agencies that have developed local capacities to withstand drought, Camrosa prefers to project demands in accordance with its philosophy of self-reliance, and assume that the work that has been done towards that end would provide our customers the opportunity to continue availing themselves of the resource they have invested, over the course of many years, in stabilizing. Modest decreases in recycled water (assuming reduced flows at wastewater treatment plants due to voluntary customer conservation) account for supply reductions between the first and second year, and contribute to third-year reductions.

Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison					
		2020	2025	2030	2035
First year	Supply totals	24,450	28,830	28,930	28,930
	Demand totals	15,941	15,587	15,987	16,113
	Difference	8,509	13,243	12,943	12,817
Second year	Supply totals	23,931	25,995	26,082	26,082
	Demand totals	15,941	15,587	15,987	16,113
	Difference	7,990	10,408	10,095	9,969
Third year	Supply totals	21,385	23,458	23,543	23,543
	Demand totals	15,941	15,587	15,987	16,113
	Difference	5,444	7,871	7,556	7,430
NOTES:					

7.4 Regional Supply Reliability

In 2014, Camrosa renewed its agreement with the City of Thousand Oaks allowing for Conejo Creek diversions for a term of 40 years. At the same time, Camrosa entered into an agreement (FCGMA Resolution 2014-01) with FCGMA for the transfer of PVCWD's pumping allocations in the northeast Pleasant Valley Basin to Camrosa in exchange for Conejo Creek surface water, on a one-to-one basis, also for 40 years. With these agreements in place the District has achieved a reasonable level of water supply reliability well beyond the planning horizon of this plan.

The draft agreement Camrosa is working on with the City of Camarillo to bring surplus recycled water into the District, described in Section 6.5.2, will also contribute to regional reliability.

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8 Water Shortage Contingency Planning

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10632 (a) The plan shall provide an urban water shortage contingency analysis that includes each of the following elements that are within the authority of the urban water supplier.

10632 (a)(1) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.

10632 (a)(2) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence of the agency's water supply.

10632 (a)(4) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.

10632 (a)(5) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.

10632 (a)(6) Penalties or charges for excessive use, where applicable.

10632 (b) Commencing with the urban water management plan update due July 1, 2016, for purposes of developing the water shortage contingency analysis pursuant to subdivision (a), the urban water supplier shall analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas, as defined in subdivision (a) of Section 115921 of the Health and Safety Code.

Health and Safety Code Section 115921
As used in this article the following terms have the following meanings:
(a) "Swimming pool" or "pool" means any structure intended for swimming or recreational bathing that contains water over 18 inches deep. "Swimming pool" includes in-round and aboveground structures and includes, but is not limited to, hot tubs, spas, probable spas, and non-portable wading pools.

10632 (a)(9) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

10632 (a)(7) An analysis of the impacts of each of the actions and conditions described in paragraphs (1) to (6), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.

10632 (a)(8) A draft water shortage contingency resolution or ordinance

10632 (a)(3) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.

8.1 Stages of Action

On August 27, 2015, the Camrosa Water District adopted Ordinance 40-15, "Rules and Regulations Governing the Provision of Water and Sanitary Services." Section 5 of the ordinance establishes conditions of service for all classes of water and establishes provisions for staged reductions in water service during water shortage emergencies and prohibitions on end users. The ordinance is included as Appendix C in its entirety; applicable portions are quoted below. Camrosa Board of Directors Resolution 15-07, Declaring a Stage Three Water Supply Shortage, passed on May 28, 2015, expands on Section 5.16.3, in particular the exceptions to no new potable water service after "individual review by the District." The drought resolution now requires that "no new potable water service will be provided…without mitigation measures approved by the General Manager that will offset the new demand." See Section 8.4 for details.

5.16. Water Supply Shortage or Water Emergencies

"Water Supply Shortage" is a condition when Camrosa Water District determines, in its sole discretion, that due to drought or other water supply conditions, a water supply shortage or threatened shortage exists and a consumer demand reduction is necessary to make more efficient use of water and appropriately respond to existing water conditions. A "Water Emergency" is a condition resulting from some catastrophic event or events, which cause or threaten to cause an impairment, reduction, or severance of the district's water supply or access to its water supplies in a manner that may result in district's inability to meet ordinary water demands for potable water service. In the event of an imminent inability of the District to meet ordinary water demands for a period beyond what can reasonably be considered routine system repairs the General Manager shall report to the Board of Directors on the extent, estimated duration, cause, and estimated severity of the event or events leading to the water supply shortage or water emergency and by resolution the Board of Directors may declare a Water Supply Shortage or Water Emergency and activate one or more of the following emergency provisions of this ordinance:

5.16.1. Stage One Water Supply Shortage or Water Emergency

The goal of a stage one water supply shortage or water emergency declaration is a 10% potable water demand reduction to preserve water supplies for district and or the region until the emergency has ended. The district shall notify its customers via newspaper, radio, television and direct mail or by any other means determined by the district to be prudent that a Water Supply Shortage or Water Emergency has been declared and that the District is requesting all customers to reduce water use by 10%. In addition to the prohibited uses of water outlined in Section 5.14, the following water conservation requirements apply during a declared Stage One Water Supply Shortage or Water Emergency;

1. Leaks - No person may permit leaks of water that he/she has the authority to eliminate. Any detected leak, break or malfunction shall be corrected within 48 hours after a person discovers or receives notice from the District.

2. Wash-Down of Hard or Paved Surfaces – Washing down hard or paved surfaces, including but not limited to sidewalks, walkways, driveways, parking areas, tennis courts, patios or alleys, is prohibited except when necessary to alleviate safety or sanitary hazards, and then only by with a hose equipped with a positive self-closing water shut-off device, a low-volume, high-pressure cleaning machine, or a low-volume high-pressure water broom.

3. Drinking Water Served Upon Request Only – Eating or drinking establishments, including but not limited to a restaurant, hotel, café, cafeteria, bar, or other public place where food or drinks are sold, served, or offered for sale, are prohibited from providing drinking water to any person unless expressly requested.

4. Limits on Watering Durations – Watering of lawns, landscape or other vegetated area with potable water is limited to non-peak demand times and only when necessary. Use of a hand held hose with positive shutoff nozzle; bucket or micro irrigation systems/equipment may be required.

5. Limits on Watering Hours - Watering or irrigating of lawn, landscape or other vegetated area with potable water may be prohibited between the hours of 9:00 a.m. and 5:00 p.m. on any day.

5.16.2. Stage Two Water Supply Shortage or Water Emergency

The goal of a stage two water supply shortage or water emergency declaration is a 20-30% reduction in potable water demands while preventing the loss of property and protecting the health and safety of the community and region. The district shall notice all of its customers via newspaper, radio, television and direct mail or by any other means determined by the district to be prudent that a Water Supply Shortage or Water Emergency has been declared and that the District is requesting customers to reduce water use. In addition to the prohibitions listed in the Stage One Water Supply Shortage or Water Emergency and the prohibited uses of water in Section 5.14 above, the following water conservation requirements to prudently preserve water supplies shall be observed;

1. Leaks - No person may permit leaks of water that he/she has the authority to eliminate. Any detected leak, break or malfunction shall be corrected within 24 hours after a person discovers or receives notice from the District.

2. Limits on Watering Days – Water or irrigating of landscape or other vegetated area with potable water may be limited to three days per week on a schedule established and posted by the District.

3. Limits on Filling Residential Swimming Pools & Spas – Use of water to fill or refill swimming pools and spas may be limited to maintain the level of water only when necessary. Draining of pools and spas or refilling shall be done only for health or safety reasons.

4. Substitution of Nonpotable water - No person shall permit the outdoor use of potable water for irrigation or dust abatement where nonpotable or recycled water is available.

5.16.3. Stage Three Water Supply Shortage or Water Emergency

The goal of a stage three water supply shortage or water emergency is to reduce potable water demands by 30-50% while protecting the health and safety of the community and the region. The district shall notice all of its customers via newspaper, radio, television and direct mail or by any other means determined by the district to be prudent that a Water Supply Shortage or Water Emergency has been declared and that the District is requesting customers to reduce water use. In addition to the actions and requirements of a stage two emergency and the prohibited uses of water in outlined in Section 5.14 above the following water conservation requirements to prudently preserve water supplies must be observed;

1. Irrigation restrictions – Watering or irrigation of lawn, landscape or other vegetated area with potable water may be prohibited by the Board.

2. New Potable Water Service – No new potable water service will be provided, no new temporary meters or permanent meters will be provided and no statements of immediate ability to serve or provide potable water service will be issued, except as approved on an individual review by the District.

3. Other Prohibited Uses – The District may implement other water use requirements as determined by the District to meet water supply shortage or water emergency conditions.

Table 8-1 below summaries the shortage stages, supply reductions, conditions and expected response in each case.

Table 8-1 Retail: Stages of Water Shortage Contingency Plan

Stage	Percent Supply Reduction *Numerical value as a percent*	Water Supply Condition
One	10%	Condition: Total net supply potable supply (imported and local sources) at 90% of firm supply (e.g. loss of a local groundwater source). Response: Voluntary reduction to preserve water supplies.
Two	20-30%	Condition: Total net supply potable supply (imported and local sources) at 70% to 80% of firm supply (e.g. loss of multiple groundwater sources or a limitation in the availability of imported water). Response: Mandatory reduction to prevent property loss & protect health & safety of community.
Three	50%	Condition: Total net supply potable supply (imported and local sources) below 70% of firm supply (e.g. loss of all groundwater sources or significant reduction in the availability of imported water). Response: Mandatory reduction to protect health and safety of community.
NOTES:		

8.2 Prohibitions on End Uses

5.14. Water-Use Prohibitions

No person shall cause or permit water under his/her control to be used in violation of the District's water-use prohibitions. Violating water-use prohibitions may result in additional fees, charges and/or termination of service as directed by the Board of Directors. The following prohibitions are in effect at all times, regardless of whether any declared water supply shortage or water emergency condition is in effect:

1. Gutter Flooding - No person shall cause or permit any water furnished to any property within the District to run or to escape from any hose, pipe, valve, faucet, sprinkler or irrigation device into any gutter or to otherwise escape from the property, if such running or escaping can reasonably be prevented.

2. Leaks - No person shall permit leaks of water that he/she has the authority to eliminate. Any detected leak, break or malfunction shall be corrected within 72 hours after a person discovers or receives notice from the District.

3. Positive Hose-end Shutoff - All garden and utility hoses shall be equipped with a positive hose-end shutoff nozzle.

4. Vehicle Washdown - Vehicles, including but not limited to any automobile, truck, van, bus, motorcycle, boat or trailer shall be cleaned only by use of a hand-held bucket or a hand-held hose with a shutoff nozzle device.

5. Restaurant Equipment - Restaurants are required to use water-conserving dish washing spray valves in all food preparation and utensil cleaning areas.

6. Water Fountains and Decorative Water Features – Operating a water fountain or other decorative water feature that does not use re-circulated water is prohibited

7. Single Pass Cooling Systems - Installation of single pass cooling systems in buildings requesting new water service is prohibited.

Table 8-2 summaries the restrictions and prohibitions on end users.

Table 8-2 Retail Only: Restrictions and Prohibitions on End Uses

Stage	Restrictions and Prohibitions on End Users	Penalty, Charge, or Other Enforcement?
N/A	Gutter Flooding	Other Enforcement
N/A	Leaks to be repaired within 72 hours	Other Enforcement
N/A	Positive hose-end shutoffs required	Other Enforcement
N/A	Vehicle washdown restrictions	Other Enforcement
N/A	Water-conserving restaurant equipment required	Other Enforcement
N/A	Restrictions on decorative water features	Other Enforcement
N/A	Restrictions on single-pass cooling systems	Other Enforcement
NOTES: The above prohibitions are in effect at all times, regardless of whether any declared water supply shortage or water emergency condition is in effect		

8.3 Penalties, Charges, Other Enforcement of Prohibitions

In the event of a Stage Three Water Emergency, Ordinance 40-15 contemplates that special rates, fees, and/or penalty fees may be required to meet demand reductions necessary to preserve water supply. These include a written notice after the first violation; a $100.00 fine after the second violation within twelve months; a $250.00 fine after the third; and a $500 fine for the fourth, plus $500 a day thereafter until the water-use prohibition is no longer being violated. Resolution 15-07, passed to move the District into a Stage Three Water Emergency during the current drought, gives the General Manager authority to institute other measures as necessary to meet water supply shortage or water emergency conditions.

8.4 Consumption Reduction Method

On June 10, 2009, in the wake of three consecutive years of below average rainfall and the Governor's subsequent proclamation earlier that year of a statewide emergency due to drought conditions, the District adopted Resolution 09-02 which established a moratorium on new unmitigated potable demand until June 2012. On June 27, 2012, under Resolution 12-14, the District made the moratorium permanent, requiring all new development to "bring with them" additional or "new" water supplies sufficient to offset project max-day demands.

Additionally, on May 28, 2015 responding to Governor Brown's executive order B-29-15 requiring the State Water Resources Control Board to implement mandatory water reductions in potable urban usage through February 2016, the District approved Resolution 15-07 (see Appendix D1) authorizing a 32-percent mandatory reduction (using 2013 as the baseline year) in the District's potable water use. As of this writing the executive order has been extended through October 2016.

Any authorized new development within the District is now required to meet the requirements of both resolutions. For example, a developer would be required to both provide supply equal to or greater than their projected max-day demand and reduce the District's existing potable production by the development's projected average-day demand, plus 32 percent. While both resolutions undoubtedly figure into future water savings, the District has chosen to use only the former (Ordinance 12-14) in its calculation of future water saving projections in Tables 4-2 and 4-3 above and its affirmation in Table 4-4 below. The District considers any future savings due to Resolution 15-07 as transient in nature and has excluded the savings from its long range projections.

Secondly, the District is actively pursuing a reduction in real water loss from its potable distribution system. The Districts cumulative real water loss for fiscal year 2015 was approximately 8.7 percent. In November 2015, the District initiated a pilot leak survey program which evaluated pressure zones 2A, 3D, 4A, 4B, and 4C. A leak detection firm was selected which performed acoustic leak detection and correlation on main distribution lines within these zones. At the conclusion of the survey, a report was presented which outlined issues found within these zones. The District subsequently performed corrective action of issues found in the leak report. After the completion of the leak survey and corrective actions, cumulative water loss in these zones dropped from 8.0 percent to 4.28 percent. The District has budgeted in 2017 for leak survey services to be performed on the remaining pressure zones within the District. These include zones 1, 2B, and 3ABC where most of the District's water loss occurs.

In addition to increasing its detection program, Camrosa is also systematically reconciling production/sales disparities and instituting a meter-calibration program on both the production and delivery sides. A meter-replacement program is being developed, too, which will aim to prevent water loss resulting from aging infrastructure, particularly on large meters.

Finally, the District has enhanced customer bills to include a 32 percent reduction goal from their 2013 baseline target. The enhancement provides a graphical month-to-month comparison of their actual

consumption to their reduction goal. In December of 2015, Camrosa hired a part-time employee to contact high-use (great than 2 AFY) customers who were not meeting their conservation targets.

Additionally, the District is in the process of providing customers with a web portal that will allow them to view their daily and/or hourly usage, receive comparisons with other customers' water use, and to receive text and email alerts when their usage exceeds a pre-determined threshold. Table 8-3 below summaries these consumption reduction methods.

Table 8-3 Retail Only: Stages of Water Shortage Contingency Plan - Consumption Reduction Methods

Stage	Consumption Reduction Methods by Water Supplier	Additional Explanation or Reference *(optional)*
1	Expanded public information campaign	Mailers, bill inserts, public focus meetings, website information.
N/A*	Reduce System Water Loss	Independent leak surveys performed on portions of the District's potable distribution system in November, 2015 with plans to complete the remainder in 2016.
3	Improve Customer Billing	Enhancement provides a graphical month-to-month comparison of customer's actual consumption to their reduction goal
3	Mandatory 32% reduction in potable water use from 2013 base line usage	Resolution 15-07 has been in effect as of May 28, 2015, and is currently extended through October 2016. Applies to existing customers and to new authorized development as well.
N/A*	Moratorium on net zero demand increase on new connections	Resolution 12-14 requires all new development involving a single meter greater than 1 inch to mitigate their water demand (Appendix D2). This resolution is in effect at all times, regardless of whether any staged water supply shortage or water emergency condition is in effect.
N/A*	Provide rebates on plumbing fixtures and devices	See Section 9.2.7 for more details
N/A*	Offer water use surveys	See Section 9.2.7 for more details
N/A*	Provide rebates for turf replacement	See Section 9.27 for more details
N/A*	Meter-replacement program	
N/A*	Meter-calibration program	See Section 4.2.3.c
N/A*	Hired temporary employee to contact high users	
NOTES: * These measures are always in effect regardless of staged water supply shortages in effect.		

8.5 Determining Water Shortage Reductions

The District meters all water production sources and customer water services. In the event of a water shortage emergency, metering would be the primary means to monitor whether reductions are being met. Production metering is automated, real-time, and measured to the nearest gallon. Given the volume of supply, the metering is converted to acre feet under normal operations. Production metering would provide a broad measure of overall quantity of use in generalized zones. Customer service metering provides quantification of water use by customer. Meters are typically read monthly, but with the District's conversion to Automatic Meter Reading (AMR) daily readings for 85 percent of productions meters are currently available. Customer meter reads are read to the nearest HCF.

8.6 Revenue and Expenditures Impacts

Reductions in water demand are bound to reduce District revenues. Although the cost of imported water is much higher than the total cost of producing local resources, wells, desalters, and other local-resource production facilities are more energy intensive to operate than importing water, which primarily consists of opening Calleguas meter station valves. Because Camrosa uses local resources first, and relies on them primarily in times of drought or other emergency, and floats off Calleguas to meet demand, energy expenditures (and chemical requirements and other associated treatment and distribution costs) do not typically mirror revenue reductions during reduced demand. Human resources also do not fall in times of drought; in fact, under the drought emergency of 2015, California water agencies were encouraged to increase conservation personnel and activities, including enforcement staff, which many agencies have outsourced. As described throughout this document, Camrosa's long-term strategy is to increase self-reliance to withstand periods of imported water supply restrictions, in no small part to buffer Camrosa customers against penalties and other enforcement options to which water districts with less stable supplies are forced to turn. At some point, drought-driven resource scarcity affects any supply, but Camrosa's strategy is to extend the length of time before such exigencies as restrictions and penalties are required, and because the severity of the 2015 drought is unprecedented and the longevity of future dry periods is unpredictable, Camrosa has not built additional human resources expenditures into reduced-demand budgets.

For the purposes of Worksheet 8.6, an average/normal water year assumes 8,973AF of potable water deliveries (the average of the last five fiscal years—see Table 4-1b) and an import blend ratio of 56 percent. To offset the reductions in revenues resulting from reduced water sales during a Stage1, 2, and 3, the District has the ability to increase pumping of local water supplies to offset the higher import water purchases, thus dampening a decline in net operating results.

The impact of Stage 1, 2 and 3 emergencies upon revenues was examined in detail and is outlined in Worksheet 8.6. The worksheet assumes that as Camrosa moves through water supply shortage stages and demands scale back, local production will continue at capacity and reductions will be taken out of imported supplies. As the "Percent Import vs. Local" recedes and the total volume of imported water declines, water costs fall. Costs associated with energy, operations, and debt service, however, remain fairly stable.

Worksheet 8.6. Revenue and Expenditures under Reduced Demand Scenarios				
Water Production Costs	**Average/Normal Water Year**	**Stage 1 10% Cutback**	**Stage 2 30% Cutback**	**Stage 3 50% Cutback**
Projected Demand (AFY)	**8,973**	**8,076**	**6,281**	**4,487**
Percent Import vs. Local	56% Import	50% Import	40% Import	30% Import
Import Purchases	$8,497,072	$6,828,258	$4,248,468	$2,276,255
Energy Costs	$614,664	$648,315	$637,920	$578,881
O&M	$4,104,035	$4,104,035	$4,104,035	$4,104,035
Debt Service	$516,835	$516,835	$516,835	$516,835
Total Water Costs	**$13,732,606**	**$12,097,443**	**$9,507,258**	**$7,476,006**
Water Revenue				
Potable Water Sales	$12,204,300	$11,153,500	$9,049,500	$6,947,100
Potable Meter Service Charge	$2,364,400	$2,364,400	$2,364,400	$2,364,400
Non-Operating Revenue	$420,100	$420,100	$420,100	$420,100
Total Water Revenue	**$14,988,800**	**$13,938,000**	**$11,834,000**	**$9,731,600**
Net Operating Results	**$1,256,194**	**$1,840,557**	**$2,326,742**	**$2,255,594**

The Board of Directors has a slate of options, described above and including a rate stabilization fund, available to maintain financial stability in the event an emergency lasted more than one accounting period.

In the longer term, rates may be restructured to reflect increased costs and/or reduced deliveries. In all cases, the Board will assess the financial impacts at the point that an emergency is declared, and apply the appropriate measures to accommodate those impacts.

8.7 Resolution or Ordinance

As stated in Section 8.1, The Camrosa Water District's water shortage contingency measures are outlined in Ordinance 40-15, *Rules and Regulations Governing Provision of Water and Sanitary Services*, which was updated in 2015 and supersedes the 2010 revision (Ordinance 40-10). Section 5 of the ordinance establishes conditions of service for all classes of water and establishes provisions for staged reductions in water service during water shortage emergencies and prohibitions on end users. The Ordinance is included as Appendix C in its entirety.

8.8 Catastrophic Supply Interruption

The District maintains an Emergency Response Plan, separate from this Urban Water Management Plan that outlines procedures necessary to respond to emergency disasters. The purpose of that plan is to:

- Minimize damaging effects of natural or man-made disasters on the water production, water distribution, sewage collection and sewage treatment systems of Camrosa Water District;
- Restore those systems to working order as quickly as possible in the event of disasters,
- Provide local, area and state assistance where and when required during and after disasters as directed by the Ventura Operational Area Emergency Operations Center; and,
- Implement training procedures by going through mock exercises to make certain all employees are well versed in their roles.

- Pursuant to the Public Health Security and Bio-Terrorism Preparedness and Response Act of 2002, Camrosa Water District conducted a vulnerability assessment and submitted a certified copy of that assessment to the U.S. Environmental Protection Agency in June 2004. The confidential report identified known vulnerabilities and countermeasures and responses to be implemented to safeguard against this potential threat. This report was in response to an isolated request and has not been updated. Camrosa Water District, however, continues to improve the security and surveillance of all its facilities.

The District's emergency procedures are fully integrated with the Standard Emergency Management System (SEMS) to ensure effective multi-agency and multi-jurisdictional responses to emergencies. Internally, Camrosa uses the Incident Command System (ICS) structure to provide a scalable, flexible response to emergencies.

The ICS provides procedures for designation of an Incident Commander who is ultimately responsible for all operations, planning, logistics, finance and public interface associated with any given emergency. Employee recall lists are published and contact lists for emergency assistance from outside contractors, utility companies, and other agencies have been pre-prepared. The plan fully contemplates full and open cooperation with the public media and individual customers throughout any emergency condition.

In terms of facilities and equipment to meet catastrophic emergencies, nearly 16 million gallons of tank storage is available within the District to provide immediate gravity-powered water service for most of the District in the event of a power outage. The District has two portable diesel backup generators, one in the District Office yard and another semi-permanently positioned at the Conejo Wellfield. A permanent generator is attached to the Tierra Rejada Well, and another permanent generator is planned to be installed at Woodcreek Well as the second Pleasant Valley well construction is completed in 2016; a third well in the PV Basin, expected some time after 2020, would increase local reliability, so long as it, too, had a backup generator. The Camrosa Water Reclamation Facility has installed electrical generation equipment to ensure continued operations for extended periods of time and uninterrupted recycled water service. Each District vehicle is equipped with emergency food and water supplies for extended deployment as well as a full set of system plans. An emergency response trailer is also equipped with supplies and equipment to manage emergency field operations. The water system's SCADA system is set up on an independent radio system with solar-powered instrumentation and radio transmission to maintain system monitoring independent of the electrical grid. Four of the District's five sewer lift stations have emergency generation backup on site; the fifth will siphon during electrical outages.

The District maintains sufficient reserves to fund most contemplated emergencies. Extensive replacement of infrastructure, in the most catastrophic circumstances, would require additional funding from sources that would need to be determined at the time of the emergency.

Table 8-3a below summarizes actions in response to emergency conditions that might reasonably occur in the District.

Table 8-3a: Catastrophe Response Actions	
Possible Catastrophe	**Summary of Actions**
Regional Power Outage	▪ Evaluate need to initiate the Incident Command System ▪ Lock off large interruptible service meters ▪ Shift to fixed electrical generators ▪ Position portable electrical generators ▪ Evaluate need to implement water shortage contingency plan ▪ Notify customers
Earthquake, Flood, or Fire - Caused Catastrophic Damage to Camrosa's Water System	▪ Evaluate need to initiate the Incident Command System ▪ Isolate damaged sections of system ▪ Lock off large interruptible service meters ▪ Fill system storage ▪ Shift to electrical generators as necessary ▪ Immediately close valves where needed to preserve existing water in storage ▪ Assess, and, if necessary, systematically recharge system ▪ Evaluate need to implement water shortage contingency plan
Interruption of Supply from Water Wholesaler	▪ Evaluate need to initiate the Incident Command System ▪ Fill system storage ▪ Lock off large interruptible service meters ▪ Evaluate need to implement water shortage contingency plan

8.9 Minimum Supply Next Three Years

Groundwater in the District Service Area is pumped at rates that are sustainable even in multiple-dry year scenarios. Sufficient water is available from imported sources, and levels of nonpotable irrigation water available remain constant, as displayed in Table 8-4 below. For these reasons, the District's ability to provide water in multiple-dry year scenarios is not adversely affected.

Table 8-4 Retail: Minimum Supply Next Three Years			
	2016	2017	2018
Available Water Supply	15,340	15,549	15,757
NOTES: Values are total supply including imported water, groundwater, and nonpotable irrigation water			

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9 Demand Management Measures

LAW

10631 (f)(A)…The narrative shall describe the water demand management measure that the supplier plans to implement to achieve its water use targets pursuant to Section 10608.20.

(B) The narrative pursuant to this paragraph shall include descriptions of the following water demand management measures:

(i) Water waste prevention ordinances.

(ii) Metering.

(iii) Conservation pricing.

(iv) Public education and outreach.

(v) Programs to assess and manage distribution system real loss

(vi) Water conservation program coordination and staffing support.

(vii) Other demand management measures that have a significant impact on water use as measured in gallons per capita per day, including innovative measures, if implemented.

526

(a) Notwithstanding any other provisions of law, an urban water supplier that, on or after January 1, 2004, receives water from the federal Central Valley Project under a water service contract or subcontract… shall do both of the following:

(1) On or before January 1, 2013, install water meters on all service connections to residential and nonagricultural commercial buildings… located within its service area.

527

(a) An urban water supplier that is not subject to Section 526 shall do both the following:

(1) Install water meters on all municipal and industrial service connections located within its service area on or before January 1, 2025.

10631

(f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:

(1)(A) … a narrative description that addresses the nature and extent of each water demand management measure implemented over the past five years. …The narrative shall describe the water demand management measures that the supplier plans to implement to achieve its water use targets pursuant to Section 10608.20.

10631 (i) For the purposes of this part, urban water suppliers that are members of the California Urban Water Conservation Council shall be deemed in compliance with the requirements of subdivision (f) by complying with all the provisions of the "Memorandum of Understanding Regarding Urban Water Conservation in California." dated December 10, 2008, as it may be amended, and by submitting the annual reports required by Section 6.2 of that memorandum.

9.1 Demand Management Measures for Wholesale Agencies

Not applicable.

9.2 Demand Management Measures for Retail Agencies

9.2.1 Water Waste prevention ordinances

The Camrosa Water District's water waste prohibitions are outlined in Ordinance 40-15 *Rules and Regulations Governing Provision of Water and Sanitary Services*, which was adopted on August 27, 2015, and supersedes Ordinance 40-10. These water-use prohibitions are in place at all times, regardless of whether any declared water supply shortage or water emergency condition is in effect and preclude:

- gutter flooding
- uncorrected leaks lasting longer than 72 hours
- utility hoses with open-end nozzles
- vehicle wash down with open-end hose nozzels

Restaurants are required to use water conserving dish-washing pray valves, water fountains must use re-circulated water, and installation of single pass cooling systems in building requesting new water service is prohibited. Ordinance 40-15 is included for review in Appendix C.

9.2.2 Metering

The Camrosa Water District began an Automated Meter Reading (AMR) installation program in 2008 to retrofit manual-read meters with radio-read meters to facilitate meter reading and improve customer service. In addition, the meter reading information will be used by staff for modeling and water usage patterns and analyzing those patterns when developing projects. Approximately 7,000 meters in the District have now been retrofitted. The project is approximately 82 percent complete.

In addition to the AMR retrofit program, the District has an ongoing meter maintenance replacement program. A portion of the District's meters are replaced each year to ensure accuracy. Water meters tend to deteriorate over time, resulting in inaccurate meter reads resulting in a decrease in revenue. With a serviceable life of approximately 15 years, replacement of between six and seven percent of the District's 8,500 meters annually provides a reasonable guarantee of meter accuracy. Camrosa has performed a feasibility study for BMP1.3 Mixed-Use Meters and submitted to CUWCC to be incompliance with the BMP.

9.2.3 Conservation Pricing

All water connections are metered. Approximately 60 percent of the District's potable meters are equipped with radio-read meters and connected to the Automatic Meter Reading (AMR) system; it is an ongoing CIP to replace all traditional meters with AMRs. Camrosa's rate structure consists of a two-tier volumetric rate. The first tier is set at 12 HCF, which is considered the amount needed for essential use. All use exceeding 12 HCF is charged at the second-tier rate. Fixed monthly meter service fees are determined by the size of the meter. Camrosa does not currently have volumetric pricing on the wastewater system, and does not intend to implement it.

9.2.4 Public education and outreach

The Camrosa Water District has developed an effective public outreach program to educate the District's customers about water resources and conservation. Included in the public outreach and education program is an interactive website to provide a resource tool for the customers. In 2008, the District inaugurated its newsletter, *The Independent*, as another public outreach/education resource to inform customers of water supply resource challenges and conservation practices. The District also hosts speaker bureaus to inform local community organizations about the challenges facing California and the District regarding water

reliability, water quality and the future of water availability and cost. In addition, the District includes water conservation messages in its monthly utility bills, to remind customers of easy day-to-day water conservation practices and techniques.

Residential Landscape Classes are another public outreach and education forum the District utilizes to educate customers on good water stewardship, in such areas as California-Friendly gardens, landscape design, and irrigation maintenance. The District has a water-efficient California Friendly Demonstration Garden, which was partially funded by Metropolitan's City Makeover grant program. The garden is used during Residential Landscape Classes as a demonstration and has resulted in a number of customers using water-wise plants in their own landscapes.

The District has conducted teacher in-service workshops to promote water awareness as part of the school curriculum. Coordinated with Metropolitan, Calleguas Municipal Water District, and the City of Camarillo, a teacher resources workshop is hosted bi-annually with the school district to promote Metropolitan's educational materials that meet local elementary and junior high school curriculum. In addition, the District holds an annual art contest with elementary and junior high school students to promote and educate water conservation. The winners are submitted to Metropolitan to be considered as part of the annual "Water Is Life" calendar contest. The District also hosts an annual school assembly called "H_20, Where Did You Go?" to local schools to promote water-resource and conservation education. In December of 2015, Camrosa hired a part-time employee to contact high-use (great than 2 AFY) customers who were not meeting their conservation targets.

A part of the District's education program includes in-classroom presentations that educate students on the sources of water supply and conservation of the limited resources. The District provides school tours of the water quality laboratories and Wastewater Reclamation Facility and Round Mountain Water Treatment Plant desalter educating on the water reuse technologies to provide additional water supplies to an already limited resource.

9.2.5 Programs to assess and manage distribution system real loss

Annually, the District prepares BMP 1.2 Water Loss Control utilizing the AWWA Water Audit software. District staff has participated in training of the Water Loss Audit and Component Analysis Process as required by the BMP. The District maintains records of the reported water loss including date/time, location, type of pipe fitting, estimated volume of loss, leak running time from time of report to repair, and cost of repair.

The District's cumulative real water loss for fiscal year 2015 was approximately 9.0 percent. In November 2015, the District initiated a pilot leak survey program that evaluated pressure zones 2A, 3D, 4A, 4B, and 4C. A leak detection firm was selected which performed acoustic leak detection and correlation on main distribution lines within these zones. At the conclusion of the survey, a report was presented which outlined issues found within these zones. The District subsequently performed corrective action of issues found in the leak report. After the completion of the leak survey and corrective actions, cumulative water loss in these zones dropped from 8.0 percent to 4.28 percent. The District has budgeted in 2017 for leak survey services to be performed on the remaining pressure zones within the District. These include zones 1, 2B, and 3ABC, where most of the District's water loss occurs.

In addition to increasing its detection program, Camrosa is also systematically reconciling production/sales disparities and instituting a meter-calibration program on both the production and delivery sides. A meter-replacement program is being developed, too, which will aim to prevent water loss resulting from aging infrastructure, particularly on large meters.

9.2.6 Water conservation program coordination and staffing support

While several people contribute to the conservation efforts at the District, Camrosa has a Water Conservation Technician who is responsible for all conservation related programs and implementation of BMPs formulated by the CUWCC. The water conservation program is a line item in the District's budget.

9.2.7 Other demand management measures

The District distributes the California Urban Water Conservation Council's (CUWCC) *Practical Plumbing Handbook*, which residents can use to perform self surveys. Camrosa also distributes indoor water saving devices such as low-flow showerheads, faucet aerators, and toilet flappers free of charge.

In addition to the distribution of indoor water saving devices, the District fully participates in Metropolitan Water District's SoCal Water$mart rebate program which offers High-Efficiency Clothes Washer, High-Efficiency Toilets (HETs), Turf-Removal, Rotating Nozzles, Weather-Based Irrigation Controllers (WBICs), Rain Barrels and Cisterns, and Soil Moisture Sensor Systems rebates for residential customers.

The District also promotes Metropolitan's SoCal Water$mart rebate program, which targets Commercial, Industrial and Institutional (CII) customers. Water-efficient devices eligible for rebates include Commercial HETs, Ultra Low and Zero Water Urinals, Plumbing Control Valves, Cooling Tower Regulators and Controllers, In-stream Flow Regulators, Air-Cooled Ice Machines, Connectionless Food Steamers, Rotating Nozzles, Irrigation Controllers, Soil Moisture Sensor Systems, Dry Vacuum Pumps, and Laminar Flow Restrictors. The District also promotes Metropolitan's Landscape Irrigation Surveys for CII customers providing comprehensive review of the irrigation system and receive a written report that includes recommendations for improving the site's irrigation efficiency including system repairs, equipment updates, irrigation scheduling and information about available financial incentives to help with the cost of recommended improvements.

The District partnered with Western Municipal Water District in 2013, implementing the FreeSprinklerNozzles program, providing customers with free Toro Precision Series Spray nozzles to both help combat wasted water and increase the efficiency of an irrigation system by as much as 10 percent – 30 percent. The District has also partnered with local water purveyors in a regional landscape survey program, Ventura County Regional Urban Landscape Efficiency Program (VC-Rule) to provide free landscape water evaluations with the use of Proposition 84 grant funding. The program is designed to improve irrigation efficiency, conserve water and improve the reliability of Ventura County's water supply. Customers are offered a landscape survey, direct installation low-precipitation rate nozzles, and either rain gage or WBIC to achieve significant landscape water savings. In addition, the District has partnered with the Ventura County Resource Conservation District to provide agricultural customers water evaluations with recommended maintenance and irrigation retrofits to improve water irrigation efficiencies.

9.3 Implementation over the Past Five Years

Worksheet 9.3 enumerates the DMMs Camrosa has implemented over the past five years.

Worksheet 9.3. Camrosa Demand Management Measures, FY11-14

DMM	FY 2009-10	FY 2010-11	FY 2011-12	FY 2012-13	FY 2013-14
HECW (High-Efficiency Clothes Washer)	106	124	107	82	69
HET (High-Efficiency Toilet)	51	10	26	24	20
WBIC (Weather-Based Irrigation Controller)	2	0	2	0	27
WBIC for Large Landscape	0	0	0	1	1
Rotating Nozzles	653	558	714	737	907
Synthetic Turf	7,950 sq. ft.				
Rain Barrels	0	0	0	0	9
FreeSprinklerNozzels.com	0	0	0	2991	4926
Water Surveys	8	0	0	0	14
Showerheads	0	3	0	1	1
Toilet Flappers	0	3	0	0	2
Faucet Aerators	1	21	112	0	16
Shut Off Hose Nozzles	0	0	0	0	16
Soil Moisture Meters	0	0	0	0	0
Single Family Landscape Surveys	8	5	6	0	14
Multi Family Landscape Surveys			3		
Bill Messages	12	12	12	12	12
School Assemblies	2	2	2	2	2
Class Presentations	3	2	0	1	1
Landscape Class	2	2	2	2	2
Tours	1	0	1	0	1
Art Calendar Contest	1	1	1	1	1
Newsletters	3	3	3	1	1
Media Contact	3	1	1	0	1
Teacher Workshop	1	0	0	0	1
Paid Advertisements		1			4
Speaker Bureau	5	2	4	4	1
Utility Bill Inserts	0	0	0	2	2

9.4 Planned Implementation to Achieve Water Use Targets

Camrosa plans to continue implementing the programs described in Section 9.2.

9.5 Members of the California Urban Water Conservation Council

Camrosa Water District is committed to implementing water conservation programs. As a signatory to the California Urban Water Conservation Council (CUWCC) Memorandum of Understanding, the District is actively involved in implementing a prescribed set of urban water conservation best management practices

(BMPs). Camrosa Water District has implemented or plans to implement all of the required Demand Management Measures outlined in the CUWCC's BMPs. Annual reports are filed with the CUWCC on activities conducted by the District to effect implementation. Coverage Reports are provided in Appendix B. On April 11, 2014, DWR approved of Camrosa's Self-Certification Statement regarding the implementation of its Urban BMPs, declaring that Camrosa's implementation is consistent with AB 1420 and, therefore, is eligible to receive water management grant or loan funds (see Appendix B for DWR Certification).

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Due to their length, Appendices A-K are not included in this draft version, and are available upon request.

APPENDIX A. Announcements and Resolutions

- Announcements of Notice of Preparation
- Announcement of Public Hearing
- Proof of Public Hearing
- Resolution 15-XX: A resolution of the Board of Directors of Camrosa Water District Adopting the Urban Water Management Plan 2015
-

APPENDIX B. CUWCC and DWR Reporting

- *CUWCC Reporting – Best Management Practices*
  - *BMP 1.1 Operation Practices*
  - *BMP 1.2 Foundational Water Loss Control*
  - *BMP 1.2 Water Loss Control*
  - *BMP 1.3 Foundational Metering with Commodity*
  - *BMP 1.3 Metering with Commodity*
  - *BMP 1.4 Foundational Retail Conservation Pricing*
  - *BMP 1.4 Retail Conservation Pricing*
  - *BMP 2.1 Foundational Public Outreach*
  - *BMP 2.1 Public Outreach*
  - *BMP 2.2 Foundational School Education Programs*
  - *BMP 2.2 School Education Programs*
- *DWR Self-Certification Statement*

APPENDIX C. Camrosa Water District Ordinance 40-15

- CWD Ordinance 40-15 – Rules and Regulations Governing the Provision of Water and Sanitary Services (Adopted August 27, 2015)
- Also submitted electronically

APPENDIX D. Resolutions Declaring Water Shortage Emergencies

- Appendix D1 - Resolution 15-07. A Resolution of the Board of Directors of the Camrosa Water District Declaring a Water Shortage Emergency & Implementing a Water Shortage Contingency Plan (DRAFT)
- Appendix D2 – Resolution 12-14. A Resolution Establishing a Moratorium on Water Availability & Will Serve Letters

APPENDIX E. Metropolitan Water District Allocation Information

- Information from Metropolitan Water District delineating allocations to its member agencies, and from Calleguas Municipal Water District to Camrosa.

APPENDIX F. Santa Rosa Groundwater Management Plan

- Due to the length of the *Santa Rosa Groundwater Management Plan*, Camrosa has not included it in this hardcopy. It is available electronically and in hard form upon request. Please contact the Camrosa Water District at 7385 Santa Rosa Road, Camarillo, CA 93012 for copies of the management plan.

APPENDIX G. Ventura County Population Projections

- 2040_revised_Decapolis 5_23_08_Final.pdf

APPENDIX H. Fox Canyon Groundwater Management Authority

- Appendix H1 – FCGMA Resolution 2014-01.pdf
- Appendix H2 – FCGMA Groundwater Management Plan.pdf

APPENDIX I. AWWA Water Audit Reporting Worksheet

- AWWA-WAS-v5-09152014.xls

APPENDIX J. City of Thousand Oaks Agreement 10116-2013

- Agreement between City of Thousand Oaks and the Camrosa Water District for the beneficial use of water (Contract #101162013).pdf

APPENDIX K. Perched Aquifer

- Appendix K1 – Aquifer Pumping Test of Camrosa Water District University Well – 2010.pdf
- Appendix K2 – Shallow Groundwater of the Eastern PV Basin.pdf
- Appendix K3 – Northeast Pleasant Valley Basin Ground and Surface Water Study.pdf