San Diego Regional Agricultural Water Management Plan

Part II

February 2016

Prepared for:

San Diego County Farm Bureau

SAN DIEGO COUNTY FARM BUREAU

Prepared by:

Ken Weinberg Water Resources Consulting LLC

Bill Jacoby Water Resources Consulting

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San Diego Regional Agricultural Water Management Plan

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on behalf of the following Participating Agencies

- **Valley Center Municipal Water District**
- **Rainbow Municipal Water District**
- **Carlsbad Municipal Water District**
- **City of Escondido**
- **City of Oceanside**
- **City of Poway**
- **Fallbrook Public Utilities District**
- **Olivenhain Municipal Water District**
- **Ramona Municipal Water District**
- **Rincon del Diablo Municipal Water District**
- **San Dieguito Water District**
- **Santa Fe Irrigation District**
- **Vallecitos Water District**
- **Yuima Municipal Water District**

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Ken Weinberg Water Resources Consulting LLC

Bill Jacoby Water Resources Consulting

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Acronyms and Abbreviations

Mg/l	**micrograms per liter**
°F	**degrees Fahrenheit**
2005 Plan	**Updated 2005 Urban Water Management Plan**
2010 Plan	**2010 Urban Water Management Plan**
AAC	**All-American Canal**
AB	**Assembly Bill**
AF or af	**Acre Feet**
AF/YR or af/yr	**acre-feet per year**
AMR	**Automatic Meter Reading**
AWMP	**Agriculture Water Management Program**
AWWA	**American Water Works Association**
Avg.	**average**
BDCP	**Bay Delta Conservation Plan**
BiOp	**Biological Opinion**
BMPs	**Best Management Practices**
Board	**Board of Directors**
CC	**Coachella Canal**
CCR	**California Code of Regulations**
CDFG	**California Department of Fish and Game**
CEQA	**California Environmental Quality Act**
cfs	**cubic feet per second**
CII	**commercial, industrial, and institutional**
CIMIS	**California Irrigation Management Information System**
CIP	**Capital Improvement Program**
CMWD	**Carlsbad Municipal Water District**
CO2	**carbon dioxide**
CRA	**Colorado River Aqueduct**
CSP	**Carryover Storage Project**
CUWCC	**California Urban Water Conservation Council**
CVP	**Central Valley Project**
CVWD	**Coachella Valley Water District**
D/DBP	**Disinfectants/ Disinfection Byproducts**
DBPs	**Disinfection byproducts**
DDW	**Division of Drinking Water State Water Resources Control Board**
Delta	**Sacramento-San Joaquin River Delta**
DWR	**California Department of Water Resources**

EDU	**Equivalent Dwelling Unit**
EIR	**Environmental Impact Report**
EIS	**Environment impact statement**
EPA	**U. S. Environmental Protection Agency**
ESA	**Endangered Species Acts**
ESP	**Emergency Storage Project**
ET	**Evapotranspiration**
ETC	**Crop Evapotranspiration**
ET0	**Reference Evapotranspiration**
EWMP	**Efficient Water Management Practice**
Forum	**Colorado River Basin Salinity Control Forum**
FPUD	**Fallbrook Public Utilities District**
GCM	**General Circulation Model**
GIS	**geographic information system**
GPCD	**Gallons per capita per day**
gpm	**Gallons per minute**
hcf	**Hundred Cubic Feet**
IAC	**San Diego County Water Authority**
ID	**Infrastructure Access Charge** **Irrigation District**
IID	**Imperial Irrigation District**
IPCC	**Intergovernmental Panel on Climate Change**
IPR	**Indirect Potable Reuse**
Ib/day	**pounds per day**
M&I	**Municipal and Industrial**
MAIN	**Municipal and Industrial Needs**
mg/l	**milligrams per liter**
MGD	**million gallons per day**
MRCD	**Mission Resource Conservation District**
MOU	**Memorandum of Understanding**
MSL	**Mean Sea Level**
MWD	**Municipal Water District of Southern California**

MTBE	**Methyl Tertiary Butyl Ether**
MW	**megawatts**
MWD	**Municipal Water District**
NCCP	**Natural Community Conservation Plan**
NOAA	**National Oceanic and Atmospheric Administration**
NPDES	**National Pollutant Discharge Elimination System**
OMWD	**Olivenhain Municipal Water District**
pCi/l	**picocuries per liter**
PL	**Public Law**
Poseidon	**Poseidon Resources**
ppm	**parts per million**
QSA	**Quantification Settlement Agreement**
RAWMP	**Regional Agricultural Water Management Plan**
RMWD	**Rainbow Municipal Water District**
Regional Board	**Regional Water Quality Control Board**
RO	**reverse osmosis**
ROD	**Record of Decision**
RSF	**Rate Stabilization Fund**
RUWMP	**Regional Urban Water Management Plan**
RWMG	**Regional Water Management Group**
SANDAG	**San Diego Association of Governments**
SCADA	**Supervisory Control and Data Acquisition**
SWRCB	**State Water Resources Control Board**
TSAWR	**Transitional Special Agricultural Water Rate**

SB	**Senate Bill**
SBX7-7	**Senate Bill 7 of the Seventh Extraordinary Session of 2009 (Water Code §10608); also known as Water Conservation Act of 2009**
SCSC	**Southern California Salinity Coalition**
SDCWA	**San Diego County Water Authority**
SDWA	**Safe Drinking Water Act**
SDWD	**San Dieguito Water District**
SFID	**Santa Fe Irrigation District**
SNMP	**Salt and Nutrient Management Plan**
SWA	**Source Water Assessment**
SWP	**State Water Project**
SWRCB	**State Water Resources Control Board**
TDS	**total dissolved solids**
TOC	**total organic carbon**
Transfer Agreement	**Water Authority-IID Water Conservation and Transfer Agreement**
USBR	**U.S. Bureau of Reclamation**
USFWS	**U.S. Fish and Wildlife Service**
USGS	**United States Geological Survey**
UWMP	**Urban Water Management Plan**
VWD	**Vallecitos Water District**
VCMWD	**Valley Center Municipal Water District**
WSAP	**Water Supply Allocation plan**
WSDM	**Water Surplus and Drought Management Water Shortage and**
WSDRP	**Drought Response Plan**
WTP	**Water Treatment Plant**

WUCA	**Water Utility Climate Alliance**
YMWD	**Yuima Municipal Water District**

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0 Preface to Part II Agency Chapters

The *San Diego County Regional Agricultural Water Management Plan* (San Diego RAWMP) has been prepared by the San Diego County Farm Bureau (SDCFB) and 14 participating San Diego County retail water agencies serving commercial agricultural water users within the service area of the San Diego County Water Authority (SDCWA). The RAWMP describes the water supply and water use efficiency planning and implementation activity of 14 retail water agencies in San Diego County for the purpose of providing reliable water supply to agricultural customers. The combined service areas of the 14 participating agencies total 380,000 acres of which 44,210 acres includes irrigated agricultural lands. The participating agencies are urban water suppliers located in the northern half of San Diego County.

The San Diego RAWMP has been prepared in accordance with the requirements of the Water Conservation Act of 2009 (SBx7-7), which modifies Division 6 of the California Water Code (CWC or Code), adding Part 2.55 (commencing with §10608) and replacing Part 2.8 (commencing with §10800). This AWMP document conforms to the framework presented in ***A Guidebook to Assist Agricultural Water Suppliers to Prepare a 2015 Agricultural Water Management Plan*** (Guidebook) that was issued by the California Department of Water Resources Division of Statewide Integrated Water Management Water Use and Efficiency Branch (DWR) in June, 2015 to aid water suppliers in preparing AWMPs in accordance with the requirements of SBx7-7.

Since all but one of the 14 participating agencies prepares Urban Water Management Plans (UWMPs) it is the intent of the RAWMP to be consent with those documents and at the suggestion of DWR staff to avoid unnecessary duplication. This RAWMP relies heavily on information contained in the 2010 updates to the participating agencies *Urban Water Management Plans* (UWMPs) and the for regional information the SDCWA's 2010 UWMP and the 2013 *San Diego Integrated Regional Water Management Plan* (IRWM Plan). This RAWMP also uses information from monthly and annual reports from the participating agencies and the regional water wholesaler, SDCWA, and information based on a various public regional plans and studies conducted over time. Major sources of information are cited at the end of each Section.

The San Diego RAWMP consists of 2 volumes, Part I and Part II. Part I addresses the Plan requirements from a regional perspective. This volume, Part II, provides agency specific information on AWMP requirements for the 14 water suppliers participating in this RAWMP. Part II is organized with the two

largest agricultural water suppliers listed first and then the remaining water suppliers appearing in alphabetical order.

When combining the information in Part I and Part II the reader will be provided a good understanding of the interconnectedness of the region's water supplies and water management strategies as well as a perspective of the unique and vibrant agricultural tradition the San Diego region maintains today.

Acknowledgements for Part II

All the General Managers and retail water supplier staff that reviewed the individual agency chapters, provided important data and graphics and did so in a very professional and responsive manner.
Much appreciation to all of you, too many to list here.

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1. Valley Center Municipal Water District

Agency Chapter

1 Valley Center Municipal Water District

1.1 Size, History and Location of Service Area

The unincorporated community of Valley Center is primarily a rural residential and agricultural community with several more suburban pockets of residential development. Originally known as Bear Valley, Valley Center is located inland in northern San Diego County 45 miles northeast of San Diego and covers an area of approximately 100 square miles. The area called Valley Center was actually several communities in the last decades of the 19th century including: Vineyard, Lilac, and Bear Valley. Valley Center remained quite sparsely populated until the formation in 1953 of the Valley Center Municipal Water District (VCMWD / District). Adjacent water agencies include Yuima Municipal Water District to the north, Rainbow Municipal Water District and Vallecitos Water District to the west and Escondido to the south.

Valley Center is characterized by its mostly rural residential pattern of development with significant agricultural uses located on the periphery of an urbanizing San Diego County. Approximately 9.5 percent of all agricultural acres in the county and 30.3 percent of all agricultural acres in the SDCWA's service area are in Valley Center. Although urbanization has greatly diminished agricultural uses in other areas of the County, Valley Center has managed to maintain its rural identity. The residents of Valley Center consider their community to be one of the few places left in San Diego County where one can enjoy a rural quality of life and an unspoiled natural environment, while at the same time living within a reasonable proximity of employment and urban services.

Valley Center has a unique history relative to other agricultural areas in San Diego County. In 1845, Rancho Guejito y Canada de Palomia, or Rancho Guejito, was established as a Mexican Land Grant on 13,000 acres. Although adjacent to the Land Grant, what later became Valley Center was not part of the Rancho Guejito. Interestingly, Rancho Guejito is the only Mexican land grant among 800 original ranchos still existing in its original state and continues to be used for cattle raising and other agricultural activities, such as avocados and wine grape growing.

Because the area was not part of a recognized land grant it was open to settlement by small farmers and ranchers after President Lincoln signed the Homestead Act in 1862. Homesteaders came to Valley Center to claim 160 acres of land for a nominal filing fee. Its original name of Bear Valley came from an incident in 1866 where a settler killed a 2,200-pound grizzly bear, the largest in California in history.

Relying on dry farming techniques and limited but available groundwater, the first navel orange trees were planted in 1873 and by 1886 the first shipment of oranges from Valley Center was sent to the east coast. By 1887 Valley Center's population reached 1,000 and the first cotton plantation was planted. Agricultural activities continued with a rubber plantation being added to its citrus groves and in 1936 the world's largest turkey farm began operating in Valley Center. However, expanded commercial agricultural development was severely constrained by reliance on limited groundwater and intermittent surface flows.

Creation of the San Diego County Water Authority (SDCWA) in 1944 and completion of the 1st San Diego Aqueduct in the late 1940's provided the arid inland North San Diego County an opportunity to secure a water supply from the Colorado River via the Metropolitan Water District of Southern California (MWD) to supplement the area's limited groundwater and intermittent stream flows. Fortunately for Valley Center, the 1st San Diego Aqueduct coursed essentially through the middle of what would become the District's service area. After a successful formation election in 1954 with an initial 55,000-acre service area, the District was officially annexed to the SDCWA and MWD on May 9, 1955, thereby securing access to a then ample and reliable source of imported water to serve the community.

With the availability of imported water, dry-farming techniques were no longer required. Droughts were not the problem they were previously and a stable and relatively inexpensive water supply allowed citrus and avocado groves to thrive. In these early years of the District's history, MWD had more Colorado River supply than water demand and actively sought to sell water to farmers to increase its revenue which was then made up almost exclusively from property tax collections. This large supply of reliable and affordable water allowed the Valley Center community to substantially expand into farming citrus and later avocado. Up until recently as much as 85% of the water sold by the water district was for agricultural purposes.

There are a number of agricultural land uses within Valley Center which contribute significantly to the rural character of the District's service area. Crop production in Valley Center is heavily weighted toward avocado and citrus production. Cut flower and nursery production has increased in recent years with these industries relocating to Valley Center as a result of urbanization and high land prices in the coastal areas of San Diego County. High value crops such as Kiwi fruits, Fuyu persimmons, and protea flowers have begun to increase in response to market demand, value, and the added advantage of their

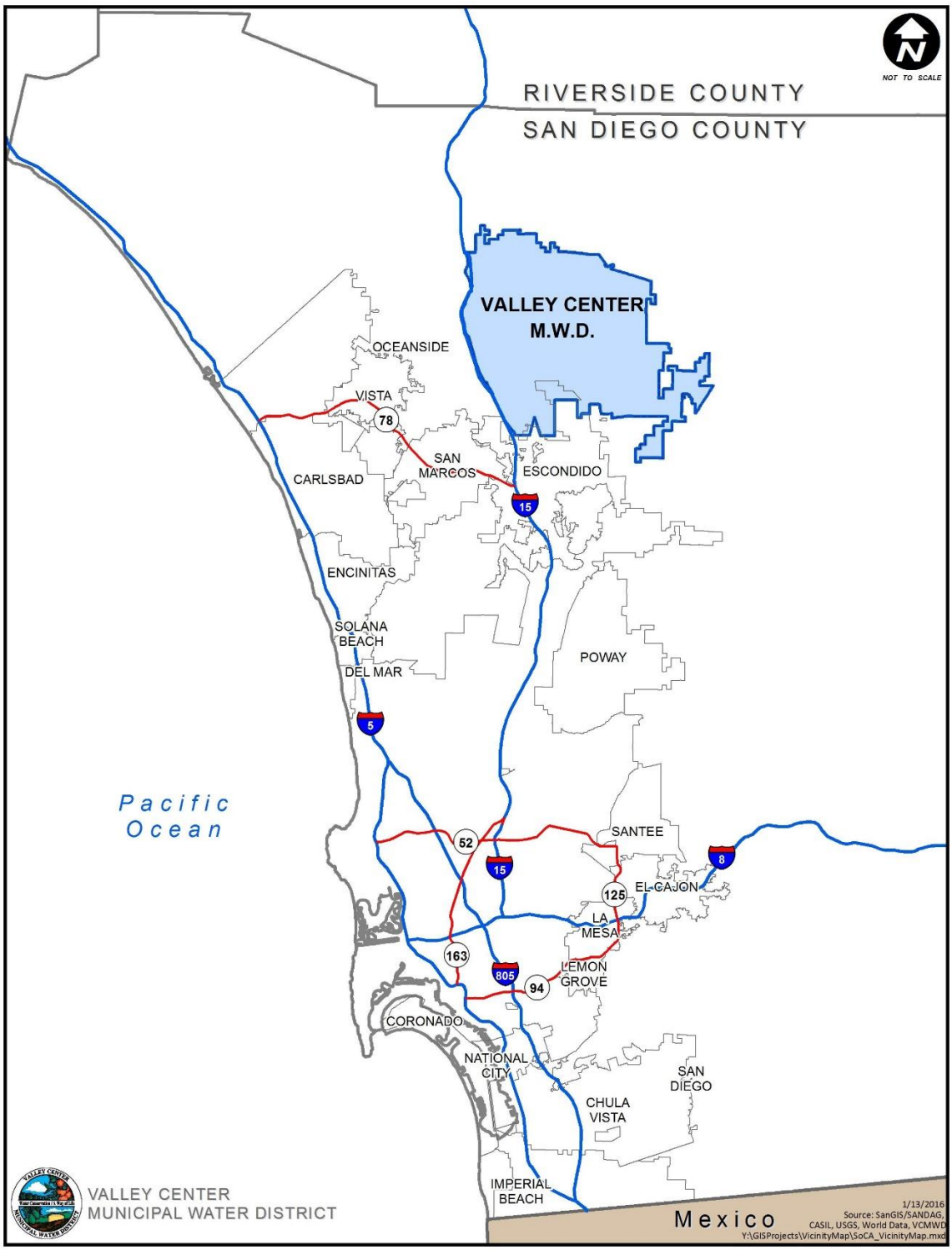
low water requirements. It is estimated that proteas consume 20 percent of the water used to sustain avocados. There is also a wine grape growing and winery industry emerging in Valley Center taking advantage of the ideal climate patterns, available land with ideal soils and very low water demand compared to permanent tree crops.

The District imports nearly 100 percent of its water from the SDCWA and approximately 58 percent of the area receives water service from VCMWD. Once the SDCWA's second largest water user, the District currently ranks behind the City of San Diego, Helix Water District, and Otay Water District. As of June 30, 2015, the District served 9,869 active water meters (including 1,040 residential fire protection meters) for a net 8,829 active water service accounts. The District is also the largest retail purchaser of agricultural water within SDCWA's service area

Historically over the 60+ years of operation the majority of water delivered by the District has been for agricultural purposes. In the 1970's, 1980's, and early 1990's as much as 85% to 90% of the water supplies was counted as agricultural deliveries. Even today, with the dramatic drop on agricultural accounts, acreage and demand over the last ten years, agricultural still accounted for 70.2% of the district's water demand. Over the decades, avocado and citrus production have dominated, but other crops, such as ornamental cut flowers, nuts, nurseries poultry, and wine grapes are also in the mix agricultural activities.

As projected by the San Diego Association of Governments and reflected in SDCWA water demand projections, the 2035 and 2050 horizons hold for dramatic reductions in agricultural lands and activities. Though there are no doubt pressures on existing agricultural lands from residential and commercial development, the predominate zoning as per the November 2015 Valley Center Community Plan remains low and high intensity agricultural and low density residential. This, coupled with the varied topography of the community will always mitigate toward some level of agricultural activity in the District's service area.

Figure 1-1 VCMWD Service Area



As described in Part 1 of this RAWMP, rising water prices, labor costs, regulatory restrictions and market competition have resulted in a dramatic reduction in permanent tree crop acreage production. However, there has also been observed a resilient rise in higher value, lower water use crops such as nurseries, cut-flowers and wine grape plantings replacing those legacy permanent tree crop plantings.

In the January 2008 "Interim Agricultural Water Program (IAWP) Supply Reduction Implementation Plan" the District reported to the SDCWA that it had 1,700 accounts and 20,606 acres of land certified and as being used for commercial agricultural production under the MWD/SDCWA IAWP and SAWR Programs. Of that acreage, 14,200 acres were avocado and 3,641 were various forms of citrus, including oranges, lemons and grape fruit. For FY 2007-2008, the District delivered 28,257 acre feet to the 1,700 active certified agricultural meters. By the time the January 2011 report was submitted to the SDCWA, 1,326 accounts and 12,695 acres were certified in the IAWP/SAWR programs. Certified agricultural deliveries for FY 2010-2011 dropped to 16, 248 AF.

In 2012, the District conducted a recertification process of its commercial agricultural customers. The number of accounts dropped to 1,304, with acreage actually under production reported at 10,608, with avocados at 7,288 acres and citrus at 1,495 acres. With the lifting of the drought restriction in 2011, agricultural water usage in FY 2011-2012 went to 17,942 AF. In this certification process, participating customers were asked to provide the acreage actually under cultivation, rather than the District just assuming that their entire properties were under cultivation.

As of the end of FY 2014-2015, the District has 1,096 active certified agricultural accounts and delivered 17,218 AF of certified agricultural supply. Though the District has continued to eliminate accounts from the program based upon water use characteristics indicating a lack of agricultural water usage and activity, it has not completed a comprehensive recertification process since 2012. One is planned at the end of the current drought and resumption of normal water deliveries, hopefully by the end of 2016. It is likely that with the drop of 232 certified accounts between FY 2011-2012 and FY 2014-2015, the amount of acreage actually under cultivation will drop commensurately.

Finally, it should be noted that the District only reports on agricultural deliveries and activities as certified by the agricultural customers themselves under the various programs, such as the TSAWR. There might well be other uncertified agricultural activity using imported water or that using the limited private groundwater resources. While these activities are not reflected in the District's statistics, they might well be counted in the County of San Diego Annual Crop Report and other statistical information.

Commitment to Water Conservation

Valley Center Municipal Water District has a long and well established history of commitment to water conservation both as an agricultural and urban water supplier.

On December 7, 1997, Valley Center MWD Board of Directors approved signing the Memorandum of Understanding Regarding Efficient Agricultural Water Management Practices for Water Suppliers in California. As the only agricultural retailer in SDCWA's service area to execute what would become known as the EWMP MOU, the District also was the focus of the regional 2001 Agricultural Water Management Plan developed by the San Diego County Water Authority on behalf of the Valley Center Municipal Water District (Group 1 Voting Member), the Mission Resource Conservation District (MRCD) and SDCWA (Group 3 Non-voting Other Interested Parties) and its other member agencies.

In its role as an Urban Water Supplier, the District is also a signatory of the CUWCC MOU. Since execution of this MOU on September 16, 1991, the District has consistently implemented the BMPs it felt were economically feasible, as required by the MOU and met its annual reporting requirements.

In the past, VCMWD has provided direct WUE assistance to its agricultural customers. Additionally, VCMWD has been a consistent supporter of the efforts of MRCD to provide water management assistance to growers in its service area. In the early 1990's, the District along with Rainbow MWD and Fallbrook Public Utility District jointly funded no-cost irrigation audits for their agricultural customers by the MRCD. In the mid-1990's the SDCWA assumed this role, and as a result, the MRCD has been under contract to the SDCWA to operate regional agricultural water management services as part of the SDCWA's AWMP. The goal of the program is to provide technical assistance to growers to enable them to irrigate crops as efficiently as possible in order to obtain the maximum economic benefit from limited water resources. The WUE programs have included direct assistance to retail water users, implementation of University of California Cooperative Extension (UCCE) BMPs, funding information assistance, and water purveyor efficiency practices. For more information on the regional WUE programs VCMWD supports, see Part 1.

To facilitate the effectiveness of this MRCD agricultural water use evaluation or "audit" program, the VCMWD annually mails out letters and informational brochures—produced by MRCD as part of this program—to VCMWD agricultural customers, encouraging them to participate in the program. The information also makes them aware of the availability of regional, state and federal (U.S. Department of Agriculture Natural Resource Conservation District "NRCS") funding to make on-farm irrigation

improvements. Additionally, it informs them that the agricultural evaluation carried out on-site and at no cost to them by the MRCD makes them eligible to apply for certain sources of funding. In the past several years, Valley Center farmers have availed themselves of NRCS funding ($85,000 in Calendar Year 2013) after participating in the MRCD program.

1.2 Water Management Facilities

Approved by the Board of Directors in 1955, the District's first Water System Master Plan called for the construction of three connections to the SDCWA's First Aqueduct, 47 miles of the backbone distribution system (6" to 18" diameter pipe), five pumping stations, and three reservoirs totaling 3.0 million gallons of water storage. In 1956, by a 4 to1 margin, voters indebted themselves to issue $1.6 million in General Obligation bonds secured by property tax payments from lands having $2.9 million in assessed valuation for the entire 56,224-acre service area.

With the availability of affordable and reliable imported water from the Colorado River came rapid growth in agricultural plantings. By the early 1960's it became clear that the initial water facilities built in the late 1950's could not keep up with the increasing water demand. By wide margins, the landowners again indebted themselves with a $1.75 million G.O. Bond issued in 1964 and a $2.8 million bond in 1966. This period also saw the District purchase and incorporate a number of small private water systems, as well as form a number of improvement districts, or "U" Districts (the "U" was for unimproved area). The U Districts were used to fund even more landowner approved debt to finance construction of additional water distribution and storage systems fed by the GO bond funded backbone system.

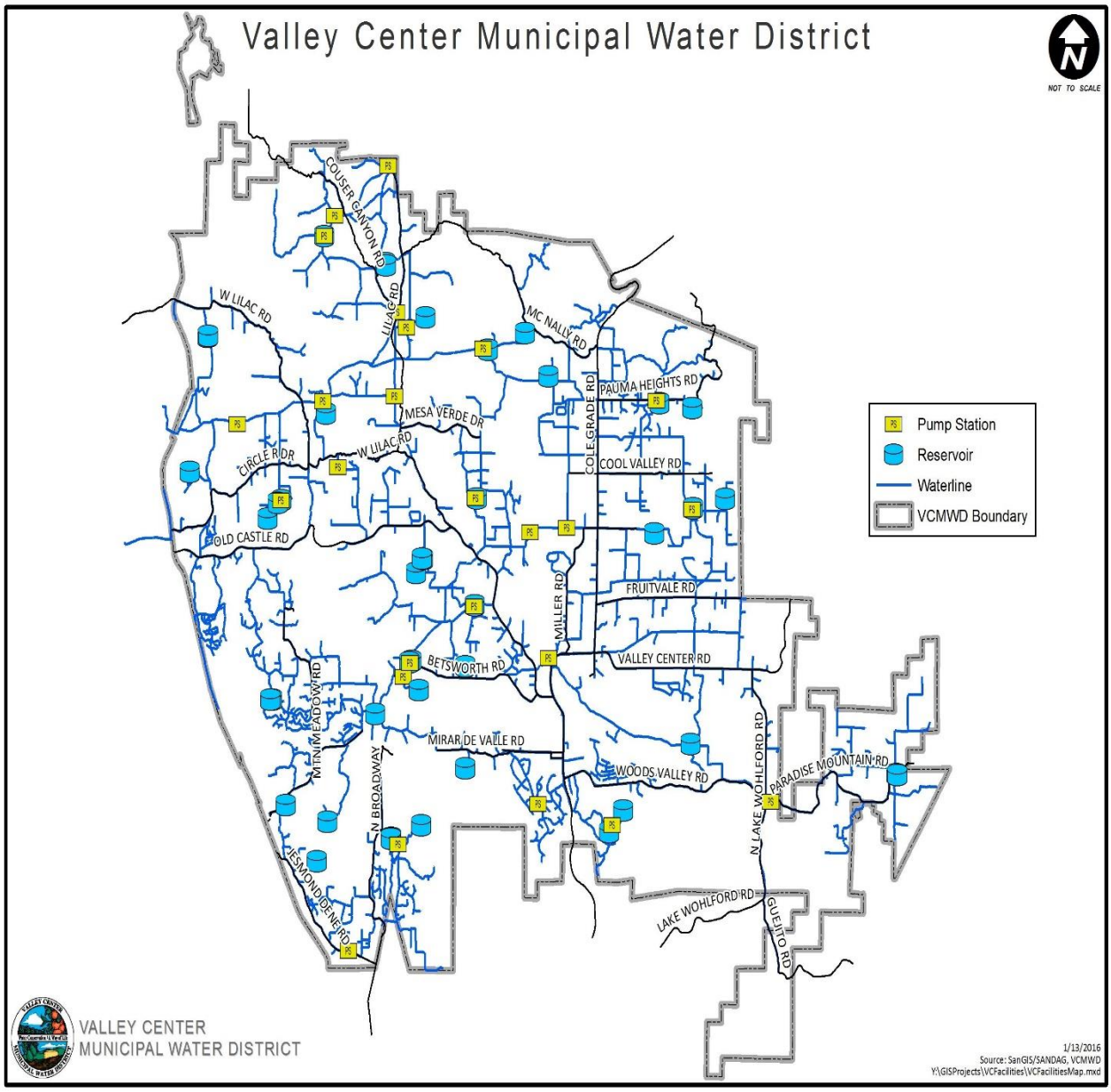
With water demand still growing through the 1960's and into the 1970's and 1980's, the District turned to the state and federal governments for low-interest rate loan programs, including the Federal Bureau of Reclamation 984 Program and the California Safe Drinking Water Act to expand pipeline and pumping station capacities and add more storage, including the 1,600-acre foot Lake Turner Dam and Reservoir.

Today, the District's Water System has 297 miles of pipe, 7 aqueduct connections, 27 pumping stations, 106 pumps, and 42 covered reservoirs with 137 million gallons of water storage. The District's service area has no lined or unlined canals, drains, tailwater or spill recovery devices. The challenge ahead for the District will be to maintain, replace, upgrade, and enhance this extensive, but aging water

distribution and storage system to meet the needs of a community changing from predominantly agricultural to one more balanced with residential and commercial water demands.

As a result of steeply varying topography, the District's water distribution system is hydraulically divided into 18 pressure zones. Within the pressure zones are 13 pressure regulated areas. The system includes over 297 miles of water main pipe ranging in size from 8 inches to 42 inches in diameter. Within these pressure zones, the District currently operates a total of 42 storage facilities (ranging in size from 100,000 gallons to 55.9 million gallons), 27 pump stations, 22 pressure-reducing stations, and one hydropneumatic tank to meet the needs of their customers.

Figure 1-2 VCMWD Water Facilities



1.3 Operating Rules and Regulations

Valley Center's water transmission, distribution and storage systems are entirely enclosed. Water is delivered under SDCWA HGL or pressure added by the District's pumping systems. Under normal operating conditions, the District has adequate aqueduct, storage, pumping, transmission and distribution capacity to deliver water, with adequate pressure and volume at any and all times. As such, there exist no special of focused operating rules for delivery of water to retail agricultural customers, or any district customers at this time.

1.4 Water Delivery Measurements

All water received from the SDCWA is metered and monitored. Additionally, all District customers are metered and billed monthly with computerized equipment. All water sold to VCMWD customers is metered and delivered on demand. No operating rules for delivery of water to retail customers exist at this time.

Procedures for reading, calibration, and maintenance of meters in VCMWD service area are determined by the Board of Directors and the Director of Operations. Meters are read and customers are billed per hundred cubic feet on a monthly basis. Meters with a high volume usage are tested one to two times per year using a portable, in-field test bench. Every three years, 1 1/2" to 3" meters are tested and exchanged if not 98.5 percent accurate. Three-quarter inch meters are exchanged after every 900,000 cubic feet, and 1 .5 million cubic feet for one-inch meters. Routine maintenance is performed as needed in conjunction with monthly reading. Diligent maintenance results in an annual system water loss calculated to be about 5 percent.

1.5 Water Rate Schedules and Billing

All water is charged at a uniform block rate per hundred cubic feet (hcf) with meters read and customers billed on a monthly basis. The VCMWD water rates are broken down into two commodity components. The first component represents the wholesale cost to purchase the water from our supplier. The second component is the local component. This is the amount that is retained by the District to cover the costs associated with the operation and maintenance of the facilities.

Additionally, water delivered in Pump Zones One through Ten is charged a pumping rate based upon the number of feet of lift. Other charges such as Water Service Charge and Infrastructure Access Charge are also applied. Exclusive of Pumping Rates and other service charges, the agricultural rate is $3 .0627 per hcf or $1,334.11 per acre foot.

VALLEY CENTER MUNICIPAL WATER DISTRICT

Table 1-1 Schedule of Rates

Water Rates

Effective Billing of 2/1/2016

All rates shown are per 100 cubic feet (HCF)

Water Rate Components	Domestic/ Commercial	SAWR Agric.	SAWR Ag/Dom 1st 26 HCF	SAWR Ag/Dom Over 26 HCF	WVR Reclaimed effective 2/1/14	Construction Potable	Construction Non-potable
Valley Center MWD	0.4619	0.4619	0.4619	0.4619	2.1984	0.4619	3.2975
MWD/SDCWA wholesale	3.9348	2.7138	3.9348	2.7138		3.9348	
Total commodity rate	4.3967	3.1757	4.3967	3.1757	2.1984	4.3967	3.2975
Price per Ac. Ft.	$1,915.20	$1,383.33	Total=	1,415.08			

NOTE: - The Water Rates above DO NOT include Pumping Rates or VCMWD and CWA service charges. Be sure to add these when calculating the cost of water.
-MWD= Metropolitan Water District of So. Cal. SDCWA= San Diego County Water Authority.

Pumping Rates

Effective Billing of 1/15/06

Zone	Rate	Price per Acre Foot	Lift (in feet)
0	$0.00000	$0.00	0
1	0.07851	34.20	125
2	0.15698	68.38	265
3	0.17415	75.86	300
4	0.26008	113.29	455
5	0.38147	166.17	665
6	0.42553	185.36	745
7	0.45126	196.57	785
8	0.51146	222.79	895
9	0.52975	230.76	925
10	0.70165	305.64	1235

Water Service Charge

Effective Billing of 2/1/2016

Size	Monthly Charge	Fire Meter Charge	Size	Monthly Charge
3/4"	$36.30	$8.75	2"	$99.18
1"	$49.59	$12.25	3"	$148.77
1-1/2"	$74.39		Constr	$148.77/$89.26

SDCWA Infrastructure Charge

Effective Billing of 2/1/2015

Size	Monthly Charge	Size	Monthly Charge
3/4"	$2.76	2"	$14.35
1"	$4.42	3"	$26.50
1-1/2"	$8.28		

Wastewater Service Charge

Effective Billing of 2/1/2013

(A) Moosa-Gravity:	$51.20	per month
(E) Moosa-Pressure:	$93.45	per month
(G) Woods Valley Ranch (prop tax bill)	$98.60	per month

Water Equivalents

HCF = 100 cu. ft.	100 cu. ft = 748 gals.
1 ac. ft. = 43,560 cu. ft.	1 ac. ft. = 325,830 gals.

1.6 Water Shortage Contingency Planning and Allocation Policies

Valley Center Municipal Water District is very well grounded in the area of water shortage contingency planning and allocation policies. Having gone through successive drought response periods over the last four decades, including those in 1976-77, 1990-91, 2009-2011, along with the current drought, the District with the SDCWA and its other member agencies has evolved through several iterations of water shortage contingency planning, management and shortage allocation policies.

Currently the District has two bodies of regulation to deal with water shortage contingency planning and allocation:

Domestic/Non-Agricultural Commercial/Industrial/Institutional

For these customer classes, the District has Article 230 of its Administrative Code, entitled, "Water Supply Management and Shortage Condition Response Program." Article 230 addresses short-term water shortage scenarios caused by emergencies or disruptions of the District's or the SDCWA's water delivery systems. Article 230 also addresses longer–term water supply shortages caused by extended drought or regulatory restrictions. These include actual water supply shortages declared by MWD and/or the SDCWA, shortage response provisions imposed by state or regional agencies (i.e. the SDCWA, SWRCB) and regulatory water shortages imposed by the State of California; as is the case in San Diego County with the current shortage scenario.

Article 230 contains progressive provisions to reduce water usage commensurate with actual water supply shortage conditions, or those imposed by regulatory fiat:

"Watch", Level 1 - Exists at all times, voluntary conservation;

"Alert," Level 2 – Up to 20% reduction with commensurate mandatory use provisions;

"Critical" Level 3 – Up to 40% reduction with commensurate mandatory use provisions; and

"Emergency" Level 4 – Over 40% reduction with commensurate mandatory use provisions.

Compliance with mandatory use provisions in Levels 2, 3, and 4, is enforced with progressive fines, flow restriction and referral to the County District Attorney.

Commercial Agricultural Customers

For its certified agricultural customers participating in the SDCWA Transitional Special Agricultural Water Rate (TSAWR) Program, water shortage response and supply allocation is determined by

Administrative Code Article 162, entitled, "San Diego County Water Authority Transitional Special Agricultural Water Rate Program." This code section provides for the mechanisms to pass through to the District's customers participating in the TSAWR the water supply reductions tied to supply reduction from MWD to the SDCWA and any appurtenant financial penalties and operational sanctions associated with non-compliance with imposed water use reductions. Compliance is enforced with progressive over-use penalties, flow restriction and potential cessation of water service.

Enforcement and Penalties

Both Administrative Code Sections 230 and 162 contain commensurate and progressive enforcement provisions, including monetary fines and in extreme circumstance, physical limitation on water supply flow rates:

Table 1-2 Administrative Code 230:

Examples of Penalties and Charges	Stage When Penalty Takes Effect
Water Conservation Program Violation – Citation	First Violation
Water Conservation Program Violation - Penalty of $100 placed on water bill	Second Violation
Water Conservation Program Violation - Penalty of $250 placed on water bill, and a restriction of service to 5 gallons per minute for 120 hours	Third Violation
Water Conservation Program Violation - Penalty of $500 placed on the water bill, and after a 15-day written notification, a flow restriction of 5 gallons per minute for 120 hours (5 days) and the customer will be charged for the installation and removal of the flow restrictor.	Fourth Violation
Water Conservation Program Violation - Penalty of $1,000 placed on water bill, and after a 15-day written notification, complaint filed with the County of San Diego District Attorney's office, flow restriction imposed and sustained to 5 gallons per minute until disposition of complaint and the customer will be charged for the installation and removal of the flow restrictor.	Fifth Violation

Table 1-3 Over Usage Penalties/Flow Restriction Summary

Usage Level	Response No Action; Usage credit rolled forward	Response- No action	Response Base and Penalty rate for usage up to 15% over Allocation: TSAWR- $2814/AF	Response Base and Penalty rate for usage greater than 15% over allocation: TSAWR- $4,294/AF	Response- Pay penalty rate; Warning of flow restriction	Response Pay penalty; Meter restricted at 50% design flow until total usage meets cumulative allocation	Response Penalty; Meter Restricted at 50% design flow for the balance of Reduction Program
Under allocation	●						
At allocation		●					
Exceeds allocation & accumulated credits by up to 15%			●				
Exceeds allocation and accumulated credits by more than 15%				●			
Exceeds allocation & accumulated credits by ≥15% for 2 consecutive months					●		
Exceeds allocation and accumulated credits by ≥15% for 3 consecutive months						●	
Exceeds allocation & accumulated credits by ≥15% 2nd occurrence same account/acct. group					●		
Exceeds allocation & credits by ≥15% second consecutive month, 2nd occurrence same account/acct. group						●	
Exceeds allocation by ≥15%, 3rd occurrence, same acct./acct. group.							●

Revenue & Expenditure Impacts

Revenue impacts would be offset with a combination of the following:

1. An increase in water commodity and service charges
2. A reduction in annual operating expenses
3. Reserves currently earmarked for long range capital
4. General tax fund revenues currently earmarked for future capital improvements

It is anticipated that Option Number 4, the diverting of general tax and water availability/standby revenues, would be the least disruptive.

1.7 Water Use

1.7.1 Agricultural Water Use

As previously discussed agriculture in Valley Center is dominated by avocados and citrus production. A smaller number of acres are devoted to flowers and nurseries but contribute economically almost as much as avocados. Miscellaneous subtropical crops are grown along with some small acreage in deciduous crops. New crops such as blueberries, lychees and avocados on salt tolerant rootstock are being explored.

Most groves in San Diego County require about 3 – 3.5 acre feet per acre per year. Because of the higher salinity of imported water (as described in Part 1 Section 11), the grower would need to apply about 1 extra acre foot of water to maintain yield. Unfortunately, because of the toxicity of chloride specifically to avocado, there may still be a significant yield reduction, as evidenced by the results from the reclaimed water trial. Avocado is a challenge to irrigate properly because it has a shallow feeder root system (80 – 90% of the feeder root length is located in the upper 8-10 inches of root zone soil). The feeder roots are rather inefficient at water absorption because they have very few root hairs. Due

to the location of the feeder roots soil moisture is consumed rapidly in the upper layer of root zone soil. Many of the groves are on hillsides with a decomposed granite composition. These soils drain rapidly (which is good), but at the same time they don't store a lot of water. Therefore, the irrigator must be diligent at checking soil moisture with tensiometers, soil moisture meters or soil probes, and re-supplying the soil water before the trees become stressed.

On the other hand, some groves are on heavy soils with high clay content. These groves often suffer from poor drainage and low oxygen content in the soil pore spaces resulting in direct damage to the roots and increased spread of avocado root rot. Avocados are fairly heavy water users, and in Southern California where the water is expensive, some growers tend to irrigate substantially less than is required for optimum production. The key to irrigation is meeting the water needs of the trees (which is dictated by weather), not to stress trees by irrigating infrequently, and not to waste water by over-irrigating. At the same time, there must be some over-irrigation (known as leaching) to leach the salts below the root zone in order to avoid the characteristic tip-burn on leaves at the end of the season.

Table 1-4 Agricultural Water Use (AF)

Agricultural Water Use (AF)													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	Total
FY 2013	2,031	2,409	2,441	2,237	1,672	1,109	408	742	737	1,390	1,612	1,998	18,786
FY 2014	2,242	2,052	2,275	1,848	1,351	943	1,414	1,569	804	1,299	1,882	1,971	19,650
FY 2015	2,098	2,165	2,178	2,178	1,630	771	428	973	741	1,650	1,369	1,058	17,239

1.7.2 Municipal & Industrial Water Use

Table 1-5 Municipal & Industrial Water Use (AF)

Municipal & Industrial Water Use (AF)													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	Total
FY 2013	974	1,126	1,188	948	790	549	293	320	350	508	698	841	8,585
FY 2014	955	978	1,022	858	649	400	548	549	403	514	709	847	8,432
FY 2015	968	921	871	873	696	441	250	337	368	587	583	378	7,273

1.7.3 Environmental, Recreational, Groundwater Recharge, Transfers and Exchanges, And Other Uses

Table 1-6 Other Water Uses

Environmental, Recreational, Groundwater Recharge, Transfers and Exchanges, And Other uses													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	**Total**
FY 2013	0	0	0	0	0	0	0	0	0	0	0	0	0
FY 2014	0	0	0	0	0	0	0	0	0	0	0	0	0
FY 2015*	2.1	2.5	2.8	2.6	1.7	1.4	1.3	1	1.3	1.6	1.5	2.3	22.1

Representative year of interagency exchanges

1.8 Water Supplies

1.8.1 Local Surface Water

VCMWD has only one small surface reservoir, the 1600 AF Lake Turner. Built as an imported water impoundment reservoir to facilitate meeting peak agricultural demands experienced in the 1960's, 70's and early 80's, the District did not secure an appropriation permit to divert local surface flow, which is nominally about 400 AF per year. Availability of this supply is dependent on wet weather hydrology and is infrequent and diversion is impractical due to facility limitations. In addition to providing the

beneficial uses for fish and avian species, Lake Turner could be used as a water supply during an extreme emergency.

1.8.2 Recycled Water

At this time there are several proposed developments for construction of wastewater treatment and reclamation facilities that may provide recycled water including the following:

Lower Moosa Canyon Water Reclamation Facility (LMCWRF) Upgrades

Currently, the LMVWRF treats 350,000 gpd of wastewater to advanced secondary with post chlorination and with disposal by percolation in the Lower Moosa Creek which is tributary to the San Luis Rey providing indirect reuse for downstream water users. It has been anticipated for a number of years that construction of advanced wastewater treatment facilities at the Lower Moosa Canyon WRF would be required to serve nearby planned residential and commercial development which would facilitate direct beneficial use of the treated effluent. To date that development activity has not materialized.

However, the 1,750-unit Lilac Hills Development has been proposed which, if approved, would have its wastewater treatment and disposal needs served by the LMCWRF. This would require a capacity expansion of roughly 300,000 gpd, as well as a treatment upgrade to tertiary treatment. If this project does move forward, the District would also provide for a treatment upgrade of the current flow to tertiary.

The tertiary treated effluent of 650,000 gpd would then be used to irrigate the nearby Castle Creek Golf Course, landscape and agricultural planting on the Lilac Ranch Project as well as existing agricultural plantings near the LMCWRF.

If the Lilac Hills Project does not move forward in the near future, the District will pursue a tertiary treatment upgrade of the LMCWRF, anticipated to be funded by a combination of local, state and federal grants and loans to serve reclaimed water demand currently existing near the facility.

Woods Valley Ranch Water Reclamation Facility (WVRWRF) Expansion to Serve the Valley Center North and South Villages

Originally approved to serve the 280-unit Specific Plan Area Woods Valley Ranch Residential Development, this 0.075 mgd (75,000 gpd) MBR facility currently recycles 100 percent of its current 0.040mgd (40,000 gpd – 45 AF/Yr) tertiary treated effluent which is used to irrigate the adjacent Wood 18-hole Woods Valley Ranch Golf Course golf course. Seasonal storage is in on-site storage ponds incorporated as water features on the golf course.

The District is currently expanding the existing Wood's Valley Ranch Treatment Plant to meet the needs of a number of large and small development projects planned for both the North and South Village Areas. These areas were designated in the most recent SD County General Plan Update with higher residential and commercial development densities requiring conventional wastewater treatment and disposal. The $31.0 million Phase II Expansion Project, financed with local cash contributions and State of California SRF loan will add 1,000 EDU's (200,000 gallons per day) of treatment capacity, a new seasonal storage reservoir and a hybrid gravity/low pressure collection system. 100% of this new flow will be treated to full Title 22 tertiary standards and used for irrigation on the adjacent Woods Valley Ranch Golf Course.

Currently discussions are underway with local development interests to initiate a Phase III which could possibly take the plant to its master-planned capacity of 2,200 EDU's and add another seasonal storage reservoir. As Phase II will likely meet the recycled water absorptive capacity of the Woods Valley Ranch Golf Course, other landscape and agricultural customers will be sought for the additional 180,000 gpd of flow.

Meadowood Residential Development

The 850 unit Meadowood Residential Development is planned for the extreme northern portion of the District's service area. Due of its geographical placement, wastewater treatment needs cannot be met by any existing District WRF and will require a more localized solution. One possible alternative is the construction of tertiary wastewater reclamation facility to treat the estimated 1.7 mgd of wastewater flow from the development and use the reclaimed water on landscape in the development and adjacent agricultural plantings.

Recycled Water Applicability to Avocado Production

Avocado is one of the most sensitive of the tree crops in California to total dissolved solids (TDS, or total salts). The chloride ion, usually a major component in the salinity spectrum, is specifically toxic to avocado, causing the familiar "tip-burn". During the course of a five-year experiment with 100% ETc reclaimed water in Escondido (average EC = 1.5) yield was reduced 40% compared to yield with 100% ETc potable district water (average EC = 0.7). Adding 40% extra reclaimed water (140% ETc) still reduced yield 27% compared to 100% ETc district water, and a 50/50 blend of reclaimed/district water reduced yield 27% compared to district water (Bender and Miller, 1996). Salts reduce yield in avocado in a number of ways:

1. As salts accumulate in soil the osmotic potential increases, making it difficult for roots to extract water from the soil. In extreme cases of salt accumulation, water may flow out of the roots into the soil, decreasing root turgor and collapsing the roots. This has been shown to happen at an EC of 4 in the irrigation water.

2. Sodium may accumulate in the soil, displacing calcium and magnesium ions; as a result, soil structure deteriorates leading to poor water penetration into the soil. Fortunately, this is rarely seen in hillside decomposed granite soils, but has occurred in some heavier soils with a finer soil particle structure.

3. High concentrations of salts in the water may facilitate the uptake of one or more of the ions present so that an accumulation may result in an interference in the metabolism of the plant. Avocado specifically has problems with chloride, sodium and sometimes boron.

1.8.3 Groundwater

The District does not utilize groundwater as an existing source of water due to limited groundwater availability based on the size of the San Luis Rey Valley groundwater basin per California Department of Water Resources Bulletin 118. Groundwater in Valley Center originates from alluvial deposits and fractured bedrock. Research indicates that groundwater from alluvial sources is insignificant in quantity. Two groundwater wells in the fractured bedrock surrounding Lake Turner Reservoir yield water with total dissolved solids concentrations of 400- 750 milligrams per liter. This water could be treated to potable standards to yield 560 AF annually; however, due to high levels of iron and

manganese, this water cannot be economically treated to potable levels. However, there are privately owned wells within the District's service area but no records are kept by the District on well production. In the event of a drought and a lowering of the water table these private well owners may increase demand on the district for SDCWA supplied water.

1.8.4 Annual Water Supply

Table 1-7 Annual Water Supply

Annual Water Supply (AF)					
	Imported Water	Local Surface	Recycled Water	Local Groundwater	Total
FY 2013	29,238	0	46	0	29,284
FY 2014	29,607	0	45	0	29,652
FY 2015	25,598	0	45	0	26,643

1.9 Water Balance and Reliability

Reliability is discussed in detail in Part 1 of RAWMP. VCMWD's focus is on continuing to explore diversifying its supply as described previously and to maintain an aggressive approach to water conservation and water use efficiency for all its customers including commercial agricultural users. The Table Below provides the water balance for VCMWD for the Fiscal Years 2013-2015.

Table 1-8 Water Balance

Annual Water Supply Balance (AF)				
	Water Supplies	Water Use	Drain Water Leaving Service Area	Water Balance
FY 2013	29,238	27,371	0	1,876
FY 2014	29,607	28,082	0	1,525
FY 2015	25,598	24,512	0	1,086

Note: The negative water balance is attributed to Unaccounted for Water Loss (UAL) associated with meter slippage, undetected small leaks and water theft. Due to a proactive leak detection and large meter monitoring and security measures, over the last three years, the UAL has dropped from 6.4% in FY 2013, to 5.2% in FY 2014 and finally to 4.2% in FY 2015

1.10 Water Quality (See Part 1 Chapter 10)

1.11 Water Use Efficiency and EWMPs

VCMWD participates in the Regional WUE Program described in Part 1., Section 12. Please see the tables for details of the regional commitment to implementing EWMPs.

Specific information on VCMWD's efforts to address Critical EWMP 1 is included in 1.4., Water Measurement above.

Additionally, EWMP 2 efforts are detailed in 1.8.2., Recycled Water.

Sources

Valley Center Municipal Water District.2011. *2010 Urban Water Management Plan*

County of San Diego.2011. *Valley Center Community Plan*

The University of California Cooperative Extension. *Avocado Production in California Book 2*

2. Rainbow Municipal Water District

Agency Chapter

2 Rainbow Municipal Water District

2.1 Size, History and Location of Service Area

The Rainbow Municipal Water District (RMWD or District) is a local governmental agency serving water and sanitation services to an unincorporated area of northern inland San Diego County in California. RMWD was formed in 1953 under the Municipal Water District Act of 1911 (Section 7100 et. seq. of the California Water Code). The District is responsible for providing water service to almost 7,800 metered accounts. Water supply is derived from the regional aqueduct systems owned and operated by the Metropolitan Water District of Southern California (MWD or MET) and the San Diego County Water Authority (SDCWA) RMWD is a retail supplier that currently depends entirely upon imported water purchased through the SDCWA to service a small customer base within a very large agricultural water use area.

The RMWD water service area is approximately 46 miles north of downtown San Diego and covers approximately 80 square miles (51,200 acres) in North San Diego County. The District serves the unincorporated communities of Rainbow and Bonsall, as well as portions of Pala and Fallbrook, in northern San Diego County. The terrain within the RMWD is predominantly rugged and mountainous, with some flatter areas along river valleys. Service area elevations vary from just over 2,200 feet above mean sea level (msl) at the northeastern portion of the District, to under 150 feet above msl in the southwestern portion of the District. The lowest elevations are along the San Luis Rey River, which traverses the southern portion of the District and flows west before turning to the south. The northern part of RMWD is located north of the San Luis Rey River and straddling Interstate 15 (I-15) while the southern part is located west of I-15 straddling the San Luis Rey River. Adjacent Water Agencies include Fallbrook Public Utilities District (FPUD) and Oceanside to the west, Valley Center Municipal Water District to the east, Vista Irrigation District and Vallecitos Water District to the south and the service area of Eastern Municipal Water District and Rancho California Municipal Water District to the north.

The Rainbow area did not have its first permanent European settlement until 1869 when Peter Larsen filed for the first homestead. Other settlers followed and the first school, Vallecitos Adobe School, was built in 1885. James Rainbow and W. F. Gold purchased the Larsen homestead and plotted the Valleys'

first subdivision in 1887. The area, previously known as "Vallecitos", (little valley), was renamed "Rainbow Valley" in the late 1880s, after Mr. James Peebles Marshall Rainbow, who bought the homestead. Little growth took place in the first half of the 20th Century limited by access to water supplies and dependent on dry farming techniques. However, because of its location within the San Luis Rey River watershed and favorable hydrogeological conditions well water was a viable means of supplying irrigation water to early agricultural operations. However, over pumping along the coastal areas near Oceanside induced salt water intrusion and in generally, groundwater levels dropped sharply and limited the amount of agricultural growth in the Rainbow area.

With the advent of Colorado River water imported by the MWD, RMWD was formed in 1953 and the District joined the SDCWA and the MWD. Commercial agriculture expanded in the Rainbow Valley because of the availability of reliable and affordable imported water and the District began serving the growing water needs of the agricultural community. A large portion (approximately 7,900 acres) of the Rainbow Valley remains underdeveloped and steep slopes surrounding the valleys limits other types of land use activities. The use of imported Colorado River water relived pressure on groundwater pumping and allowed the local groundwater levels to recover. This also resulted in the presence of a high groundwater water table since 1966 that has limited the amount of future growth the Rainbow Valley can accommodate. The limited growth potential in the Rainbow Valley has helped maintain the rural agricultural character of the District's service area. Agriculture is expected to remain the primary resource within the area and acreage in agricultural production has continued to increase over the past 20 years. RMWD currently has approximately 10,143 acres of irrigated agricultural land characterize by Avocado, citrus, flowers, nut crops, and commercial nurseries.

Commitment to Water Conservation

RMWD has been a consistent supporter of the efforts of MRCD to provide water management assistance to growers in its service area. MRCD has been under contract to the Water Authority to operate regional agricultural water management services since 1990 as part of the Water Authority's AWMP. The goal of the program is to provide technical assistance to growers to enable them to irrigate crops as efficiently as possible in order to obtain the maximum economic benefit from limited water resources. The WUE programs have included direct assistance to retail water users, implementation of University of California Cooperative Extension (UCCE) BMPs, funding information assistance, and

water purveyor efficiency practices. For more information on the regional WUE programs RMWD supports, see Part 1 Section 13.

2.2 Water Management Facilities

Treated water is supplied from two SDCWA water aqueducts through eight connections. The existing water distribution system consists of 12 major pressure zones. Water is stored in a total of 16 water tanks and reservoirs, and is conveyed to the twelve major pressure zones utilizing seven potable water pump stations and over 30 pressure reducing stations. The highest pressure zone is at the northeast corner of the service area, and the eleven lower zones Over 300 miles of delivery and distribution generally decrease in pressure from east to west and north to south. The exception is the Gopher Canyon Zone, which supplies water south of the San Luis Rey River to the southern boundary, where elevations begin to rise. Each major pressure zone has at least one tank or reservoir to regulate pressures and provide operational, emergency and fire flow storage.

The existing distribution system has over 300 miles of pipelines 6-inches in diameter and larger.

There are seven booster pump stations in the RMWD distribution system which pump water up to higher zones with storage reservoirs. RMWD's service area has no lined or unlined canals, drains, tailwater or spill recovery devices.

RMWD has interconnections with the City of Oceanside and Fallbrook Public Utility District (FPUD) because of their close proximity. These interconnections are used for emergency supply. RMWD and FPUD have an emergency exchange agreement, which was enacted in 1986 to transfer water in an emergency event.

2.3 Operating Rules and Regulations

No operating rules for delivery of water to retail customers exist at this time.

2.4 Water Delivery Measurements

All water received from the SDCWA is metered and monitored. Additionally, all District customers are metered and billed monthly with computerized equipment. All water to RMMWD customers is metered and delivered on demand. District water delivery points to customers are metered using both positive displacement meters and turbine water meters depending on customer meter size (95+ % accuracy) and are actively monitored by the District staff. RMWD's long range Strategic Plan envisions a transition from the current Automatic Meter Reading (AMR) one-way communication process to implementation of two way communications with customers through Advanced Metering Infrastructure (AMI). The District envisions AMI as a tool for even more increased water use efficiency. If implementation of AMI goes forward the

District's AMI project will provide its agricultural customers with hourly flow data that is accessible on a daily basis so they can more accurately monitor and control their irrigation in a timelier and more responsive manner.

Figure 2-1 Rainbow MWD Service Boundaries

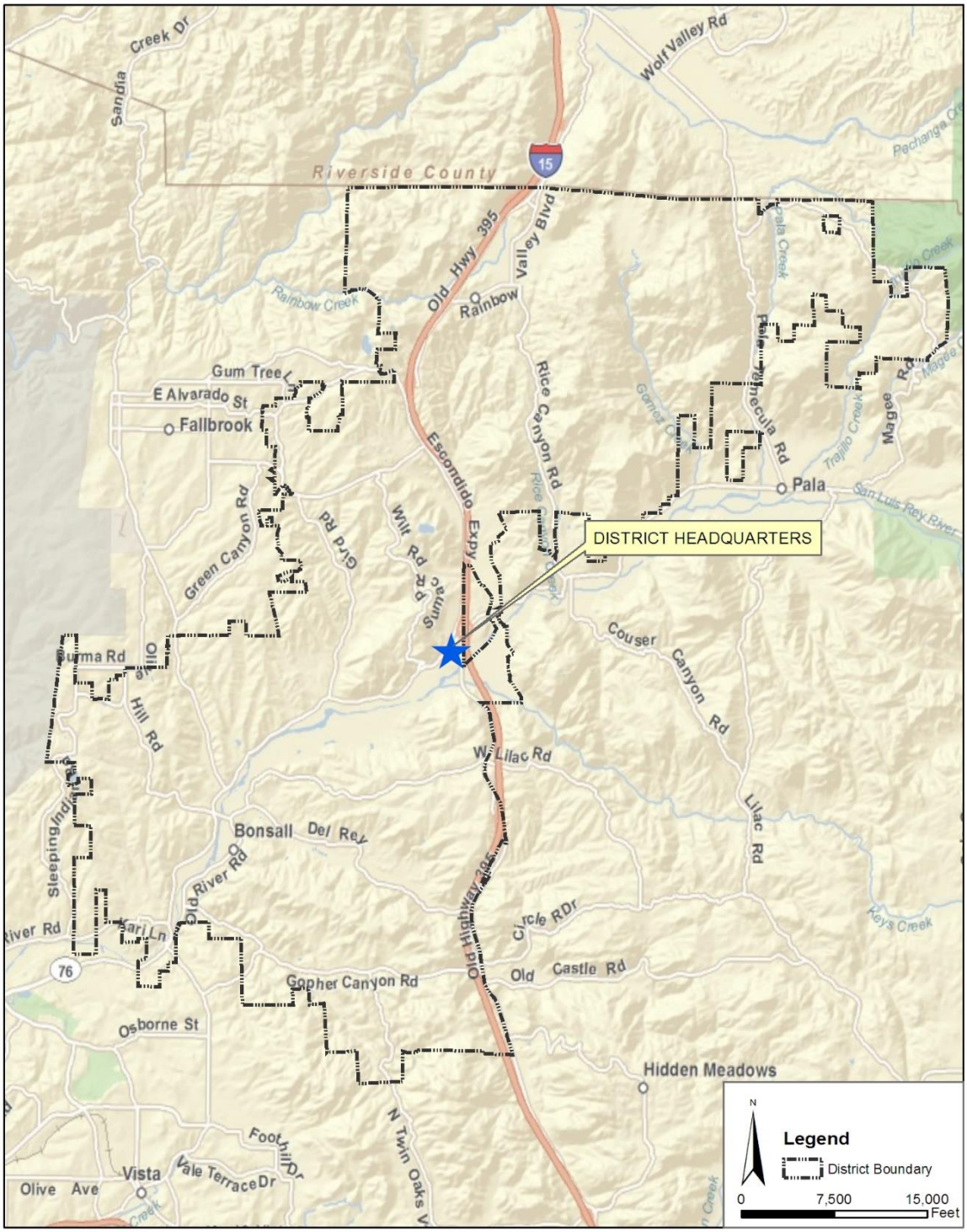
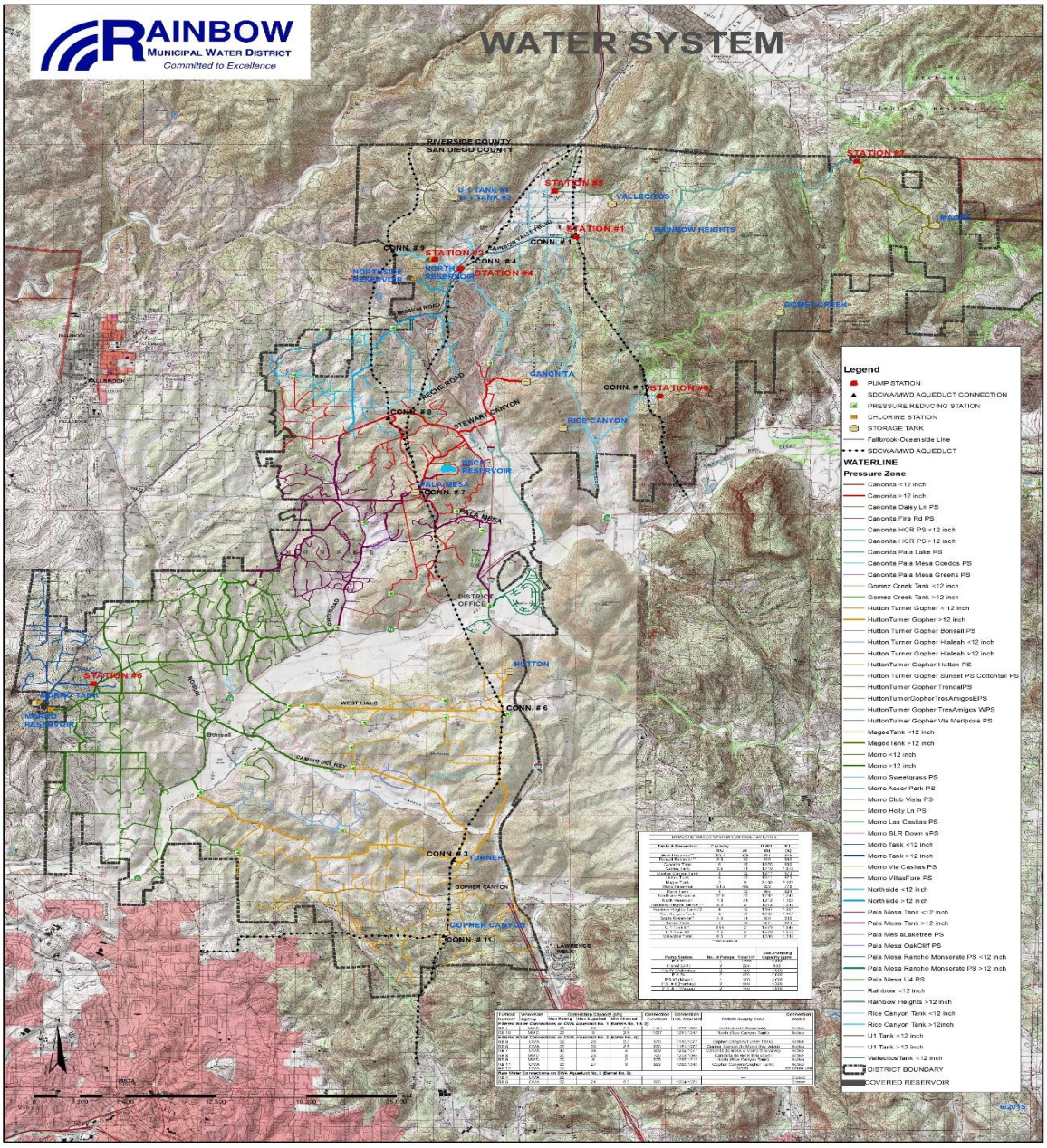


Figure 2-2 Rainbow Water Facilities



2.5 Water Rate Schedules and Billing

There are three components to the water rate RMWD customers are charged. All water is charged at a uniform block rate per hundred cubic feet (hcf) with meters read and customers billed on a monthly basis. Customers also pay a flat monthly meter fee which is designed to collect, in the most equitable way, the fixed costs of operating the District. These costs include maintenance of meters, storage facilities, pump stations, pipelines, and customer service costs for meter reading and billing. There is also a pumping charge for the actual electrical cost to pump water to certain areas of higher elevation in the District. All pumping zones pay a fixed charge of $8.77 per month plus the per unit charge (hcf).

The following tables provide RMWD current customer charges for water:

Table 2-1 Monthly Meter Charges

Meter Size	RMWD O/M Charge	CWA Fix Domestic Non TSAWR	CWA Fix TSAWR/Dom	CWA Fix TSAWR/Comm.
5/8”	$23.82	$35.02	$17.05	$17.05
3/4”	$23.82	$35.02	$17.05	$17.05
1”	$37.20	$58.37	$28.42	$28.42
1 1/2”	$70.64	$116.75	$56.84	$56.84
2”	$110.78	$186.79	$90.94	$90.94
3”	$237.86	$408.61	$198.93	$198.93
4”	$425.15	$735.50	$358.08	$358.08
6”	$873.31	$1,517.71	$738.90	$738.90

Table 2-2 Commodity Charge

Class of Service	Units (hcf)	Cost/hcf (Unit)	Cost/hcf @ 35% Use Reduction
Single Family			
Tier 1	10	$3.31	$3.57
Tier 2	26	S3,43	$3.75
Tier 3	27+	$3.31	$4.11
MFR		$3.40	$3.66
Commercial		$3.51	$3.78
Agriculture with Residence			
Tier 1	10	$3.31	$3.57
Tier 2	26	$3.48	$3.75
Tier 3	27+	$3.24	$3.49
Agriculture		$3.24	$3.49
TSAWR Domestic			
Tier 1	10	$3.31	$3.57
Tier 2	26	$3.48	$3.75
Tier 3	27+	$2.77	$2.99
TSAWR Commercial		$2.77	$2.99
Institutional		$3.58	$3.86
Construction		$4.30	$4.63

Table 2-3 Pumping Charge

Pump Zone	High Elevation Areas	Unit Charge
All		$9.51
1	Rainbow Heights	$0.77
2	Improvement District U-1	$0.48
3	Vallecitos	$0.27
4	Northside	$0.09
5	Morro Tank	$0.14
6	Huntley	$0.55
7	Magee Tank	$2.53

2.6 Water Shortage Contingency Planning and Allocation Policies

RMWD ordinance 08-01 addresses the possible water shortage scenarios in conjunction with the SDCWA *Water Shortage and Drought Management Plan*. This Ordinance was updated during the current drought by Ordinance 15-08. The sections within the ordinance discuss stages each with both Voluntary and Mandatory reduction of water usage and discuss various components of the water shortage contingency plan. Ordinance 15-08 is consistent with changes made to SDCWA's model Drought Response Ordinance used throughout the region.

It establishes four levels of drought response actions ("Drought Response Levels") to be implemented in times of shortage, with increasing restrictions on water use in response to worsening drought conditions and decreasing available supplies. Drought Response Level 1 drought condition response measures are voluntary and will be reinforced through local and regional public education and awareness measures that may be funded in part by RMWD. During Drought Response Levels 2 through 4, all conservation measures and water-use restrictions are mandatory and become increasingly restrictive in order to attain escalating conservation goals. RMWD may establish a water allocation for property served by the District using a method that does not penalize persons for the prior implementation of conservation methods or the installation of water saving devices. Violations of this Chapter are subject to criminal, civil, and administrative penalties and remedies specified in this District's legislative code and as provided by law.

Enforcement and Penalties

RMWD's ordinance provides for the establishment of customer allocations that depending on the declared shortage level penalties and charges are levied for exceeding the customer allocation amount. The penalty for excess water usage is cumulative to any other remedy or penalty that may be imposed for a violation of the Ordinance and each billing period in which an allocation is exceeded counts as a separate violation. Administrative fines may be levied for each violation as follows:

1. One hundred dollars ($100) for a first violation.
2. Two hundred dollars ($200) for a second violation of any provision of this ordinance within one (1) calendar year.
3. Five hundred dollars ($500) for each additional violation of this ordinance within one (1) calendar year.

4 Violation of a provision of this ordinance is subject to enforcement through installation of a flow-restricting device in the meter.

Revenue & Expenditure Impacts

RMWD has taken significant steps to reduce potential revenue impacts resulting from fluctuating water sales. RMWD created a Rate Stabilization Fund (RSF) to provide funds that would mitigate the need for rate increases in the event of an unexpected decline in water sales.

2.7 Water Use

2.7.1 Agricultural Water Use

The predominant water use in RMWD is agricultural. As noted in Section 2.1, avocado, citrus, flowers, nut crops, and commercial nurseries primarily characterize agricultural uses in Rainbow.

Table 2-4 Agricultural Water Use (AF)

Agricultural Water Use (AF)													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	Total
FY 2013	1,477	1,643	1,878	1,600	1,412	935	268	478	535	868	1,181	1,339	13,613
FY 2014	1,425	1,567	1,600	1,386	1,137	642	891	972	782	753	1,365	1,479	14,000
FY 2015	1,400	1,640	1,425	1,519	1,254	773	209	536	625	1,129	1,166	631	12,307

2.7.2 Municipal & Industrial Water Use

Table 2-5 Municipal & Industrial Water Use (AF)

Municipal & Industrial Water Use (AF)													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	Total
FY 2013	711	788	897	700	623	416	219	303	300	456	600	708	6,719
FY 2014	766	814	847	721	608	336	415	431	398	412	665	815	7,227
FY 2015	784	864	717	738	619	422	243	290	357	568	624	397	6,622

2.7.3 Environmental, Recreational, Groundwater Recharge, Transfers and Exchanges, And Other Uses

Table 2-6 Other Water Uses

Environmental, Recreational, Groundwater Recharge, Transfers and Exchanges, And Other uses													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	**Total**
FY 2013	0	0	0	0	0	0	0	0	0	0	0	0	0
FY 2014	0	0	0	0	0	0	0	0	0	0	0	0	0
FY 2015	0	0	0	0	0	0	0	0	0	0	0	0	0

2.8 Water Supplies

2.8.1 Recycled Water

RMWD currently does not generate nor distribute recycled water, although a water reclamation project is currently in the advanced planning stages. All wastewater collected within RMWD is conveyed to treatment plants within the City of Oceanside. RMWD currently has a contract with the City of Oceanside for 1.5 million gallons of sewage. Considering the abundance of agricultural water users and several golf courses.

RMWD has the demand available for providing recycled water. Acquiring water for distribution would require the construction of a wastewater treatment plant. In addition, due to the dispersion of agricultural demands within RMWD, a separate and independent distribution system would be required. The financial impacts of acquiring, installing and maintaining a paralleled recycled water system are part of RMWD's Strategic Plan.

2.8.2 Groundwater

RMWD currently does not utilize groundwater as a source of water supply. RMWD's service area is in the San Luis Rey Watershed and overlies the Bonsall Basin. The Bonsall basin is located at the point where the upper San Luis Rey transitions to the Lower San Luis Rey Basin. The upper San Luis Rey Groundwater Basin is partially adjudicated and subject to preexisting water rights. The Lower San Luis Rey consists of the Mission Basin which has been developed for brackish groundwater recovery by the City of Oceanside and the Bonsall Basin located in RMWD service area.

Prior to the arrival of imported Colorado River groundwater pumping along the San Luis Rey watershed had resulted in a dramatic drop in the water table. The use of reliable and relatively inexpensive Colorado River water allowed the groundwater table to recover to historic levels. However, irrigation with high salinity Colorado River Water and the accumulation of salts resulted in the most available groundwater in the Bonsall Basin being brackish.

In November 2013 RMWD commissioned a groundwater study within the Rainbow Valley. That study confirmed the potential exists within RMWD to utilize groundwater as a supplemental water supply. The project identified a 2-3 MGD brackish groundwater recovery facility that would recover imported water used by RMWD customers that has recharged the Bonsall Basin. Similar to the Mission Basin, Bonsall Basin water quality is high in total dissolved solids (TDS) and will require demineralization.

This project is currently in the planning stage.

2.8.3 Annual Water Supply

Table 2-7 Annual Water Supply (AF)

Annual Water Supply (AF)					
	Imported Water	Local Surface	Recycled Water	Local Groundwater	Total
FY 2013	22,403	0	0	0	22,403
FY 2014	23,224	0	0	0	23,224
FY 2015	20,062	0	0	0	20,062

2.9 Water Balance and Reliability

Reliability is discussed in detail in Part 1 of RAWMP. RMWD's focus is on continuing to explore diversifying its supply as described previously and to maintain an aggressive approach to water conservation and water use efficiency for all its customers including commercial agricultural users. The Table Below provides the water balance for RMWD for the Fiscal Years 2013-2015.

Table 2-8 Annual Water Supply Balance (AF)

Annual Water Supply Balance (AF)				
	Water Supplies	Water Use	Drain Water Leaving Service Area	Water Balance
FY 2013	22,403	20,333	0	2,070
FY 2014	23,224	21,227	0	1,997
FY 2015	20,062	18,929	0	1,133

2.10 Water Quality (See Part 1 Section 10)

2.11 Water Use Efficiency and EWMPs

RMWD participates in the Regional WUE Program described in Part 1. Please see Part 1 Section 12 for details of the regional commitment to implementing EWMPs.

Specific information on RMWD's projects to address Conditional EWMP 2 is detailed in 2.8.1 Recycled Water above.

Additionally, 2.5 Water Rate Schedules and Billing, discusses commitment to implement Conditional EWMP 4. For agricultural users OMWD has implemented two classes of TSAWR rates.

Sources

Rainbow Municipal Water District.2011. *2010 Urban Water Management Plan*

Rainbow Municipal Water District.2006. *Water Master Plan Update.* May

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3. Carlsbad Municipal Water District

Agency Chapter

3 Carlsbad Municipal Water District

3.1 Size, History and Location of Service Area

Carlsbad Municipal Water District (CMWD) is located in north coastal San Diego County 35 miles north of downtown San Diego and covers an area of 20,682 acres, approximately 32.32 square miles. CMWD provides water services to most of the City of Carlsbad and is a wholly owned subsidiary special district of the City. Carlsbad occupies miles of rolling hills, beaches and bluffs along the northern coast of San Diego County. In addition to the Pacific Ocean coastline along its western boundary, the communities surrounding Carlsbad include the city of Oceanside to the north, the

city of Encinitas to the south, and the cities of Vista and San Marcos and unincorporated areas of

San Diego County to the east. CMWD serves a community that is residential with a strong commercial and industrial sector that combines world class resorts along with cutting edge technology, science and manufacturing components.

Carlsbad has a very similar agricultural history to other parts of San Diego County. In 1798 Mission San Luis Rey was established by the Spanish Colonial government which covered an enormous area of north San Diego county including the present day location of Carlsbad. By 1834, the first private land grants were made by the Mexican Governor from the partitioned Mission San Luis Rey lands. Mission San Luis Rey was divided into five separate land grants: Aqua Hedionda, Buena Vista, Encinitas, Guajome and Los Vallecitos de San Marcos. Land Grants Rancho Agua Hedionda originally called Rancho San Francisco was a 13,000-acre grant issued in 1842 and is the land that eventually provided the foundation of present day Carlsbad. A small section of the land grant, Rancho Los Encinitas also issued in 1842 became part of what is now Carlsbad.

In 1880, the Southern California railway was granted a coastal right of way to provide the rail connection between San Diego and points north. The new rail connection resulted in development of previously never owned or developed coastal land. In those early years the lack of water was a major hindrance to farming. Most farmers in the area relied on wells and dry farming techniques including using cisterns to collect rain water or bringing in water by horse and wagon from the closest fresh water source 4 miles away at the El Salto Falls at Marron Gorge. In a continued search for reliable water, John Frazier, the major property owner in the area, hired drillers to bore wells 600 feet to find water. In 1885 both mineral and artesian water was discovered at a depth of 245 feet.

The Carlsbad Land and Mineral Water Company was formed to take advantage of the availability of mineral and potable water and the as part of its marketing efforts the area was named after the famous German spa at Karlsbad. Although the area experienced a period of rapid growth, a downturn in the economy and a collapse in land prices saw the population drop by 50% by the late 1880s. Agricultural development of citrus fruits, avocados and olives using the available groundwater supply became the dominant economic activity and the community continued to thrive based on its agricultural lands.

Over the next decades, agricultural production shifted to assorted row crops, strawberries, and production in greenhouses. By the 1920's Carlsbad was becoming a center of floriculture due to the unique climate and availability of land and water. Carlsbad was home to the only commercial ranunculus grower in the United States. Cultivated flower acreage grew to 1,000 acres by the late 1930's and continued to expand into other areas of Carlsbad through the 1950's. Carlsbad was world famous for its flower fields and the thousands of acres producing strawberries.

Water demands for the area were initially supplied by the privately held Carlsbad Mutual Water Company and Terramar Water Company through the utilization of local groundwater and surface water supplies. The Carlsbad Mutual Water Company's groundwater wells began being developed prior to 1914 with rights to 2,382 acre-feet per year (acre feet per year). Prior to 1942, local groundwater was the only developed source of water for the Carlsbad Mutual Water Company. In September 1941, Carlsbad Mutual Water Company completed construction of an earthen dam (Calavera Dam), which captured local surface water runoff creating Lake Calavera. Lake Calavera also included a 2 million gallons per day (mgd) water filtration plant. Beginning in 1950, an additional four wells were constructed with a safe yield capacity estimated of 400 acre feet per year. The City of Carlsbad was incorporated in 1952, and the assets of the Carlsbad Mutual Water Company and Terramar Water Company were purchased by the City in an agreement dated August 30, 1957.

CMWD was formed to bring imported water to the unincorporated areas surrounding the City of Carlsbad and to wholesale water to the newly formed City of Carlsbad. CMWD's first meeting was held on March 22, 1954, and CMWD became a member of the SDCWA that same year. CMWD began receiving imported water deliveries in 1955 through existing aqueduct connections located in the City of Escondido. CMWD constructed a pipeline in 1956 to convey imported water directly to the City of Carlsbad and unincorporated areas within CMWD's service area. In 1962 the City of Carlsbad ceased extracting groundwater and suspended use of local surface water supplies. The availability of lower-

cost Colorado River water through CMWD and increased salinity of groundwater due to pumping induced seawater intrusion resulted in complete dependence on imported supplies.

On January 1, 1990, the CMWD became a subsidiary district of the City of Carlsbad through an agreement between both agencies approved by the City Council on April 25, 1989. The Carlsbad City Council acting as CMWD's Board of Directors governs CMWD. CMWD's current water supplies consist of imported water from SDCWA, and recycled water that has been utilized as a supply source since 1993 and beginning in 2016 desalinated seawater from the Claude "Bud" Lewis Carlsbad Desalination Plant.

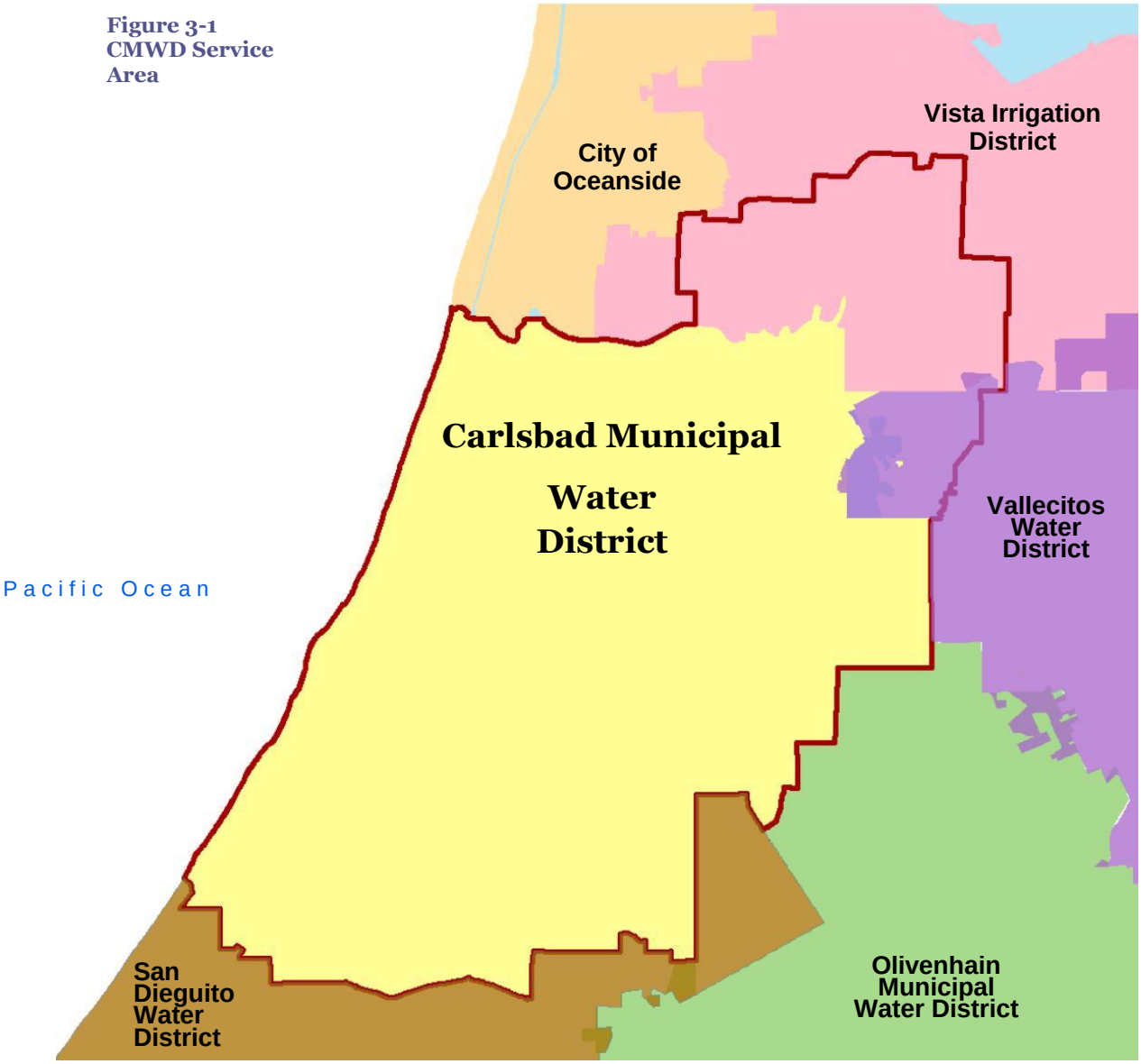
Although commercial agriculture continued to be a significant sector in Carlsbad's economy up into the 1970s, agricultural water use has decreased to the point where it represents a very small portion of CMWD's water demand. Urban development, the high cost of land and the dramatic increases in water prices all contributed to the reduction in cultivated acreage in Carlsbad. For example, in 1991 CMWD sold 1,744 acre feet to agriculture. By 2000, the agriculture consumption had declined to 1,204-acre feet and for 2010 the consumption reduced to 420 acre feet. With a long and deep history of agriculture the City of Carlsbad maintains iconic commercial agriculture in the Carlsbad Flower fields, which have used recycled water for a number of years and the Strawberry Fields.

Commitment to Water Conservation

CMWD is committed to supporting these regional water conservation activities, and provides staffing and direct and indirect financial assistance. In addition, CMWD implements local water conservation management measures to augment and complement these regional programs. City is currently a signatory to the Memorandum of Understanding for Urban Water Conservation (MOU) and, as such, is permitted to submit the most current BMP Activity Reports to comply with this section of the UWMP.

Additionally, the CMWD has been a consistent supporter of the efforts of Mission Resource Conservation District (MRCD) to provide water management assistance to growers in its service area. MRCD has been under contract to the SDCWA to operate regional agricultural water management services since 1990 as part of the SDCWA's AWMP. The goal of the program is to provide technical assistance to growers to enable them to irrigate crops as efficiently as possible in order to obtain the maximum economic benefit from limited water resources. The WUE programs have included direct

Figure 3-1
CMWD Service Area



assistance to retail water users, implementation of University of California Cooperative Extension (UCCE) BMPs, funding information assistance, and water purveyor efficiency practices. For more information on the regional WUE programs CMWD supports, see Part 1 Section 13.

3.2 Water Management Facilities

CMWD imports water through the SDCWA for their potable water needs. Water is supplied to CMWD through four separate SDCWA treated water turnouts. Two of the turnouts, Water Authority Connections No. 1 and No. 2, are direct connections to the SDCWA Second Aqueduct. Connection No. 1 supplies only the CMWD, and Connection No. 2 supplies the Vallecitos Water District (VWD) and the Olivenhain Municipal Water District (OMWD) in addition to the CMWD. Water supply to the CMWD from SDCWA Connection No. 2 is delivered through a VWD transmission main. Connections No. 3 and No. 4 to the aqueduct system are on the SDCWA owned and operated Tri-Agency Pipeline (TAP), which is also supplied from the SDCWA Second Aqueduct. The TAP also serves the City of Oceanside and the Vista Irrigation District (VID).

The existing distribution system consists of 450 miles of pipeline and 17 major pressure zones that are supplied by gravity from over 50 major pressure regulating stations. CMWD operates and maintains one active pump station and four standby pump stations within the distribution system that are used for emergency purposes only. The CMWD water distribution system is flexible in that supply from the four aqueduct connections can be routed to different parts of the distribution system by making changes to several key valve settings. This allows system operators to balance reservoir levels and correct for discrepancies in the amount of water ordered versus the amount that is delivered through service connections.

Water storage for CMWD is provided by Maerkle Reservoir and 10 additional reservoirs within the distribution system. Maerkle Reservoir is the major treated water storage facility for the CMWD, with a capacity of approximately 600 acre-feet (195 MG). This reservoir is used to meet the City's Growth Management Plan requirement to provide a minimum of ten days of emergency drinking water storage. Under normal operations, water is supplied to Maerkle Reservoir from the SDCWA TAP No. 3 connection and then pumped into the adjacent Maerkle

Tank. From Maerkle Tank water is supplied by gravity to the distribution system. CMWD has the ability to pump water via the newly constructed Bressi PS at El Camino Real and Palomar Airport Road and feed the higher zones from Maerkle Reservoir, via the upgraded Maerkle flow control facility, in the event of a shutdown of the SDCWA's Second Aqueduct.

3.3 Operating Rules and Regulations

Operating rules for delivery of water to retail customers are contained in Ordinance No. 45 approved June 2009.

3.4 Water Delivery Measurements

Metering of all water use and billing by volume has long been the standard practice at the CMWD. CMWD connections to the SDCWA aqueduct system are all metered. All sources of supply, including interconnections with Vallecitos Water District, are metered.

As directed by the CUWCC BMP, all new and existing water service connections are metered. For large parcels and commercial developments, separate, dedicated irrigation meters are placed where needed. The City's water delivery points to customers are metered using positive displacement meters (95+ % accuracy) and are actively monitored by the District Staff.

3.5 Water Rate Schedules and Billing

The current water rate structure consists of a fixed monthly service charge that varies by meter size, a tiered commodity rate for residential and irrigation customers, and a uniform commodity rate for all other customer classes including Agriculture. The Water Service Charge includes fixed water service costs such as maintenance of storage facilities, pipeline repair, meter reading, billing, and monitoring of water quality.

Table 3-1 2016 Water Rates Table

Carlsbad Municipal Water District

2016 WATER RATES TABLE

Customer Class and Rate Type	
ALL CUSTOMER CLASSES	
Monthly Delivery Fee per meter size	
5/8-inch	$ 22.19
3/4-inch	$ 29.87
1-inch	$ 45.24
1.5-inch	$ 83.66
2-inch	$ 129.78
2.5-inch	$ 183.57
3-inch	$ 237.36
4-inch	$ 391.07
6-inch	$ 775.31
8-inch	$ 1,236.41
10-inch	$ 1,774.37
SINGLE FAMILY RESIDENTIAL	
Monthly Water Rates Per Unit	
(1 Unit = 748 Gallons)	
Tier 1 (0-10 Units)	$ 3.53
Tier 2 (11-18 Units)	$ 4.68
Tier 3 (19+ Units)	$ 6.76
MULTI-FAMILY RESIDENTIAL	
Monthly Water Rates Per Unit	
(1 Unit = 748 Gallons)	
Tier 1 (0-5 Units)	$ 3.53
Tier 2 (6-10 Units)	$ 4.68
Tier 3 (11+ Units)	$ 6.76
COMMERCIAL AND NON- RESIDENTIAL	$ 4.26
AGRICULTURAL	$ 4.37
IRRIGATION	$ 4.67
RECYCLED WATER	$ 3.53

3.6 Water Shortage Contingency Planning and Allocation Policies

In January 2009, CMWD's Board of Directors adopted Ordinance No. 44 and Ordinance No. 36 which included the Drought Response Plan and Water Conservation Program. This replaced a previous Ordinance No. 35 which included the Urban Water Shortage Contingency Plan. As part of the Drought Response Plan, CMWD adopted Ordinance No. 35, An Ordinance of the Carlsbad Municipal Water District Finding the Necessity For and Adopting a Water Conservation Program. Emergency response stage actions become effective when SDCWA declares that it is unable to provide sufficient water supplies to meet the ordinary demands and requirements of its member agencies without depleting available water supplies, to the extent that insufficient water would be available for human consumption, sanitation and fire protection. When SDCWA announces its stage declaration, the CMWD concurrently would declare its corresponding stage. The ordinance outlines four drought response stages and incorporates the actions from the region's Model Ordinance as described in RAWMP Part I, Section 10.

Enforcement and Penalties

Penalty rates may be used by the SDCWA to encourage conservation and reduce demand during a drought or other water supply shortage. As described in Part I Section 10 , SDCWA's Implementing Resolution provides for pass through to CMWD of any penalties levied by MWD on SDCWA .In 2015 changes to SDCWA's Implementing Resolution provided the SDCWA the ability to impose penalties on CMWD and any other member agency that exceeds its annual allocation regardless of SDCWA exceeding its allocation from MWD. .

CMWD's Ordinance No. 44 and 46 includes a section indicating fines and penalties that may be levied for water waste violations. Administrative fines may be levied for each violation of any provision of this article, pursuant to the procedures outlined in Chapter 1A of the Municipal Code, in the following amounts:

1. For the first violation by any customer of any of the provisions of this Ordinance the CMWD shall verbally notice the fact of such violation to the customer.

2. For a second violation by any customer of any of the provisions of this Ordinance the CMWD shall issue a written notice of the fact of such violation to the customer.

3. For a third violation by a customer of any provision of this Ordinance the CMWD may install a flow restricting device of one gallon per minute (1 GPM) capacity for services of up 24 to one and one-half inch (1-1/2") size and comparatively sized restrictors for larger services upon a prior determination that the customer has repeatedly violated the provisions of this Ordinance regarding the conservation of water and that such action is reasonably necessary to assure compliance with this Ordinance regarding the conservation of water. In addition, the CMWD may levy an administrative fine of one hundred dollars.

4. Two hundred dollars for a fourth violation of any provision of this ordinance within one year.

5. Three hundred dollars ($300.00) for a second violation of any provision of this article during a level three—water shortage critical condition within one (1) year;

6. Four hundred dollars ($400.00) for a second violation of any provision of this article during a level four—water shortage emergency condition within one (1) year;

7. Five hundred dollars ($500.00) for each additional violation of any provision of this article within one (1) year.

The Board of Directors of CMWD may establish a water allocation for property served by the CMWD taking into consideration a method that does not penalize persons for the implementation of conservation methods or the installation of water saving devices.

Revenue & Expenditure Impacts

In the event that revenues are less than required to meet CMWD's financial obligations as a result of a water shortage, the CMWD would borrow from its Water Replacement Fund and then propose increasing water rates to appropriate levels for the Board's consideration. The Water Replacement Fund is maintained at adequate levels to provide short-term capital in case of emergencies as well as provide funding for replacement of depreciated facilities such as pipelines.

In the event of a water emergency, Ordinance No. 44 would be activated to respond to the level of shortage. At that time, drought response stage actions would go into effect and CMWD would be operating with reduced water sales. The amount of decreased revenue would depend upon the response stage under which CMWD would operate.

Table 3-2 Measures to Overcome Revenue Impacts

. Proposed Measures to Overcome Revenue Impacts

Name of Measures	Summary of Effects
Reserve Fund	This option would have no impact on the rate payers or CMWD as there are currently sufficient funds in the Water Replacement Fund.
Change rate structure	Changes in rates to offset significant reductions in available water supplies
Reduce overhead	Overhead, or local fixed O & M costs, can be reduced in the short and mid-term by deferring selected cash-funded CIP and major maintenance projects, other
Decrease capital expenditures	Deferral of selected, non-critical replacement projects will have little or no impact on CMWD or its customers, and would only extend the duration of the master planned replacement schedule. Infrastructure for new development is funded by new development and
Revise planning estimates	If supply reduction were long-term, CMWD would make commensurate adjustments to its CIP schedule, staffing levels and retail rate structures based

Table 3-3 Measures to Overcome Expenditure Impacts

Name of Measures	Summary of Effects
Reserve Fund	No impact- The Replacement Fund exists and is sufficient for the very purposes anticipated in a supply shortage
Change rate structure	Given the mix of wholesale water and power expenditure, non-commodity revenues needed to cover local fixed costs, availability of reserves and the flexibility to adjust CIP expenditures, short-term (1 to 2 year) impacts would be non-existent to negligible, mid-term (3 years) impacts would be moderate, and long-term (beyond three year) impacts would be moderate and incremental.
Reduce overhead	In the short-term and mid-term, over-head, or local costs can be reduced by deferring non-critical CIP and major maintenance expenditures, and in the long-term by adjusting operational and staffing levels and retail water rate structures to incorporate the reality of lower retail water sales than previously anticipated.
Decrease capital expenditures	In the short-term, there could be a decrease in the level or, if need be, even a total interruption in the expenditures for CMWD's replacement program. In the mid, to long term, adjustments would be to the retail rate structure and to the prioritization schedule to ensure that projects critical to service and system reliability were implemented
Revise planning estimates	If the reduced supply is determined to be a long-term condition, then commensurate adjustments would be incorporated into long-term staffing and water system facility requirements.

3.7 Water Use

3.7.1 Agricultural Water Use

In 1991 CMWD sold 1,744 acre feet to agriculture. By 2000, the agriculture consumption had declined to 1,204 acre feet and for 2010 the consumption reduced to 420 acre feet Current agricultural water use is less than 400 acre feet annually.

Table 3-4 Agricultural Water Use (AF)

Agricultural Water Use (AF)													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	Total
FY 2013	42	40	33	37	28	14	17	18	28	38	29	35	359
FY 2014	36	29	24	33	25	13	21	25	15	20	27	13	281
FY 2015	20	12	27	20	29	12	13	15	19	22	17	12	218

3.7.2 Municipal & Industrial Water Use

Table 3-5 Municipal & Industrial Water Use (AF)

Municipal & Industrial Water Use (AF)													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	Total
FY 2013	2,228	2,104	2,138	2,037	1,728	1,211	873	1,108	1,223	1,462	1,857	1,938	19,907
FY 2014	2,155	2,107	2,230	1,978	1,727	1,111	1,399	1,411	1,115	1,547	1,914	2,230	20,924
FY 2015	2,229	2,271	2,095	1,922	1,977	1,164	1,051	1,300	1,212	1,559	1,571	1,163	19,514

3.7.3 Environmental, Recreational, Groundwater Recharge, Transfers and Exchanges, And Other Uses

Table 3- 6 Other Water Uses

Environmental, Recreational, Groundwater Recharge, Transfers and Exchanges, And Other uses													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	**Total**
FY 2013													
FY 2014													
FY 2015*	381	333	342	318	189	175	142	224	252	250	227	245	**3,076**

Representative year of interagency exchanges

3.8 Water Supplies

3.8.1 Recycled Water

The CMWD began serving recycled water in 1993. Since 1993, CMWD has been constructing treatment facilities, pumping stations, reservoirs, and pipelines plus requiring developers to install pipelines within their projects for distribution of recycled water. Recycled water is presently supplied to CMWD from three sources consisting of the 4.0 mgd Carlsbad Water Recycling Facility (owned and

operated by CMWD), the 5.0 mgd Meadowlark Water Reclamation Facility owned and operated by the VWD) and the 1.0 mgd Gafner Wastewater Treatment Plant (owned and operated by the Leucadia Wastewater District). The maximum flow rate available to CMWD from each treatment facility varies. The Carlsbad Water Recycling Facility can be maximized at 4.0 mgd (4,480 acre feet per year), but on an average annual basis has not exceeded 2,000 acre feet per year. The Meadowlark Water Reclamation Facility ranges from 2.0 mgd during the months of November through March and 3.0 mgd during the months of April through October and this equates to 2,989 acre feet per year. The remaining amount of recycled water produced by the Meadowlark Water Reclamation Facility can be sold to OMWD under an agreement up to a maximum of 1.0 mgd or 1,120 acre feet per year. The Gafner Water Reclamation Plant is limited to 1.0 mgd (1,120 acre feet per year) but CMWD historically has purchased an average of 247 acre feet per year over the last seven years.

CMWD has approximately 78.89 miles of recycled water distribution pipelines. this distribution system currently had 675 meters supplying 362 recycled use sites. The largest customers served by recycled water include La Costa Resort and Spa, Four Seasons Resort at Aviara, Kemper Sports Management (Carlsbad Municipal Golf Course), and Legoland of California. Other recognized sites using recycled water for irrigation include Grand Pacific Palisades Hotel, Karl Strauss Brewery, Caltrans (Interstate 5 landscaping), and the Flower Fields. In addition, recycled water is also supplied to parks, median strips, shopping areas, the common areas of numerous homeowners
associations, and industrial parks.

It is the policy of CMWD that recycled water shall be used within the jurisdiction wherever its use is economically justified, financially and technically feasible, and consistent with legal requirements, preservation of public health, safety and welfare, and the environment. City of Carlsbad policy, as established in 1990 and recently revised and approved by the CMWD Board requires that recycled water be used on all new land use developments proposed in Carlsbad for all State-approved non-potable uses, if and when available. The installation of dual irrigation systems and connections to recycled water sources is also required and subject to the conditions of CMWD's Recycled Water Master Plan.

3.8.2 Groundwater

CMWD currently does not use any local groundwater and surface water supplies, although in the past both types of water sources have been used. Prior to 1957, the Carlsbad Mutual Water Company supplied local surface water from Lake Calavera and groundwater from the Mission Basin to the City of Carlsbad. In August 1957, the water rights and other assets of the Carlsbad Mutual Water Company were purchased by the City of Carlsbad. In May 1983, through an agreement, these local surface water and groundwater rights were transferred to CMWD by the City of Carlsbad. This included rights to Mission Basin of the San Luis Rey River Valley of 5 cubic feet per second (cfs) (to 2,382 acre-feet) of groundwater, pre-1914 appropriative rights, and an additional 750 acre-feet per year, up to 5 cfs, that was permitted in 1938. The Carlsbad Mutual Water Company held a license with the State Division of Water Rights for another 1,000 acre feet annually. Additionally, there were surface water rights for 150 acre feet annually which were held from Calavera Creek. The original license was for irrigation purposes and was later changed to recreational and fire protection purposes. CMWD obtained a permit for surface water in the amount of 25 acre feet from Agua Hedionda Creek. The Batiquitos Lagoon Valley Groundwater Basin is the only basin located in CMWD's service area. The San Luis Rey Valley Groundwater Basin is located north of CMWD and the San Marcos Valley Groundwater Basin is located east of CMWD. DWR does not identify any of these groundwater basins as being in overdraft.

Other groundwater basins that could be potential sources of groundwater include Buena Vista Creek Basin, Agua Hedionda Creek Basin, Encinas Creek Basin, and the Batiquitos Hydrologic Subarea. These resources have low potential yields, poor quality, or no available data to substantiate their long term use in the public water supply. Collectively, these groundwater basins could supply only a small portion of CMWD's needs.

Of the groundwater basins available to CMWD, the Mission Basin of the San Luis Rey River has the most potential for a viable water resource. This basin has a large drainage area of 565 square miles and consists of alluvium and river channel deposits averaging 150 feet in depth. The quality is mildly brackish with TDS concentrations ranging from 1,000 to 1,500 milligrams per liter (mg/L). For CMWD's use, the water would need to be treated by a low pressure membrane, reverse osmosis process to achieve treated water quality in the range of 500 mg/L. The City of Oceanside is currently doing this at their Mission Basin Desalting Facility.

3.8.3 Seawater Desalination

CMWD has been a longtime proponent and supporter of seawater desalination and actively advocated for the Carlsbad Desalination Project through the multi-year permitting process. In 1999, Poseidon Resources Corporation (Poseidon) approached CMWD with a proposal to perform a feasibility study of seawater desalination in the City of Carlsbad. In March 2000, CMWD's Board of Directors instructed staff to prepare a report on this proposal, including the benefits and impediments to such a project. Poseidon completed its feasibility study in July of 2001. This study showed that construction of a 50 mgd Seawater Desalination Facility was feasible and recommended construction of this facility on the Encina Power Plant site (owned by Cabrillo Power).

After several years of planning and business discussions between CMWD, eight other retail water agencies, Poseidon, and SDCWA it was determined by all interested parties that the most likely path to successful and cost-effective implementation of the Project was through an agreement between Poseidon and SDCWA for a regional project. As implemented, SDCWA purchases the entire plant production and then sells a portion at full-cost recovery to interested retail agencies. In early 2016 CMWD signed a water purchase agreement with SDCWA to obtain 2,500 AFY of treated water from the Carlsbad Seawater Desalination Facility. The purchase price for the desalinated water is set at the purchase price SDCWA pays Poseidon plus additional administrative and capital recovery charges incurred by SDCWA in implementation of the Project. At 2,500 AFY, desalinated water would make up approximately 10 percent of CMWD's supply at current demand levels.

As a new local water supply independent of the imported water delivery system, seawater desalination would provide a highly reliable addition to CMWD's diverse supply portfolio. This supply would be available during droughts, during an emergency event that may lead to the failure of the SDCWA aqueduct pipelines, or during other prolonged reductions in imported water deliveries. This would increase CMWD's supply reliability during drought and emergency conditions. The CMWD's few agricultural customers would benefit from the higher reliability and improved water quality of these supplies.

3.8.4 Annual Water Supply

Table 3-7 Annual Water Supply (AF)

Annual Water Supply (AF)					
	Imported Water	Local Surface	Recycled Water	Local Groundwater	Total
FY 2013	17,248	0	4,098	0	21,346
FY 2014	17,801	0	4,539	0	22,340
FY 2015	16,357	0	4,206	0	20,563

3.9 Water Balance and Reliability

Reliability is discussed in detail in Part I of this RAWMP. CMWD's focus is on continuing to diversify its supply as described previously and to maintain an aggressive approach to water conservation and water use efficiency for all its customers including commercial agricultural users. The Table Below provides the water balance for CMWD for the Fiscal Years 2013-2015.

Table 3-8 Annual Water Supply Balance (AF)

Annual Water Supply Balance (AF)				
	Water Supplies	Water Use	Drain Water Leaving Service Area	Water Balance
FY 2013	17,248	16,125	0	1,123
FY 2014	17,801	16,648	0	1,153
FY 2015	16,368	15,234	0	1,134

3.10 Water Quality (See Part 1 Chapter 13)

3.11 Water Use Efficiency and EWMPs

CMWD participates in the Regional WUE Program described in Part 1., Chapter 12. Please see the tables for details of the regional commitment to implementing EWMPs.

Specific information on CMWD's projects to address Conditional EWMP 2 is detailed in 3.8.1. Recycled Water above.

Additionally, 3.5. Water Rate Schedules and Billing, discusses commitment to implement Conditional EWMP 4.

Sources

Carlsbad Municipal Water District.2011. *2010 Urban Water Management Plan*

Carlsbad Municipal Water District. 2012. *Water Master Plan*

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4. City of Escondido

Agency Chapter

Draft San Diego Regional Agricultural Water Management Plan: Part II

4 City of Escondido

4.1 Size, History and Location of Service Area

The City of Escondido (City) is located in a long valley in the coastal mountains of southern California and historically has had a large and thriving commercial agriculture industry. Escondido is located approximately 25 miles northeast of downtown San Diego and 10 miles east of Oceanside and Carlsbad. The City provides a thriving urban environment in the midst of gentle rolling hills, and avocado and citrus groves. The City lies about 18 miles inland and 30 miles northeast of the City of San Diego. and the City continues to provide water service to portions of the unincorporated areas. The City is a member of the SDCWA and a part of MWD. As a member of the SDCWA, it has the right to purchase and distribute water throughout its service area. The City, in conjunction with the Vista Irrigation District (VID), also operates facilities supplying local water from the San Luis Rey River watershed. The area around the City lies within the boundaries of the Rincon Del Diablo Municipal Water District (Rincon). Rincon was formed in 1954 in order to purchase and distribute water from the SDCWA to areas outside the City boundaries.

The City's water service area of approximately 20,000 acres, which is not aligned with the City's incorporated boundary, is comprised of a variety of land uses including residential, commercial, industrial, agricultural, open space, and orchards. Adjacent to the City's water service area are VID and Vallecitos Water District (VWD) to the west, Rincon and the City of San Diego to the south, and Valley Center Municipal Water District (VCMWD) to the north and east.

The history of water supply development in Escondido dates from the nineteenth century and involved the interrelated actions of four district entities: The City of Escondido, the Escondido Mutual Water Company, the Vista Irrigation District, and the Rincon del Diablo Municipal Water District. The initial domestic water supply was a matter of individual or neighborhood wells. There was no such thing as a "public" water supply. The local water resource consisted of intermittent flow in the Escondido Creek and the groundwater available in the tiny groundwater basin replenished by the creek.

The Escondido Valley, six miles long and four miles wide with mostly flat level land, is an ideal place for crop cultivation. Even where the land was gently sloped, early local farmers found the geography ideal for citrus. In addition, the climate, free from coastal fog and dampness and without excessive summer heat, was responsible for agriculture's success in the Escondido valley. In 1845 Juan Maria Alvarado was granted title to the rancho "Rincon del Diablo" in the Escondido Valley. During the Mexican Rancho era, cattle were raised for meat, hide and tallow. On a typical rancho in the north county, orchards of pears, peaches, quinces and pomegranates grew along with vineyards. Hay and grain were the early settlers' chief products.

By the 1880s, basic irrigation methods included flooding the land, constructing furrows, creating basins around tree roots and laying underground pipes. Later hand pumps and windmills were used. Grapes were a significant crop as early as the 1870s. The early vineyards needed neither fertilization nor irrigation, and Escondido became famous for table grapes and gold medal winning raisins. The expansion of the railroad to Escondido in 1888, the invention of refrigeration, the use of trucks and the improvement of the road system enabled the rapid development of Escondido's agriculture.

The first avocado trees were planted in Escondido on the W. W. Prior Ranch in 1892. The original tree died out about 1977 after a long life. Early growers traveled to such places as Nicaragua and Mexico to research new varieties and were eager to use experimental plantings. The California Avocado Association, begun in 1915, reported current advances and commercial possibilities. Locally, the boom in avocado productions reached new heights in the 1960s, the Hass and Fuerte varieties being the most popular. In 1892, Prior also planted the area's first Lisbon lemon in the area, a short thorn strain. A new strain of lemon was later known as the Prior Lemon.

In 1889, the Escondido Irrigation District was formed in order to augment local agricultural water supplies. During 1894 and 1895, the Escondido Canal was constructed to bring water from the San Luis Rey River basin and the original Lake Wohlford dam was constructed to store this supply. Due to financial difficulties, the Escondido Mutual Water Company was formed in 1904 to acquire and improve the facilities of the District. The improved Escondido Canal and enlarged Lake Wohlford thus provided the main supply to areas outside the city limits. By 1923, the growing City had incorporated areas served by the Mutual Company and had begun to acquire rights and facilities of the Mutual

Company within the City to augment the municipal supply. Also, in 1923 the San Diego County Water Company constructed Lake Henshaw by damming the San Luis Rey River, in order to increase the yield from that basin. Rather than build a completely independent system, that company jointly funded certain improvements with Escondido Mutual to transmit the water from Lake Henshaw to Lake Wohlford, and then to the service area of what is now Vista. This resulted in a dual-agency water supply arrangement that persists to the present day.

In 1945, the present VID acquired the interest of the older San Diego County Company. The San Luis Rey supply now shared by VID and Escondido Mutual still proved inadequate to meet demands. During the early 1950's, a well field was constructed to deliver groundwater into Lake Henshaw for downstream use. In 1970, following a long, drawn-out process, the City of Escondido acquired the Escondido Mutual Water Company. This essentially led to the present water supply. The City and Mutual systems were joined and the new City system shares with VID the local water supply delivery system and obtains imported water as well. Rincon provides water derived solely from the SDCWA aqueduct within its historic actual service area.

The SDCWA had been formed in 1944 and began delivering the imported supplies to San Diego County in 1947. Private companies were not permitted access to this water; only public agencies were eligible. The City of Escondido, therefore, could obtain this water directly but the Escondido Mutual Company could not. As a result, in 1954, the Rincon del Diablo Mutual Water District was formed. It incorporated lands in theory, eligible for water service by the Mutual Company, in practice, short of water. Therefore, the Rincon District began to supply water within its area.

A large percentage of the City's agricultural water demand is among the large citrus and avocado growers with nurseries and livestock watering rounding out the agricultural uses. Agricultural water demand is projected to gradually decrease in the future. The City's General Plan reflects local citizen interest in open space, quality of life, environmental values, and jobs provided by local agriculture even though it is projected that more agricultural land will eventually be converted to urban uses.

Commitment to Water Conservation

The City is committed to supporting these regional water conservation activities, and provides staffing and direct and indirect financial assistance. In addition, the City implements local water conservation

management measures to augment and complement these regional programs. City is currently an MOU signatory and, as such, is permitted to submit the most current BMP Activity Reports to comply with this section of the UWMP.

Additionally, the City has been a consistent supporter of the efforts of MRCD to provide water management assistance to growers in its service area. MRCD has been under contract to the SDCWA to operate regional agricultural water management services since 1990 as part of the SDCWA's AWMP. The goal of the program is to provide technical assistance to growers to enable them to irrigate crops as efficiently as possible in order to obtain the maximum economic benefit from limited water resources. The WUE programs have included direct assistance to retail water users, implementation of University of California Cooperative Extension (UCCE) BMPs, funding information assistance, and water purveyor efficiency practices. For more information on the regional WUE programs the City supports, see Part 1.

4.2 Water Management Facilities

The water supply to the City originates from two sources: local and imported water. Local water from the San Luis Rey River watershed is stored on a seasonal basis in Lake Henshaw and Lake Wohlford reservoirs. This water is delivered to the City via the Escondido Canal and associated pipelines. This local water is shared with VID and supplies approximately 18 percent of the City's average water demand.

Imported water is brought into San Diego County by the SDCWA aqueducts. The City has two connections to the aqueduct system. Imported water via SDCWA supplies approximately 82 percent of the City's average water demand. Water released from Lake Henshaw flows downstream in the San Luis Rey River channel to the intake of the Escondido Canal, which diverts water from the river. The Escondido Canal conveys water to Lake Wohlford, where it is stored and released through the Bear Valley Pipeline to the Escondido Vista Water Treatment Plant. The City is entitled to all the water from Lake Dixon, a portion of the water of Lake Henshaw and all the water derived from runoff in Lake Wohlford. The City's water department operates Lake Dixon and Lake Wohlford, which are used for

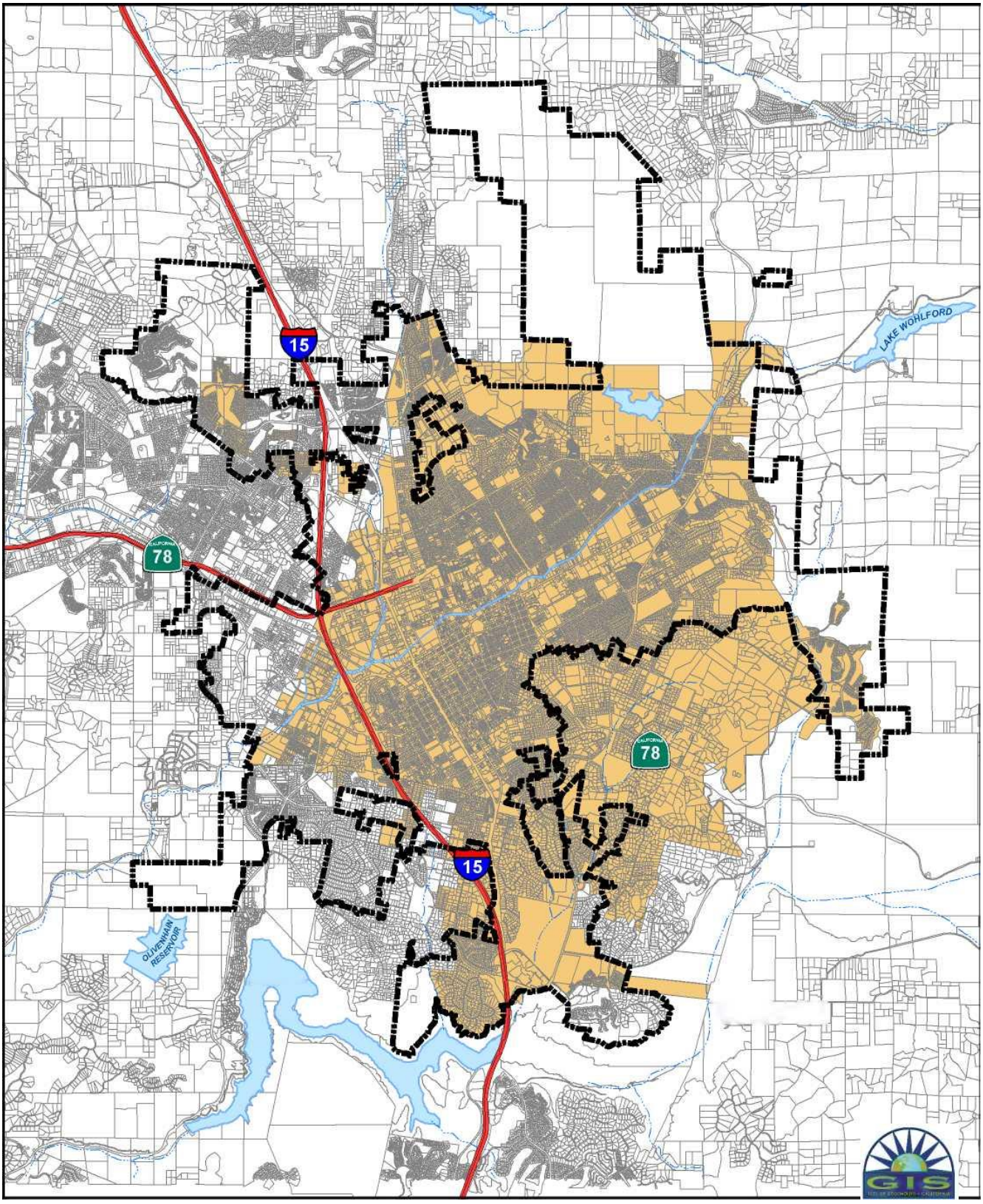
recreational purposes as well as water storage and supply. The Bear Valley power generating facility is also part of the local facilities.

The principal water storage and conveyance facilities serving the City include the Warner Basin aquifer, Lake Henshaw, the Warner Ranch Well Field, the Escondido Canal, Lake Wohlford, Dixon Lake, Bear Valley Pipeline, and Escondido/Vista Water Treatment Plant. A portion of the San Luis Rey River is also used for conveyance.

The City of Escondido maintains approximately 370 miles of active water mains ranging in size from 4-inch to 42 -inch in diameter. Escondido supplies potable water to approximately 26,000 residential, commercial, industrial and agricultural meters serving 146,000 customers and operates and maintains approximately 440 miles of pipe, eleven water reservoirs, five pump stations, two dams and associated lakes and the Escondido -Vista Water Treatment Plant (WTP) and clearwell. All of the water supplied to the City's service area is treated at the Escondido - Vista WTP and distributed to the customers within the service area, as well as to the VID and the parts of Rincon.

Escondido currently operates its water distribution system with ten major pressure zones that include one or more storage facilities. There are also six smaller reduced pressure zones and one pumped zone that do not have in -zone storage. There are over thirty interties with the adjacent water agency, Rincon. Many of these connections are normally open and district water exchanges (Escondido to Rincon or Rincon to Escondido) are either metered at the intertie or tracked through individual customer water bills. The remainder of the interties are normally closed valves which are opened manually only during emergencies. Two of the interties are at Rincon SDCWA treated water connections, which can be used to supply the Clearwell Zone directly from the SDCWA Aqueduct during a loss of supply from the Escondido-Vista WTP. The large number of interties greatly increases the reliability of Escondido's water system.

4 -1 Escondido Service Area



4.3 Operating Rules and Regulations

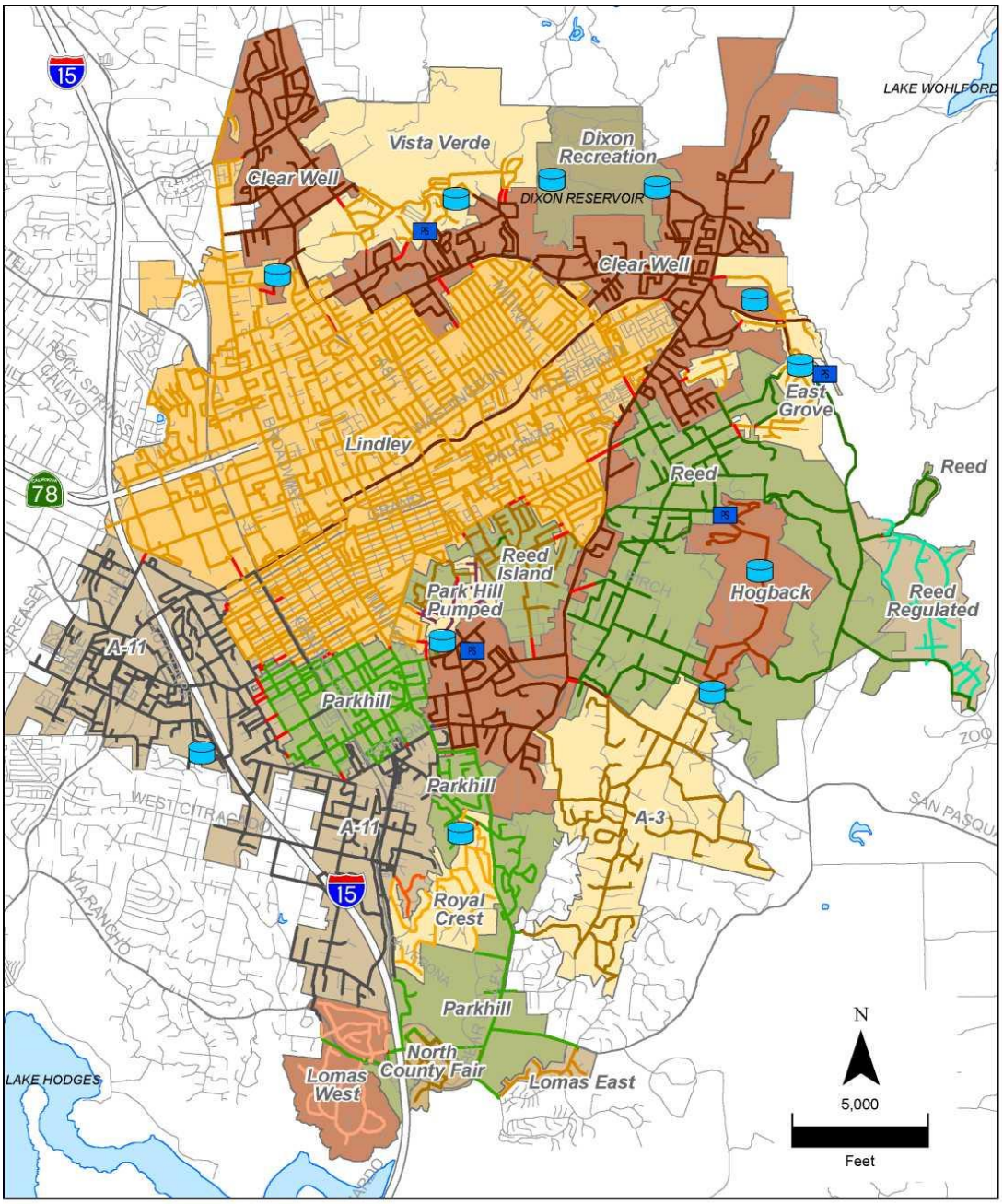
No operating rules for delivery of water to retail customers exist at this time.

4.4 Water Delivery Measurements

Metering of all water use and billing by volume has long been the standard practice at the City. The City receives water from local sources from facilities owned by the City or jointly by the City and VID or through its two connections to the SDCWA aqueduct system. All sources of supply including interconnections with Rincon are metered.

As directed by the CUWCC BMP, all new and existing water service connections are metered. For large parcels and commercial developments, separate, dedicated irrigation meters are placed where needed. The City's water delivery points to customers are metered using positive displacement meters (95+ % accuracy) and are actively monitored by the Utilities Department Staff.

Figure 4-2 Escondido Potable Water Facilities



4.5 Water Rate Schedules and Billing

The current water rate structure consists of a fixed monthly service charge that varies by meter size, a tiered commodity rate for residential and irrigation customers, and a uniform commodity rate for all other customer classes including Agriculture. The City Water Service Charge includes fixed water service costs such as maintenance of storage facilities, pipeline repair, meter reading, billing, and monitoring of water quality.

Table 4-1 User Rates for Potable Water

Resolution No. 2015-17R Effective March 1, 2015

CUSTOMER CLASS		COST PER 1,000 GALLONS
Single Family Residential		
Tier 1	0 to 7k gal	$5.05
Tier 2	>7 to 15k gal	$6.52
Tier 3	>15 k gal	$8.29
Residential/Agricultural Use		
Tier 1	0 to 7k gal	$5.05
Tier 2	>7 k gal	$6.64
Multi-Family Residential		
Tier 1	0 to 5k gal	$5.05
Tier 2	>5 to 7k gal	$6.53
Tier 3	>7 k gal	$8.27
Commercial, Industrial & School		$6.31
Irrigation - Institutional		$6.80
Landscape Districts		$6.80
SD Zoo Safari Park		$6.31
Special Unfiltered		$3.90
Agricultural Use		$3.31

Table 4-2 Water Service Charge Resolution No. 2015-17R

METER SIZE	CITY OF ESCONDIDO WATER SERVICE Effective March 1, 2015	METROPOLITAN WATER DISTRICT READINESS TO SERVE Effective July 1, 2015	SAN DIEGO COUNTY WATER AUTHORITY INFRASTRUCTURE ACCESS Effective March 1, 2015	*TOTAL WATER SERVICE CHARGE
5/8" and 3/4"	$28.54	$2.78	$2.76	$34.08
1"	$44.85	$4.46	$4.42	$53.73
1 1/2"	$85.61	$8.64	$8.27	$102.52
2"	$134.50	$13.88	$14.34	$162.72
3"	$289.38	$27.37	$26.56	$343.31
4"	$517.59	$42.77	$45.32	$605.68
6"	$1,145.22	$85.16	$82.85	$1,313.24
8"	$1,960.31	$136.81	$143.39	$2,240.50
3/4"x 3"	$405.12	$28.61	$45.32	$479.05
1" x 4"	$615.40	$45.09	$69.00	$729.49
1 1/2"x 6"	$1,226.85	$90.18	$137.61	$1,454.64
3/4" x 3" x 6"	$1,226.85	$110.79	$137.61	$1,475.25
1" x 4" x 8"	$1,960.42	$176.59	$221.33	$2,358.34
2" x 6"	$1,226.85	$99.23	$137.61	$1,463.69
2" x 8"	$1,960.42	$137.77	$221.33	$2,319.51
Detector Check	$48.59	N/A	N/A	$48.59

4.6 Water Shortage Contingency Planning and Allocation Policies

The reliability of the City's water supply is vulnerable to shortages due to unexpected interruptions to the delivery system outside of and within the San Diego region, prolonged periods of drought that limit supply or a local catastrophe that could limit supply, treatment, and movement of water within the City. As discussed in this section and in Section 4, the City has taken several actions 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. The water supplied by SDCWA is an important source for Escondido. In March 2008, the SDCWA's Board approved for release a Model Drought Response Conservation Program Ordinance (Model Drought Ordinance) for use by Escondido and other member agencies in updating their existing ordinances. The Model Drought Ordinance was developed with input from the member agencies to provide regional consistency during periods of shortages. The Department of Water Resources' 2008 Updated Urban Drought Guidebook was also utilized as a reference document for preparation of the Model Drought Ordinance. It identifies four drought response levels that contain water-use restrictions to help achieve demand reduction during temporary shortages. The restrictions become more stringent at each successive level to obtain necessary savings and delay economic impact until higher levels. The Model Drought Ordinance served as a model for the City of Escondido in updating its Drought Response Conservation Program (Ord. No. 2015-12(R), § 2, 6-10-15)

Enforcement and Penalties

Penalty rates may be used by the SDCWA to encourage conservation and reduce demand during a drought or other water supply shortage. If MWD allocates imported water supplies to the SDCWA, MWD can impose surcharges (penalty pricing) on water consumption in excess of the SDCWA's allocation. SDCWA's Implementing Resolution provides for pass through to Escondido of any penalties levied by MWD on SDCWA for exceeding its annual allocation. Penalties can be assessed on a pro rata basis to the City of Escondido if it should exceed allocations, and only if the SDCWA exceeds its allocation from MWD. SDCWA may also reduce the amount of water it allocates to Escondido or any other member agency should it fail to adopt or implement water use restrictions.

The City's Drought Response Conservation Program (Ord. No. 2008-30(R), § 2, 10-22-08) includes a section indicating fines and penalties that may be levied for water waste violations. Administrative

fines may be levied for each violation of any provision of this article, pursuant to the procedures outlined in Chapter 1A of the Escondido Municipal Code, in the following amounts:

(1) One hundred dollars ($100.00) for a first violation;
(2) Two hundred dollars ($200.00) for a second violation of any provision of this article during a level two—water shortage alert condition within one (1) year;
(3) Three hundred dollars ($300.00) for a second violation of any provision of this article during a level three—water shortage critical condition within one (1) year;
(4) Four hundred dollars ($400.00) for a second violation of any provision of this article during a level four—water shortage emergency condition within one (1) year;
(5) Five hundred dollars ($500.00) for each additional violation of any provision of this article within one (1) year.

Revenue & Expenditure Impacts

Water shortages of the types discussed above necessitate selling less water. Selling less water would result in lower revenue from sales. Rates were reviewed in a comprehensive 2009 rate study and set, most recently, in January 2011. A rate model tool was developed along with the study that could be used to help consider rate changes in a time of reduced sales due to water shortages. The various sources of water that City uses to treat and supply to its customers come with different costs for purchasing, transporting and treating. In the event of a water shortage, the amount of water pulled from each source could possibly be rebalanced to lower costs. This could include drawing more water from City's increased local storage at Lake Wohlford once the scheduled dam replacement project has been completed. The City (Utilities Department) maintains robust reserves that include consideration of emergency needs.

4.7 Water Use

4.7.1 Agricultural Water Use

In 1996 agricultural water use comprised 17 percent of the total demand, and the 1987 Master Plan estimated agriculture demand as 24 percent of the total water demand. Currently Agricultural users make up about 16 percent of water demand.

Table 4-3 Agricultural Water Use (AF)

Agricultural Water Use (AF)													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	Total
FY 2013	407	391	450	325	266	114	144	157	184	250	299	292	**3,279**
FY 2014	357	317	405	269	279	183	302	258	135	263	405	291	**3,465**
FY 2015	321	330	326	357	274	130	149	228	157	317	175	252	**3,017**

4.7.2 Municipal & Industrial Water Use

Table 4-4 M&I Water Use (AF)

M&I Water Use (AF)						
	July	Aug	Sept	Oct	Nov	Dec
FY 2013	2,854	2,700	2,895	2,262	1,862	1,349
FY 2014	2,706	2,514	2,883	2,258	1,939	1,516
FY 2015	2,720	2,365	2,337	2,239	1,892	1,414

Jan	Feb	March	April	May	June	**Total**
1,394	1,253	1,483	1,496	2,151	2,385	**24,084**
1,775	1,384	1,168	1,658	2,224	2,217	**24,242**
1,309	1,402	1,509	1,811	1,371	1,665	**22,034**

4.7.3 Environmental, Recreational, Groundwater Recharge, Transfers and Exchanges, And Other Uses

Table 4 -5 Other Water Uses

Environmental, Recreational, Groundwater Recharge, Transfers and Exchanges, And Other uses													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	**Total**
FY 2013													
FY 2014													
FY 2015*	960	733	1,155	1,199	1,211	1,042	1,108	828	1,209	1,377	1,212	786	12,820

Representative year of interagency exchanges

4.8 Water Supplies

4.8.1 Local Surface Water

The City, in conjunction with VID, also operates facilities supplying local water from the San Luis Rey River watershed. Local water is stored on a seasonal basis in Lake Henshaw and Lake Wohlford reservoirs. This water is delivered to the City via the Escondido Canal, the Bear Valley Hydroelectric plant, and associated pipelines. This local water is shared with VID and supplies approximately 18 percent of the City's average water demand. The amount can reach as high as 30 percent. Several agreements between the various water users have been entered into from 1894 to the present.

Current water rights were previously held by entities no longer in existence; water rights now held by the City have previously been held by the Escondido Irrigation District (EID) and Escondido Mutual Water Company (EMWC); water rights now held by VID include those previously held by William Henshaw (Henshaw) and the San Diego County Water Company (SDCWC). Several Indian bands (Indians) have held rights for which the Secretary of Interior (USDI) has acted on their behalf in litigation. The matters at issue in these proceedings pertain chiefly to the rights of the Parties to certain waters of the San Luis Rey River watershed and rights -of-way for the operation and maintenance of water conveyance facilities and appurtenances. In resolving these matters, the Settlement Agreement relies materially upon the assets furnished by the Federal Government pursuant to the San Luis Rey

Indian Water Rights Settlement Act (Settlement Act) (Pub. L. No 100-675, November 17, 1988, as amended). These assets include the provision of 16,000 AFY of water conserved from the lining of the All American Canal and Coachella Branch of the All American Canal (Supplemental Water) for the use of the Bands on their reservations or the Local Entities in their service areas.

The paradigm of the Settlement Agreement is that the Bands and the Local Entities are each entitled to enjoy the benefits of both the Supplemental Water and the waters of the San Luis Rey River watershed developed by the Local Entities (Local Water). The operative provisions of the Settlement Agreement establish the rights and responsibilities of each Indian Band and Local Entity by which they may access both Supplemental and Local Water. These provisions address administrative matters.

4.8.2 Recycled Water

The City owns and operates its own treatment and disposal facility. The City's Hale Avenue Resource Recovery Facility (HARRF), an 18.0 million gallons per day (mgd) wastewater treatment facility, is located in the southwest section of the City, and includes conventional treatment facilities and associated operations and maintenance buildings. The HARRF treats influent from the City and the City of San Diego's Rancho Bernardo Community.

The HARRF currently produces 3 mgd of tertiary treated recycled water for landscape and industrial use. In the future, the City will continue to produce recycled water and utilize much of that water for distribution within the City's service area, which will help offset the need for additional potable water supplies. Additional product is sold to other agencies and provides a source of revenue to the City.

The City has approximately 25 miles of recycled water distribution pipelines. As of July 1, 2010, this distribution system currently had 12 metered recycled water use sites. The largest user served by recycled water is Palomar Energy Center, a water customer of Rincon. Other recognized sites using recycled water for irrigation include local golf courses and schools. In addition, recycled water is also supplied to parks, median strips, shopping areas, the common areas of numerous homeowners' associations, and industrial parks.

The City has worked very closely with the SDCWA, the San Diego Regional Water Quality Control Board, and State and County Departments of Health Services in pursuing and developing the use of

recycled water. The City began serving recycled water in 2004. Since 2004, the City has been constructing treatment facilities, pumping stations, reservoirs, and pipelines plus requiring, in certain circumstances, that developers install pipelines within their projects for distribution of recycled water. There appears to be sufficient potential uses and customers for all tertiary water that can be produced. The plant and the distribution infrastructure are planned to expand incrementally to increase production as customer demand increases in future years.

4.8.3 Groundwater

Minimal groundwater sources are found throughout the City's service area. These wells are privately owned and maintained. The City does not participate in any groundwater withdrawal, storage or replenishment programs

4.8.4 Annual Water Supply

Table 4-6 Annual Water Supply (AF)

Annual Water Supply (AF)					
	Imported Water	Local Surface	Recycled Water	Local Groundwater	Total
FY 2013	22,657	1,956	4,242	-	28,855
FY 2014	23,791	1,510	3,682	-	28,983
FY 2015	21,253	626	3,725	-	25,604

4.9 Water Balance and Reliability

Reliability is discussed in detail in Part I of this RAWMP. Escondido's focus is on continuing to diversify its supply as described previously and to maintain an aggressive approach to water conservation and water use efficiency for all its customers including commercial agricultural users. The Table below provides the water balance for Escondido for the Fiscal Years 2013-2015.

Table 4-7 Annual Water Supply Balance (AF)

Annual Water Supply Balance (AF)				
	Water Supplies	Water Use	Drain Water Leaving Service Area	Water Balance
FY 2013	28,396	27,363	0	(1,033)
FY 2014	28,763	27,707	0	(1,056)
FY 2015	25,605	25,050	0	(555)

*Unaccounted for water is less than 4% and under industry standards for similar retail distribution systems

4.10 Water Quality (See Part 1 Chapter 10)

4.11 Water Use Efficiency and EWMPs

Escondido participates in the Regional WUE Program described in Part 1 Section 12. Please see the tables for details of the regional commitment to implementing EWMPs. Specific information on Escondido's projects to address Conditional EWMP 2 is detailed in 8.2. Recycled Water above. Additionally, 4.5.2. Water Rate Schedules and Billing, discusses commitment to implement Conditional EWMP 4. Escondido implemented a two tiered Residential/Agriculture inclining block rate schedule, at an independent rate for agriculture only accounts.

Sources

City of Escondido Utilities Department.2011. *2010 Urban Water Management Plan*

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5. City of Oceanside

Agency Chapter

5 City of Oceanside

5.1 Size, History and Location of Service Area

Oceanside is located in the historically agriculture-rich San Luis Rey Valley, The City of Oceanside was incorporated as a general law city in 1888, pursuant to the California Constitution Article XI and the California Government Code. The City is governed by an elected five-member council. The City is a full service city providing water and wastewater services through its Water Utilities department, under the purview of the City Council.

The City is located 35 miles north of the City of San Diego, encompassing about 42 square miles. The city is bordered on the west by the Pacific Ocean, the north by Camp Pendleton Marine Base, the south by the City of Carlsbad, and on the east by the City of Vista and unincorporated County land.

Spanish missionaries founded Mission San Luis Rey de Francia on a former site of a Luiseño Indian village on the banks of the San Luis Rey River. In the early 19th century, the introduction of farming and grazing changed the landscape of what would become Oceanside. Mission San Luis Rey and its surrounding lands became a large Mexican land grant following secularization, and the City of Oceanside was founded in the 1880's to coincide with the arrival of the railroad between San Bernardino and San Diego.

Much of the original land grant property was sold to the United States government in 1942 for the establishment of Camp Joseph H. Pendleton Marine Corps Base. Oceanside has prospered ever since, with the influx of military, along with agriculture and tourism.

Agriculture is an important component of Oceanside's economy. San Diego County is a major agricultural producer and the warm climate of Oceanside makes it ideal for the growing of tomatoes, avocados, citrus fruit, nursery stock, and flowers. Oceanside supports commercial farming, particularly in designating an agricultural district — which includes South Morro Hills — where large-scale agriculture is encouraged and only low-density housing is permitted. Morro Hills, which is also known as South Morro Hills, is a rural farming community located in Oceanside's northeast corner. This community is best known as the home to local producers of citrus fruits, avocados, vegetables, flowers, palm trees and strawberries. Oceanside's agriculture-friendly policies that seek to protect farming as a desirable long-term land use.

Commitment to Water Conservation

The City is a member of the California Urban Water Conservation Council (CUWCC). As such, the City has submitted biannual reports to the CUWCC in accordance with the "Memorandum of Understanding Regarding Urban Water Conservation in California," dated September 1991. The Biannual Report is a good faith effort in implementing the 14 urban water conservation Best Management Practices (BMPs) that are intended to reduce long-term urban water demands. The City completed a comprehensive Water Conservation Master Plan in May 2011

Additionally, the City has been a consistent supporter of the efforts of MRCD to provide water management assistance to growers in its service area. MRCD has been under contract to the Water Authority to operate regional agricultural water management services since 1990 as part of the Water Authority's AWMP. The goal of the program is to provide technical assistance to growers to enable them to irrigate crops as efficiently as possible in order to obtain the maximum economic benefit from limited water resources. The WUE programs have included direct assistance to retail water users, implementation of University of California Cooperative Extension (UCCE) BMPs, funding information assistance, and water purveyor efficiency practices. For more information on the regional WUE programs the City supports, see Part 1.

5.2 Water Management Facilities

The City water supply system includes five connections with the San Diego County Water Authority (SDCWA) filtered and untreated imported water aqueducts. These include connections on Pipelines No. 1 and No. 2, the CWA Tri-Agency Pipeline and the North County Distribution Pipeline (NCDP) for SDCWA imported water delivery to the City. The City also provides treatment to imported unfiltered water from the SDCWA at the 25 MGD Robert A. Weese Filtration Plant and the 6.4 MGD Mission Basin Groundwater Purification Facility that treats brackish groundwater extracted from Mission Basin via five wells. Recycled water is another City supply source and is discussed more fully in Section 5.8.1.

The City's water distribution system also includes 12 storage reservoirs located throughout the water system with at least one storage reservoir located in each of seven primary pressure zones. Some of the

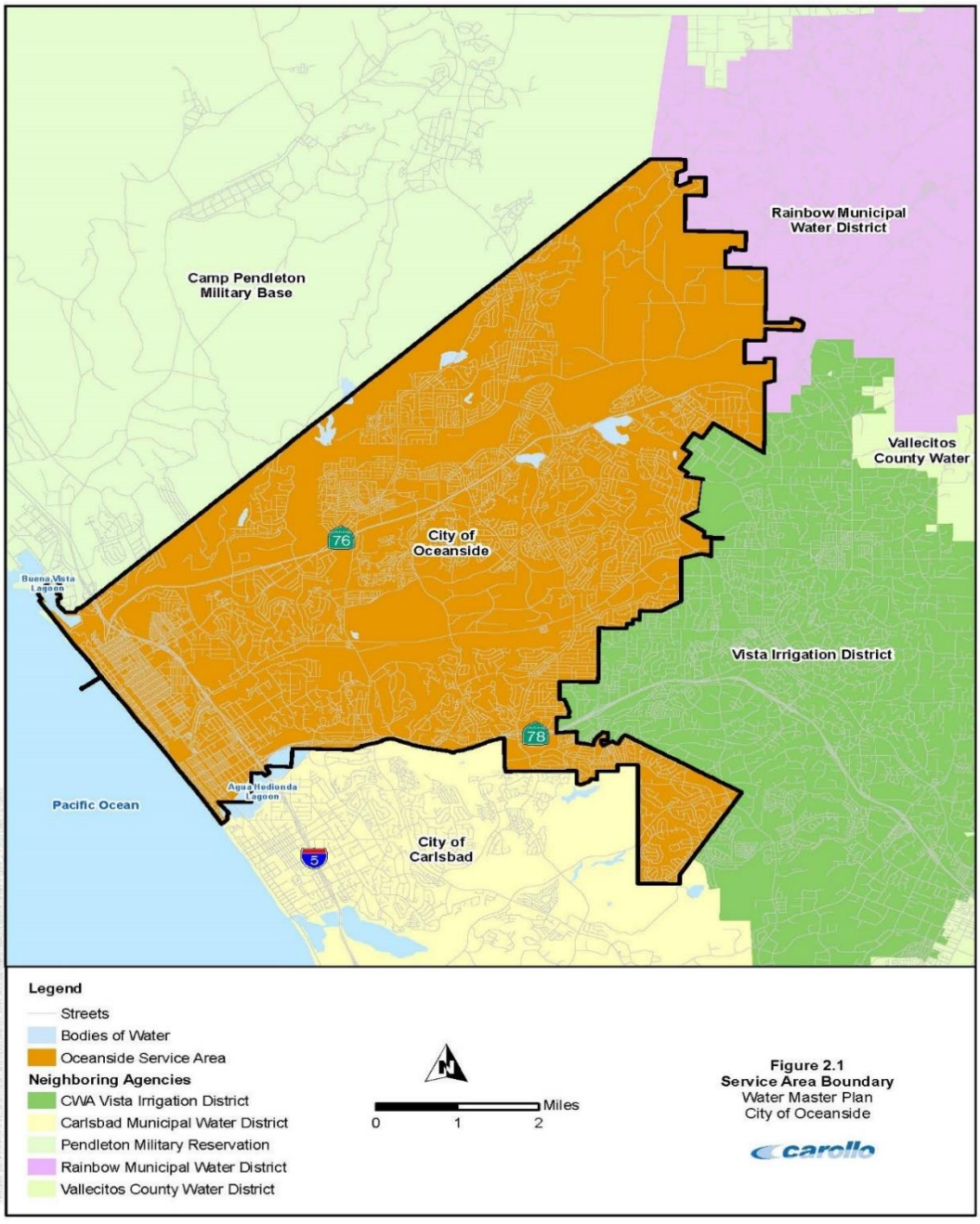
primary pressure zones have subzones that are supplied via pumping and via a pressure reducing station if the subzone ground elevations are lower. There are eleven pump stations in the City's water distribution system. Nine of the pump stations deliver water from lower pressure zones to upper pressure zones of the distribution system while two of the pump situations are located at the Mission Basin Groundwater Purification Facility. As the majority of the City's water supplies enter the distribution system in the upper pressure zones, seven of the City's pump stations are typically in standby mode. Only two pump stations operate on a daily basis.

Pressure reducing stations (PRS)'s are located throughout the City. In some instances, the PRS is a primary source of supply for a pressure zone, while in other instances they serve as a secondary source of supply.

There are approximately 591 miles of transmission and distribution piping in the water system with sizes ranging from 2 to 42 inches in diameter. The majority of the piping in the system is 8 inches in diameter and is made of asbestos cement (AC) pipe.

The Rainbow Municipal Water District (RMWD) can supply Oceanside with approximately 5-7 cfs of treated water through the Fallbrook connection in an emergency. The City also has a connection with the Carlsbad Municipal Water District near the intersection of El Camino Real and Vista Way. The city can also utilize emergency connections with the Vista Irrigation District (VID) near the Osborne Drive and East Vista Way intersection and at a second connection near the Tri City Medical Center complex on Vista Way. The City may also supply water to these neighboring urban water suppliers during localized emergency situations

Figure 5-1 Oceanside Service Area Boundaries



5.3 Operating Rules and Regulations

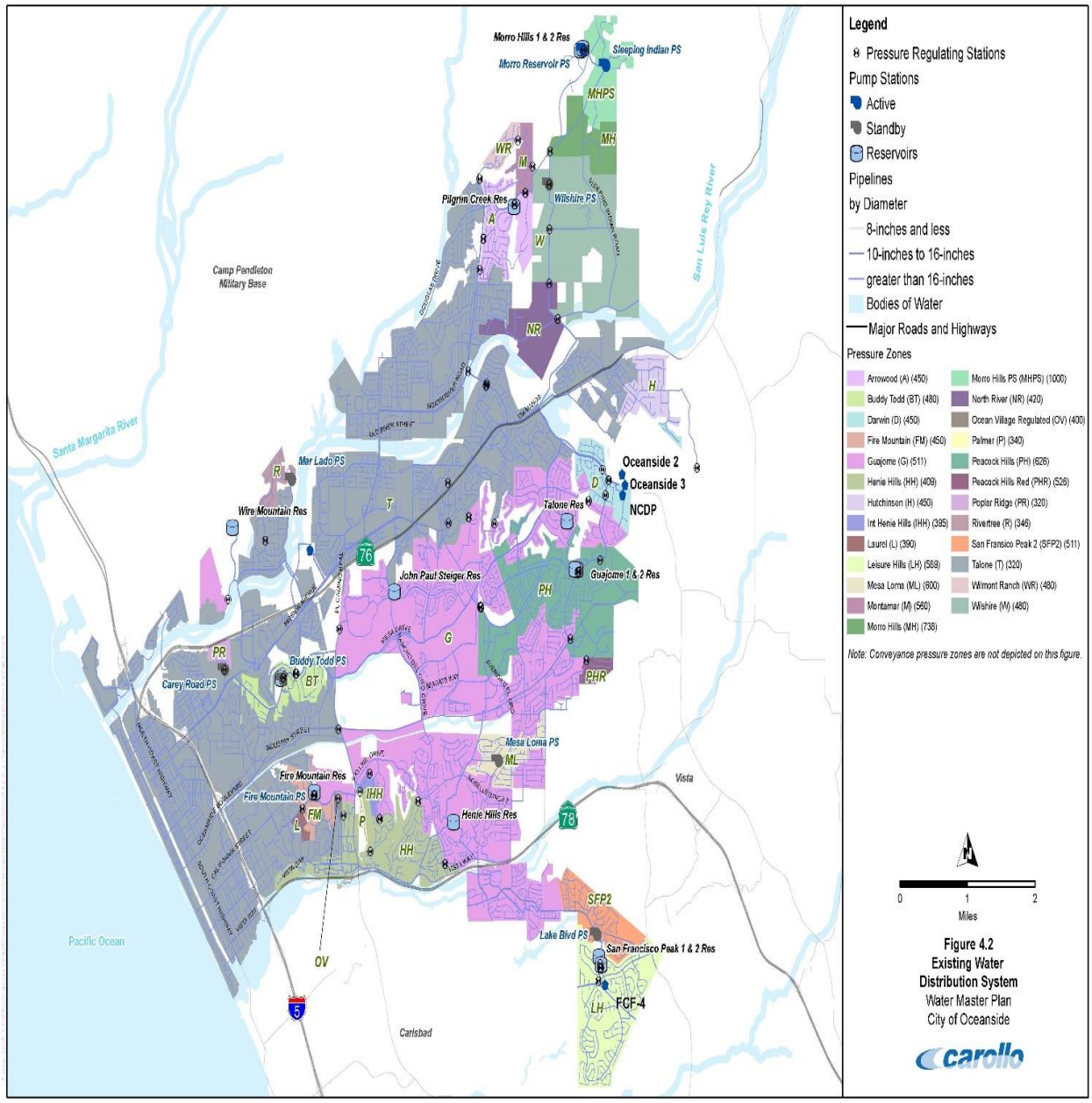
No operating rules for delivery of water to retail customers exist at this time.

5.4 Water Delivery Measurements

Metering of all water use and billing by volume has long been the standard practice at the City. The City receives water from local sources from facilities owned by the City or through its connections to the SDCWA aqueduct system. All sources of supply including interconnections with Rainbow, Carlsbad and VID are metered.

As directed by the CUWCC BMP, all new and existing water service connections are metered. For large parcels and commercial developments, separate, dedicated irrigation meters are placed where needed. The City's water delivery points to customers are metered using positive displacement meters (95+ % accuracy) and are actively monitored by the Utilities Department Staff.

Figure 5-2 Oceanside Water Facilities



5.5 Water Rate Schedules and Billing

Oceanside's current water rate structure consists of a fixed monthly water service charge that varies by meter size and customer class, and a two tiered commodity rate for residential customers, and a uniform commodity rate for all other customer classes including Agriculture. Agricultural customers have two classes of service; Commercial Agriculture and for those participating in SDCWA's TSAWR Program, a Special Agricultural Rate. The City of Oceanside Water Service Charge applies to all classes of customers. Table 5-X provides the rates charged to agricultural customers by the City of Oceanside

Table 5-1 City of Oceanside Agricultural Water Rates

	Water Consumption 1 unit = 748 gallons
Commercial Agricultural	$5.03 per unit
Special Agricultural Rate	$4.13 per unit

SDCWA Surcharge - All meter sizes $2.29 for each unit of water used.

Clean Water Program - All meter sizes $.12 for each unit of water used

Meter Size	Water Service	MWD Ready to Serve	SDCWA Infrastructure
5/8, 3/4 inch	$21.86	$1.99	$2.85
1 inch	$49.58	$4.98	$4.57
1 1/2 inch	$95.79	$9.95	$8.56
2 inch	$151.23	$15.92	$14.84
3 inch	$280.59	$29.85	$27.40
4 inch	$465.40	$49.75	$46.79
6 inch	$927.42	$99.50	$85.59
8 inch	$1,481.84	$159.20	$148.36
10 inch	$2,128.66	$228.85	$222.54

5.6 Water Shortage Contingency Planning and Allocation Policies

As part of the conservation effort, the City of Oceanside adopted Ordinance No. 091-15 on March 27, 1991, which established a water conservation program for the City. The City's "Water Conservation" code was further amended in July 2008 through the adoption of City Ordinance No. 08-IR0439-1 to revise the existing water conservation program and add drought response conservation measures to be implemented in the event of mandatory water reductions. The City of Oceanside has formally codified Ordinance No. 08-ORO439-1, establishing a water contingency plan. On May 20, 2015, following a declaration of drought emergency and in response to the Governor's executive order to impose restrictions on water suppliers to achieve a statewide 25 percent reduction in potable urban usage through February 2016, Oceanside adopted Ordinance No. 15_OR0276-1. Adopted as an urgency ordinance to minimize the effects of water shortage and to avoid potential fines and penalties, the ordinance revised and updated the Water Conservation Program and the Drought Response Conservation Measures.

Water management stages are a sequential, regulatory program of increasingly stringent prohibitions on the use of water delivered within the City. The drought ordinance establishes four levels of drought response actions to be implemented in times of shortage. When the City declares that a particular stage is in effect, City customers must comply with all regulations contained in the declared stage

The City's drought ordinance establishes regulations to be implemented during the water shortage levels with increasing restrictions on water use in response to worsening drought conditions and decreasing available supplies. During a Drought Response Level 2 condition or higher, the water conservation measures and water use restrictions established are mandatory and violations are subject to criminal, civil, and administrative penalties and remedies specified in this ordinance and as provided City's Administrative or Municipal Code. The Drought Response Conservation Program (Program) was adopted by the City in July 2008. It was based on a model program developed by the SDCWA for its member agencies. During the most recent drought, the Program was utilized to declare a Drought Response Level 2 Condition.

Further, the City has declared that at no time shall water be wasted or used unreasonably. Unreasonable uses of water include, but are not limited to, the following:

- Failure to repair a water leak after notification from the City and opportunity to do so.

- Failure to stop water waste resulting from conditions such as inefficient landscape irrigation excessive runoff, low head drainage, overspray of water flows onto non-targeted areas, overspray of water flows onto adjacent property, overspray and water flow onto non-irrigated areas, overspray and water flow onto roadways and adjacent structures

Enforcement and Penalties

The City of Oceanside does have provisions for penalties and charges for excessive use and mandatory prohibition violations. These are:

- Section 37.109 of the City Code provides that penalties for violation of the code sections related to water conservation are punishable as misdemeanor crimes under section 1.7 (a) (1) of the City Code with fines not to exceed $1,000 or imprisonment for a term not exceeding six months or both.

- The City's Water Conservation Ordinance includes provisions that water service can also be discontinued or limited to any customer who uses excessive water in a drought

Revenue & Expenditure Impacts

It is difficult to precisely gauge the revenue and expenditure impacts of implementation of the water shortage contingency plan. The plan provides for prohibitions on outdoor water use and requests for indoor use reductions, enforced by misdemeanor penalties for violation. Ultimate impacts will be based upon a mix of responses to these requirements and overall public cooperation in saving water in additional ways. Revenue will be reduced through lower water sales. However, the City will see this compensated to some degree by lower water purchase, pumping and treatment charges.

Impacts during Drought Response Levels 1 through 4 would likely be absorbed by City reserves without requiring a rate increase provided the shortage condition did not persist for more than a year. Impacts beyond a year or impacts from a greater level of shortage would need to be individually assessed. Measures to reduce expenses would be considered during a shortage such as reduction in capital expenditures, deferring non-critical maintenance items and deferring filling of personnel

vacancies. Should revenue loss impacts begin to affect essential water system operations, the City has established a drought rate structure to offset loss of revenue. As a conservation measure, the City has established a drought rate structure, per Ordinance No. 09-OR0336-1, to be implemented to achieve the water reduction targets established in the City's Drought Response Conservation Program in the event of mandatory water reductions

5.7 Water Use

5.7.1 Agricultural Water Use

Table 5-2 Agricultural Water Use (AF)

Agricultural Water Use (AF)													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	Total
FY 2013	235	254	243	191	133	36	81	105	89	102	160	169	1,804
FY 2014	183	220	189	163	94	71	116	93	84	159	201	166	1,743
FY 2015	165	190	227	193	100	37	49	89	114	152	101	127	1,549

5.7.2 Municipal & Industrial Water Use

Table 5-3 M&I Water Use (AF)

M&I Water Use (AF)						
	July	Aug	Sept	Oct	Nov	Dec
FY 2013	3,010	2,863	2,991	2,583	2,144	1,636
FY 2014	2,840	2,777	2,939	2,419	2,092	1,609
FY 2015	2,878	2,726	2,754	2,423	2,048	1,571

M&I Water Use (AF)						
Aug	Feb	March	April	May	June	Total
1,384.3	1,420.4	1,638.4	2,024.4	2,302.7	2,545.2	**26,542.7**
1,825.2	1,763.5	1,610.0	1,958.6	2,595.2	2,696.8	**27,125.6**
1,269.3	1,468.6	1,639.8	2,103.3	1,975.1	1,806.2	**24,662.1**

5.7.3 Environmental, Recreational, Groundwater Recharge, Transfers and Exchanges, And Other Uses

Table 5 -4 Other Water Uses

Environmental, Recreational, Groundwater Recharge, Transfers and Exchanges, And Other uses													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	**Total**
FY 2013													
FY 2014													
FY 2015*	1,401	1,209	1,073	1,080	492	238	409	743	814	984	871	956	10,268

Representative year of interagency exchanges

5.8 Water Supplies

5.8.1 Recycled Water

The City of Oceanside has produced recycled water for many years, starting with the construction of the SLRWRP in 1972. Secondary effluent was supplied to Whelan Lake for storage reasons. More recently, the lake has changed its uses and is presently a bird sanctuary. The SLRWRP provides secondary treatment for most of the City service area. The rated secondary treatment capacity is 13.5 mgd on an average annual basis. The FY 2014 average annual flow was 9.2 mgd. By agreement, the plant also provides treatment for up to 1.5 mgd of wastewater from the Rainbow Municipal Water District.

The processes at the SLRWRP was upgraded in 1991, through construction of a tertiary filter and chlorine contact basin. Up to 0.7 mgd of the secondary effluent can be treated further to meet Title 22 requirements for unrestricted reuse. The Recycled water is then pumped to the City of Oceanside municipal golf course or Whelan Lake. Currently recycled water from FPUD is used to irrigate the Arrowood Country Club. FPUD however may present an additional opportunity for future recycled water within the City. Potential future uses of recycled water include agricultural irrigation, landscape irrigation, wildlife habitat enhancement at Whelan Lake, and groundwater recharge.

Phase 3 would expand the system to the agricultural users along Wilshire Road. This would require construction of an expanded treatment plant as well as a new distribution pipeline to these users. There would not be enough hydraulic capacity in the Fallbrook land outfall. A new storage reservoir would also be required.

5.8.2 Groundwater

The Mission Basin Groundwater Purification Facility (MBGPF) is a desalting treatment facility that treats brackish groundwater extracted from the Mission Basin via eight wells including four “on-site” wells located at the MBGPF site and four “off-site” wells, located in the eastern portion of the basin near North River Road west of College Blvd. Of the eight wells, six are active and two are under construction. The MBGPF was put into service in 1992 with a capacity of 2.0 mgd, and expanded to its current capacity of 6.37 MGD, or 7,130 acre-feet per year, in 2002. The MBGPF treatment process utilizes reverse osmosis membranes to reduce salt concentrations present in the groundwater. A side-stream treatment system is employed to reduce iron and manganese. The facility is capable of removing

many impurities form the groundwater including particles, iron, manganese, and sodium to meet drinking water standards. Iron and manganese are present in the on-site wells, and manganese is present in the off-site wells. After the minerals and other impurities are removed through reverse osmosis, the product is then blended with a 20 percent share of water direct from the well field and subjected to additional post-blend treatment to result in a finished, potable water supply.

The six existing wells can be combined to produce a consistent yield of 4.2 mgd of brackish groundwater. The City is constructing two additional wells southwest of the existing MBGPF to fully utilize the full 6.4 mgd treatment capacity of the MBGPF. The amount of groundwater projected to be pump is shown in Table 19. This will reduce the need for imported SDCWA water. The City has conducted studies to determine the impact of groundwater pumping on local groundwater levels. Those studies concluded that the planned expansion of the MBGPF will result in no significant impacts to existing groundwater-dependent vegetation during extended dry-year periods lasting up to three years. Therefore, the MBGPF is considered a reliable source of up to 7,130 acre-ft per year of potable water during multiple-dry water years.

5.8.3 Annual Water Supply

Table 5-5 Annual Water Supply (AF)

Annual Water Supply (AF)					
	Imported Water	Local Surface	Recycled Water	Local Groundwater	Total
FY 2013	24,140.6		128.1	4,574.3	28,843
FY 2014	24,762.9		140.4	4,734.5	29,637.8
FY 2015	23,081.7		135.3	3,231.8	26,448.8

5.9 Water Balance and Reliability

Reliability is discussed in detail in Part 1 of RAWMP. Oceanside's focus is on continuing to diversify its supply as described previously and to maintain an aggressive approach to water conservation and

water use efficiency for all its customers including commercial agricultural users. The Table on the following page provides the water balance for Oceanside for the Fiscal Years 2013-2015.

Table 5-6 Annual Water Supply Balance (AF)

Annual Water Supply Balance (AF)				
	Water Supplies	Water Use	Drain Water Leaving Service Area	Water Balance
FY 2013	28,843.0	28,347.0	0	496.0
FY 2014	29,637.8	28,925.7	0	712.1
FY 2015	26,448.8	26,211.2	0	237.6

5.10 Water Quality (See Part 1 Chapter 10)

5.11 Water Use Efficiency and EWMPs

The City participates in the Regional WUE Program described in Part 1., Section 12. Please see the table for details of the regional commitment to implementing EWMPs. Specific information on Oceanside's projects to address Conditional EWMP 2 is detailed in 5.8.1 Recycled Water above. Additionally, 5.5 Water Rate Schedules and Billing, discusses commitment to implement Conditional EWMP 4. For agricultural users, the City implemented two types of commodity rates.

Sources

City of Oceanside .2011. *2010 Urban Water Management Plan*

6. City of Poway

Agency Chapter

Draft San Diego Regional Agricultural Water Management Plan: Part II

6 City of Poway

6.1 Size, History and Location of Service Area

The City of Poway is the water supplier within its jurisdiction. The City of Poway imports nearly 100 percent of its water supply in the form of raw, untreated water. The City of Poway encompasses 39 square miles and is located in San Diego County, 20 miles north of downtown San Diego and 125 miles south of Los Angeles. Poway borders the City of San Diego on two sides, including the communities of Scripps Ranch to the south and Sabre Springs, Rancho Peñasquitos and Rancho Bernardo to the west. The City of Escondido is just north of Poway, and the unincorporated community of Ramona is to the east. Poway is one mile east of Interstate 15, which links San Diego, Riverside, Los Angeles and Orange Counties. The elevation of Poway ranges from 480 to 2,250 feet above sea level.

Water has always been crucial in the Poway area. In 1859 Poway saw its first white settler and its first ranching activity. By 1869 there were a sufficient number of settlers in the valley to warrant a post office which was established in 1870. The 1880s saw a prosperous and well-populated valley. Families were settling on farms, planting orchards and vineyards, and raising grain. Dairying was profitable, as was beekeeping. By 1887, there were about 800 people in the Poway area. Early settlers and ranchers in the late 1800s depended almost entirely on well water. By the early 1900s, the hardiest of the settlers had managed to cope with drought and transportation problems. They had firmly established themselves in the valley and Poway became known for its exceptionally fine peaches and for its vineyards. Grain and alfalfa were other major products. The area saw significant population increases as the Valley became known for its agriculture. Dependence on local rainfall and wells made the area susceptible to frequent drought and highlighted the need for new and more reliable sources.

As Colorado River water was being imported into the region, the Water Committee of the Poway Chamber of Commerce was actively investigating the possibility of forming a Poway Municipal Water District and joining the SDCWA and, through them, MWD. Initially, areas like Poway could not become a part of SDCWA and MWD because district membership required that water agencies owned their own local surface water supply. Areas solely dependent on wells for water supply were considered dry land and were not eligible for MWD membership. MWD changed its policy in 1953. On Jan. 29, 1954, Poway voters overwhelmingly approved the creation of the Poway Municipal Water District

(District.) On March 25, 1954, Poway residents voted to have the District join SDCWA and begin delivery of Colorado River water to Poway. Subsequently, a $600,000 bond issue was overwhelmingly approved by Poway voters and construction of the irrigation system was initiated to convey water from the District to local farms and ranches. The first delivery of Colorado River water through the system was in July 1954.

In 1971, the directors of the water district made plans for expanded water treatment and emergency storage capacity. Voters in the district approved a bond to construct the Lake Poway Dam. Lake Poway became operational as a water reservoir and recreational area in 1972. Major modifications to the plant were completed in 1974. Poway incorporated as a general law city on December 1, 1980, and merged the Poway Municipal Water District and the Pomerado County Water District to establish a municipality. A Council-City Manager form of government administers the City. The City Council is comprised of 5 members elected at large by the citizens of Poway to serve for 4-year overlapping terms. The Mayor is directly elected by the citizens of Poway for a 4-year term. Annually, the City Council reorganizes, selecting a Councilmember to serve as Deputy Mayor. The Council appoints the City Manager to run the daily municipal operations.

Urbanization and residential land use along with industrial uses dominates the character of Poway today although there are still pockets of commercial agricultural activity remaining in the community.

Commitment to Conservation and Efficient Water Use

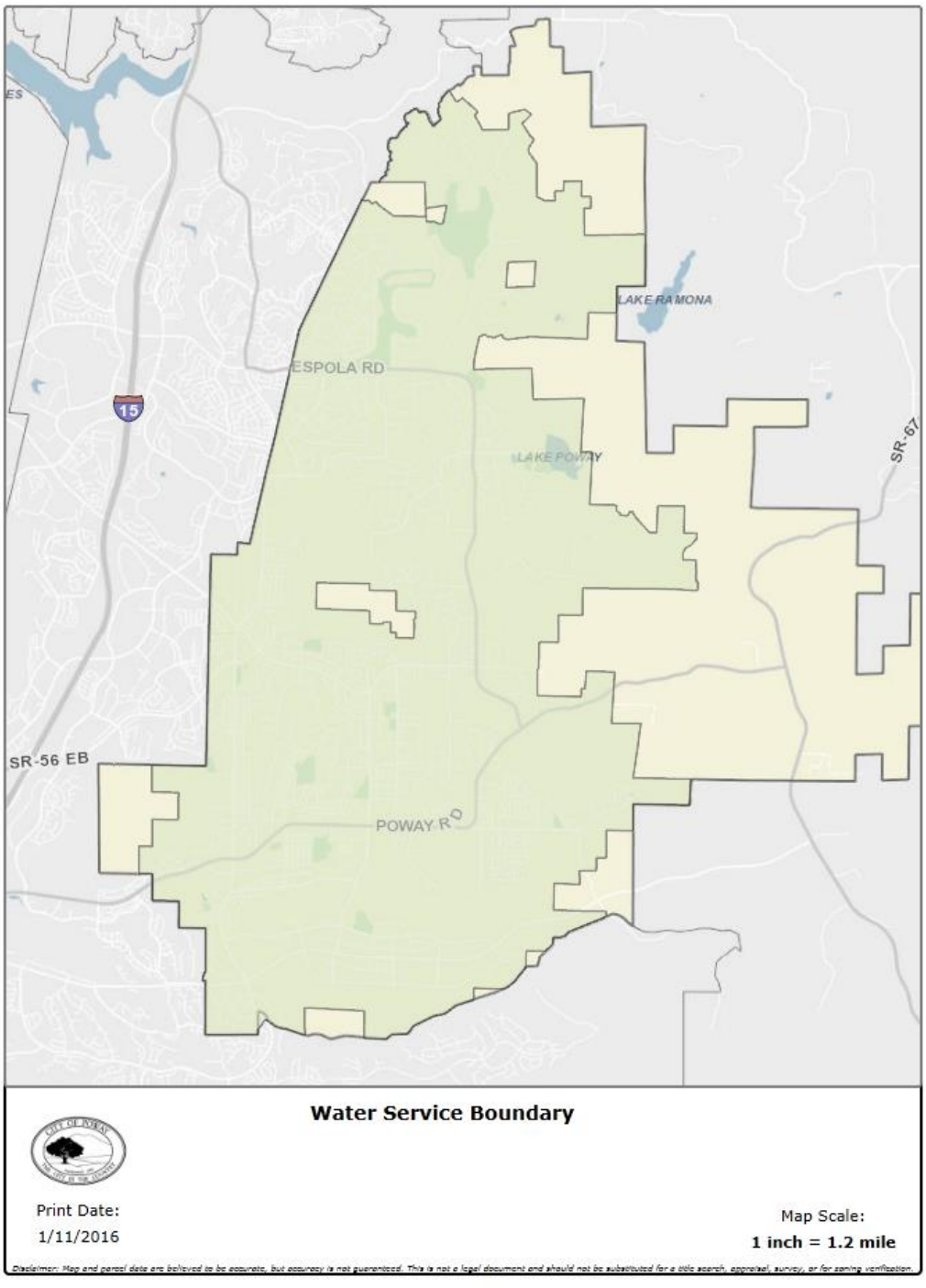
The City of Poway is committed to water use efficiency and conservation. Water conservation is a key component in Southern California's strategy to meet water demand. The City of Poway has proactively supported water conservation through City and SDCWA programs since the early 1990s. Poway has water conservation and reclamation measures in the development review process in order to implement strategies set forth in the Poway General Plan. Poway's efforts to promote and achieve water conservation have included the Demand Management Measures specified by the California Water Code, as well as other programs tailored to meet the specific needs of Poway water customers. The City of Poway has been a signatory member of the California Urban Water Conservation Council (CUWCC) since 1997.

Poway has implemented the Demand Management Measures (DMMs) by adhering to the CUWCC Best Management Practices (BMPs) and participating in the conservation efforts of the City's two wholesale water suppliers, MWD and SDCWA. While Poway has offered some programs

independently, most of Poway's water conservation programs have been offered in partnership with MWD and SDCWA. Since the 2005 UWMP was prepared, many changes have been made by the CUWCC to the BMPs and options for compliance. For the 2010 UWMP, CUWCC members have the option of submitting their 2009-2010 BMP annual reports in lieu of describing the DMMs in their UWMP, if the supplier is in full compliance with the CUWCC's Memorandum of Understanding Regarding Urban Water Conservation in California (the CUWCC MOU). Since the new CUWCC database was not complete at the time this plan was prepared and released for public review, the City of Poway self-certifies its full compliance with the MOU. Appendix G includes the City of Poway's 2009 and 2010 BMP Reports prepared for the CUWCC (submitted on May 19, 2011) and the coverage reports from the CUWCC showing the City of Poway's compliance with the BMPs for 2009 and 2010. Reports were filed by the City for 2013 and 2014.

Additionally, Poway has been a consistent supporter of the efforts of MRCD to provide water management assistance to growers in its service area. MRCD has been under contract to the SDCWA to operate regional agricultural water management services since 1990 as part of the SDCWA's AWMP. The goal of the program is to provide technical assistance to growers to enable them to irrigate crops as efficiently as possible in order to obtain the maximum economic benefit from limited water resources. The WUE programs have included direct assistance to retail water users, implementation of University of California Cooperative Extension (UCCE) BMPs, funding information assistance, and water purveyor efficiency practices. For more information on the regional WUE programs Poway supports, see Part 1.

Figure 6-1 Poway Service Area



6.2 Water Management Facilities

The City of Poway is a raw water customer of SDCWA with untreated water connections to the regional aqueduct system of Pipeline 1 and 2 of the First San Diego Aqueduct. Due to Poway's varied topography, distribution service zones range in elevation between 715 feet and 1,680 feet above sea level. This elevation range requires pumping and pressure regulating zones to provide average service pressures of approximately 80 pounds per square inch. There are eighteen pressure zones and about 267 miles of water mains (greater than four-inch diameter) and distribution pipelines serving approximately 13,746 services. All water services are metered. A small portion of the City of Poway is not connected to the water system.

The City of Poway has 20 storage reservoirs ranging in size from 200,000 gallons to 10 million gallons. Lake Poway is the City's largest reservoir. It was originally built by the Poway Municipal Water District in 1971-1972 and serves the City of Poway as a raw water storage reservoir and regional park and recreation facility. It has a 162-foot high earthen dam that contains 3,300 AF of water in 60 surface acres. The Lake is normally maintained at an elevation of 936 feet, two feet below the spillway. The Lake level fluctuates at the 936-foot elevation throughout the year except during summer months when it is drawn down for operational reasons. It is estimated that depending on the volume of water in the Lake, the season, and conservation levels, the Lake would have adequate water supplies for three to six months.

The City operates the Lester J. Berglund Water Treatment Plant, a conventional water filtration plant, transmission and storage system infrastructure with a peak design capacity of 24 million gallons per day (MGD). The City has the capability to provide some treated water to SDCWA in the event of shutdowns of SDCWA's treated water aqueduct. The maximum amount of water that Poway could deliver to SDCWA would depend on Water Treatment Plant flow. In most cases, Poway would be able to deliver up to four MGD of treated water for a short time through an emergency use agreement with SDCWA.

6.3 Operating Rules and Regulations

No operating rules for delivery of water to retail customers exist at this time.

6.4 Water Delivery Measurements

All deliveries through SDCWA connections are metered and billed monthly by SDCWA to Poway. All of Poway's deliveries' to retail customers are metered. Metering of all water use and billing by volume has long been the standard practice at the City Poway meters all flows into and out of the Berglund Treatment Plant. As directed by the CUWCC BMP, all new and existing water service connections are metered. For large parcels and commercial developments, separate, dedicated irrigation meters are placed where needed. Poway water delivery points to customers are metered using positive displacement meters (95+ % accuracy) and are actively monitored by City Staff.

The City diligently monitors and controls water system losses. The City tracks "authorized unmetered" uses, such as firefighter training and firefighting; water, sewer, and stormwater system maintenance; recycled system makeup water; and water quality and other testing. The City also tracks "metered" flows for water quality maintenance and analysis, and the testing and disinfection associated with the installation of new water mains. To calculate "non-revenue" water, the City compares the quantity of water delivered to the system from the Water Treatment Plant clearwell to the volume of water sold to customers. Authorized unmetered flows (e.g., water for firefighting training and system flushing) and unmetered flows (e.g., main leaks/breaks) are subtracted from this non-revenue water to calculate unaccounted for water, or water loss.

Over the last 10 years and last three years, estimated water loss as potential system leakage was 3.63 and 3.33 percent, which is considered very good in the water industry. For calculating gross water use, a total water loss of 4.09 percent (excluding raw water for golf course irrigation) was used prior to 1998, and 5.51 percent was used after 1998 (when the recycled water system was implemented because water used to flush the potable system is sometimes captured for reuse through the recycled system rather than being diverted to the storm drain system.)

6.5 Water Rate Schedules and Billing

All water sales in Poway, both potable and recycled, are metered. Customers receive water bills bimonthly and are charged based on meter size (capacity) and metered (commodity) use. The rate includes components for treatment, delivery, pumping, capital replacement, debt service, and administration. Millions of dollars have been invested in the Water Treatment Plant, reservoirs, and distribution system. Fixed costs and maintenance expenses occur regardless of customer usage. The "capacity" and "commodity" billing structure provides financial stability for the water system even in

times of drought or heavy rain. Conservation, even during a water shortage, will not have a long-term significant financial impact because the City Council adjusts rates to balance "capacity" costs and "commodity" costs.

The City of Poway has two tiers for residential water rates based on bi-monthly usage, in addition to a fixed meter charge based on meter size. Tier one is usage between 1 HCF and 199 HCF and, effective January 1, 2016, is charged at $4.60 per HCF. Tier 2 is any usage above 200 HCF and is charged at $6.56 per HCF. In addition, a $0.75 per HCF (potable water) temporary drought recovery surcharge is effect January 1, 2016*. Multifamily, landscape irrigation, and nonresidential are all charged a uniform rate of $4.69 per HCF.

**Adopted surcharge is partially suspended (the first 22 HCF used bimonthly) for single family residential customers for through December 2016.*

For those customers on the Transitional Special Agricultural Water Rate (TSAWR) the following applies:

Mixed Residential and Agricultural meter

- Fixed Meter Charge (variable by meter size) with residential commodity rate per HCF (either $4.60 or if >200 HCF then $6.56)
- TSAWR gives an additional $.52 credit per HCF on usage above 52 units bi-monthly

Agricultural Meters

- Fixed Meter Charge (variable by meter size) with the uniform rate of $4.69 per HCF
- TSAWR gives an additional $.52 credit per HCF

Table 6-1 City of Poway Water Rates

Customer	Block	Volume (1 unit = 100 cubic-feet)	Rate
Single-Family	**Block 1**	**1 to 199 units**	**$ 4.60 per unit**
	Block 2	**200 units and above**	**$ $6.56 per unit**
All Other Customer Types	**Not Applicable**	**Not Applicable**	**$ $4.69 per unit**
Recycled	**Not Applicable**	**Not Applicable**	**$ 4.22 per unit**

6.6 Water Shortage Contingency Planning and Allocation Policies

The City of Poway used the SDCWA model ordinance to develop a revised Water Conservation Ordinance, adopted by the Poway City Council on December 2, 2008, known as Poway Municipal Code Chapter 8.94 Water Conservation Plan. Poway's ordinance identifies four water shortage response levels. Level 4 – Water Shortage Emergency includes mandatory use restrictions and a conservation target above 40 percent. Poway's Water Conservation Plan, Chapter 8.94 of the Poway Municipal Code, is attached as Appendix F. It was adopted by the City Council on November 18, 2008, as Ordinance 682. The purpose of Chapter 8.94 – Water Conservation Plan is to establish water management requirements necessary to conserve water, enable effective water supply planning, and assure reasonable and beneficial use of water. The plan is also meant to prevent waste of water, unreasonable use of water, and unreasonable methods of water use. The plan aims to assure adequate supplies of water to meet the needs of the public, and further the public health, safety, and welfare, recognizing water is a scarce natural resource requiring careful management not only in times of drought, but at all times.

The Water Conservation Plan identifies four levels of action in response to a water supply shortage. The Water Conservation Plan also includes water use efficiency measures applicable at all times to all persons or businesses using City of Poway water, though the measures are not mandatory until Level 2 (or by separate, specific action of the Poway City Council at Level 1). Level 1 water conservation

measures are voluntary and will be reinforced through local and regional public education and awareness measures. During water conservation Levels 2 through 4, conservation measures and water-use restrictions are mandatory and become increasingly restrictive in order to attain escalating conservation goals. Violations may be subject to administrative, civil, and criminal penalties and remedies specified in Chapter 8.94 and as provided elsewhere in the Poway Municipal Code. The Water Conservation Plan specifies procedural and administrative requirements to implement a water shortage condition. Examples of situations that could trigger implementation of a water shortage condition include:

• General water supply shortage;

• Limited capacity in the SDCWA distribution facilities;

• Potential for a major failure of the supply or distribution facilities belonging to MWD,

SDCWA, and/or the City; or

• Conditions prevailing in San Diego County that require water resources available be put to maximum beneficial use.

Enforcement and Penalties

Section 8.94.140 - Water Conservation Plan - Enforcement of the Poway Municipal Code (Appendix F) addresses enforcement provisions associated with the City's water shortage response plan, including penalties for violating the water use restrictions.

Allocation Ordinance

On October 6, 2015 the Poway City Council adopted Ordinance No. 778, adding Chapter 8.96 to the Poway Municipal Code. This Chapter provides a framework for identifiable administrative fines and penalties that may be imposed by the City for customers whose consumption of water exceeds the amount allocated by the City for the billing cycle being charged. The imposition of the administrative fines and penalties are subject to those procedures established by Chapter 1.10 of the Poway Municipal Code, as amended from time to time, except as supplemented in this Chapter. The amount of administrative fines and penalties shall not exceed the amounts set forth in Chapter 8.96, but because the City experiences varying degrees of water supply restrictions (due to, adversely, sustained drought conditions, or, favorably, improvements in the supply of potable water as a result of successful conservation efforts and other conditions) they shall be based upon a determination of allocation or

base level usage as set by resolution of the City Council from time to time and consistent with this Chapter.

Table 6-2 Summary of Water Conservation Plan Enforcement Provisions

First Violation	Warning Letter
Second Violation	$100 Water Bill Surcharge
Third Violation	$200 Water Bill Surcharge
Any Subsequent Violation within One-Year of Any Third Violation	$500 Water Bill Surcharge and Possible Installation of a Flow Restrictor
Any Further Violation	Possible Water Service Turn-Off

Revenue & Expenditure Impacts

Poway's Water Conservation Plan includes four water shortage response levels, including three levels of mandatory conservation, from up to 20 percent to more than 40 percent. Reductions in potable water sales would result. The impact would depend on the amount of sales reduction and the length of water shortage conditions. For example, if sales declined by ten percent for several months, the impact on revenue and operations would be mild. If a severe water shortage occurred, necessitating that the City declare a Level 4 - Water Shortage Emergency, requiring mandatory reduced water use of greater than 40 percent, the revenue impact would be substantial, particularly based on timing during the year and duration of the emergency.

Measures to overcome revenue impacts would include purchasing less raw water from SDCWA and processing less water at the Water Treatment Plant (potentially resulting in decreased chemical and energy costs). Potable water in reservoirs would be sold first, and the raw water in the Lake Poway reservoir would be accessed for treatment. The City Council could consider adjustments to water rates and billing strategy. Rates are adopted by Resolution of the City Council following an extensive public notification process as required by Proposition 218. To partially address the revenue impacts from

reduced water sales, the rates in effect January 1, 2016 include a temporary drought recovery surcharge based on customer water use.

6.7 Water Use

6.7.1 Agricultural Water Use

Table 6-3 Agricultural Water Use (AF)

Agricultural Water Use (AF)													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	Total
FY 2013	5.3	30.1	4.8	3.5	1.6	1.5	0.4	1.3	1.0	5.4	2.3	7.7	**64.9**
FY 2014	3.8	9.4	2.5	7.4	1.3	3.5	1.4	2.5	0.9	5.3	2.2	7.7	**47.9**
FY 2015	1.7	8.2	1.6	6.2	0.5	1.2	1.4	3.4	1.0	3.8	0.6	3.6	**33.2**

6.7.2 Municipal & Industrial Water Use

Table 6-4 Municipal & Industrial Water Use (AF)

Municipal & Industrial Water Use (AF)						
	July	Aug	Sept	Oct	Nov	Dec
FY 2013	1,422.9	1,487.1	1,334.7	1,080.7	882.5	543.0
FY 2014	1,417.0	1,411.6	1,339.5	1,105.2	818.8	677.6
FY 2015	1,410.2	1,291.7	1,246.4	1,135.3	835.3	473.6

Municipal & Industrial Water Use (AF)						
Jan	Feb	March	April	May	June	**Total**
515.0	493.2	742.3	1,017.5	1,228.4	1,379.6	**12,126.9**
863.8	635.0	726.8	952.3	1,324.0	1,353.8	**12,625.4**
510.6	622.0	754.8	890.3	679.4	880.7	**10,730.3**

6.7.3 Environmental, Recreational, Groundwater Recharge, Transfers and Exchanges, And Other Uses

Table 6-5 Other Water Uses

Environmental, Recreational, Groundwater Recharge, Transfers and Exchanges, And Other Uses													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	**Total**
FY 2013	0	0	0	0	0	0	0	0	0	0	0	0	0
FY 2014	0	0	0	0	0	0	0	0	0	0	0	0	0
FY 2015	0	0	0	0	0	0	0	0	0	0	0	0	0

6.8 Water Supplies

6.8.1 Local Surface Water

Minimal surface run-off occurs in the 1,200-acre watershed upstream of Lake Poway. The City of San Diego has water rights in this watershed. By agreement, 50 percent of seasonal stream flow into Lake Poway must be passed on to the City of San Diego unless San Diego's Lake Hodges spills.

6.8.2 Recycled Water

Approximately five percent of total water use in Poway is recycled water for landscape irrigation in the Poway Business Park. This is the only recycled water used in the City of Poway. Recycled water is currently used in the Poway Business Park for landscape irrigation, distributed through dedicated pipes and meters. The developers of the Business Park paid for the recycled water infrastructure at the time of construction, and the City maintains the system. The recycled water system began construction in the 1990s and the first recycled water was received in 1997. Poway purchases its recycled water from the City of San Diego. The recycled water is produced at San Diego's North City Water Reclamation Plant in the Miramar area and piped back to a Poway reservoir that serves both Poway and a pressure zone in the City of San Diego. The City of Poway's 12-mile recycled water distribution system is heavily regulated and routinely inspected for excess runoff and other discrepancies to ensure that all sites adhere to all legal requirements, including Poway's Rules and Regulations for Recycled Water Use adopted by the City Council on September 30, 1997. All irrigation in the Business Park is required to use recycled water, with the exception of a small portion of the Business Park not yet connected to the system

Landscape irrigation in the Community Park and Civic Center area, and industrial reuse in the Business Park are potentially economically feasible and Poway will continue to consider these opportunities. Other landscape irrigation is not currently economically feasible because of the cost to construct pipelines to serve relatively few users. There is a very small amount of commercial agriculture remaining in Poway. There are no wildlife habitats, wetlands, groundwater recharge, seawater barrier, or geothermal/energy uses for recycled water.

6.8.3 Groundwater

The geology of Poway does not include any large alluvial aquifers with the coarse-grained materials that support efficient groundwater extraction and recharge. Poway's aquifers are small, located along creeks and streams, and contain more fine-grained materials. Groundwater is also available in fractured bedrock, although it is difficult to locate and normally requires deep wells. For these reasons, groundwater is not a significant supply for Poway, and it is not used in the community water treatment and distribution system. Private wells are privately constructed and not subject to monitoring by the City. They are used for potable supply in some areas that are not served by the community water system and in other areas as a secondary source for domestic use and landscape/crop irrigation. The absence

of a community water distribution infrastructure in the undeveloped areas, together with minimal groundwater supply, prevents dense development in that area. The City closely monitors and regulates all land use applications in these areas, but is not required to monitor the volume of water pumped.

6.8.4 Annual Water Supply

Table 6-6 Annual Water Supply (AF)

Annual Water Supply (AF)					
	Imported Water	Local Surface	Recycled Water	Local Groundwater	Total
FY 2013	12,080	55	453	0	12,588
FY 2014	13,199	37	412	0	13,648
FY 2015	10,771	69	413	0	11,253

6.9 Water Balance and Reliability

Reliability is discussed in detail in Part I of this RAWMP. Poway's focus is on continuing to see the region continue to diversify its supply as described previously and to maintain an aggressive approach to water conservation and water use efficiency for all its customers including commercial agricultural users. The Table Below provides the water balance for Poway for the Fiscal Years 2013-2015.

Table 6-7 Annual Water Supply Balance (AF)

Annual Water Supply Balance (AF)				
	Water Supplies	Water Use	Drain Water Leaving Service Area	Water Balance
FY 2013	12,588.26	12,524.86	0	63.4
FY 2014	13,649.3	13,037.8	0	611.5
FY 2015	11,255.15	11,143.65	0	111.5

6.10 Water Quality (See Part 1 Section 10)

6.11 Water Use Efficiency and EWMPs

Poway participates in the Regional WUE Program described in Part 1., Section 12. Please see the tables for details of the regional commitment to implementing EWMPs.

Specific information on Poway's projects to address Conditional EWMP 2 is detailed in 6.8.1 Recycled Water above.

Additionally, 5. Water Rate Schedules and Billing, discusses commitment to implement Conditional EWMP 4. For agricultural users, Poway charges a uniform commodity rate exceeding the first tier of the single family residential block.

Sources

City of Poway.2011. *2010 Urban Water Management Plan*

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7. Fallbrook Public Utilities District

Agency Chapter

Draft San Diego Regional Agricultural Water Management Plan: Part II

7 Fallbrook Public Utility District

7.1 Size, History and Location of Service Area

Fallbrook is an unincorporated community of San Diego County located in the northeast portion of the County. The community consists of 36,000 acres and is located south of Riverside County, east of Camp Pendleton and is 56 miles from downtown San Diego. Most of the area is characterized by rolling hills covered in avocado and citrus orchards. However, as the topography changes, it creates natural buffers that separate Fallbrook from its neighbors. The Santa Margarita River crosses through the rugged terrain in the northern portion of the area and the San Luis Rey River runs along the southern boundary. The eastern portion is dominated by steep slopes and Interstate 15.

Fallbrook Public Utility District (FPUD) operates as a public agency under the Public Utility District Act of the State of California. FPUD was incorporated as a political subdivision of the State of California in 1922. The mission of the FPUD is to provide a safe and reliable supply of water to residents and customers7 in the Fallbrook area. The FPUD serves an area of 28,000 acres. Currently, 43% percent of the annual water deliveries are for agricultural use. This number is significantly lower than in prior years. The remainder is for municipal, residential and industrial uses.

The first permanent recorded settlement in Fallbrook was in 1869, in the east area of the FPUD, which later became Live Oak County Park. Agriculture has always been a major industry in the area. The first plantings were olives and citrus, which were replaced in the 1920s by avocados. Fallbrook is generally recognized as the "Avocado Capital of the World." FPUD, consisting of about 500 acres, was incorporated on June 5, 1922. In 1927, the Fallbrook Irrigation District voted to dissolve and a portion of the former Irrigation District became part of FPUD, increasing the size of the District to 5,000 acres.

Subsequently, a plan to develop water from the Bonsall basin of the San Luis Rey River was started and FPUD became a member of the San Diego County Water Authority (SDCWA) at its formation on June 9, 1944, and thus was eligible to receive a portion of the Colorado River water diverted by the Metropolitan Water District (MWD) of Southern California. When Colorado River water became available in 1948, consumption within the FPUD gradually increased to approximately 10,000 acre-feet per year by 1959.

Significant expansions of the FPUD service area took place in 1950 when it annexed the last remaining portion of the Fallbrook Irrigation District and in 1958 when the area to the north of the town on both sides of the Santa Margarita River annexed to the District. In May 1990, the registered voters of the DeLuz Heights Municipal Water District, whose service area joins Fallbrook to the northwest, decided to dissolve their 17-year -old district and annex into FPUD's. This annexation added 11,789 acres (a

42% increase) to FPUD's service area; it increased water use by 25% as well as the number of service connections. The DeLuz Heights Municipal Water District was a member agency of the CWA and MWD, and relied on the same source of imported water except for three small wells, which had produced approximately 100 AF per year. Currently, FPUD has 7,798 residential connections; 546 commercial connections; 695 agricultural connections; 27 reclaimed connections; and 42 public connections. It receives virtually all of its potable water supply from SDCWA.

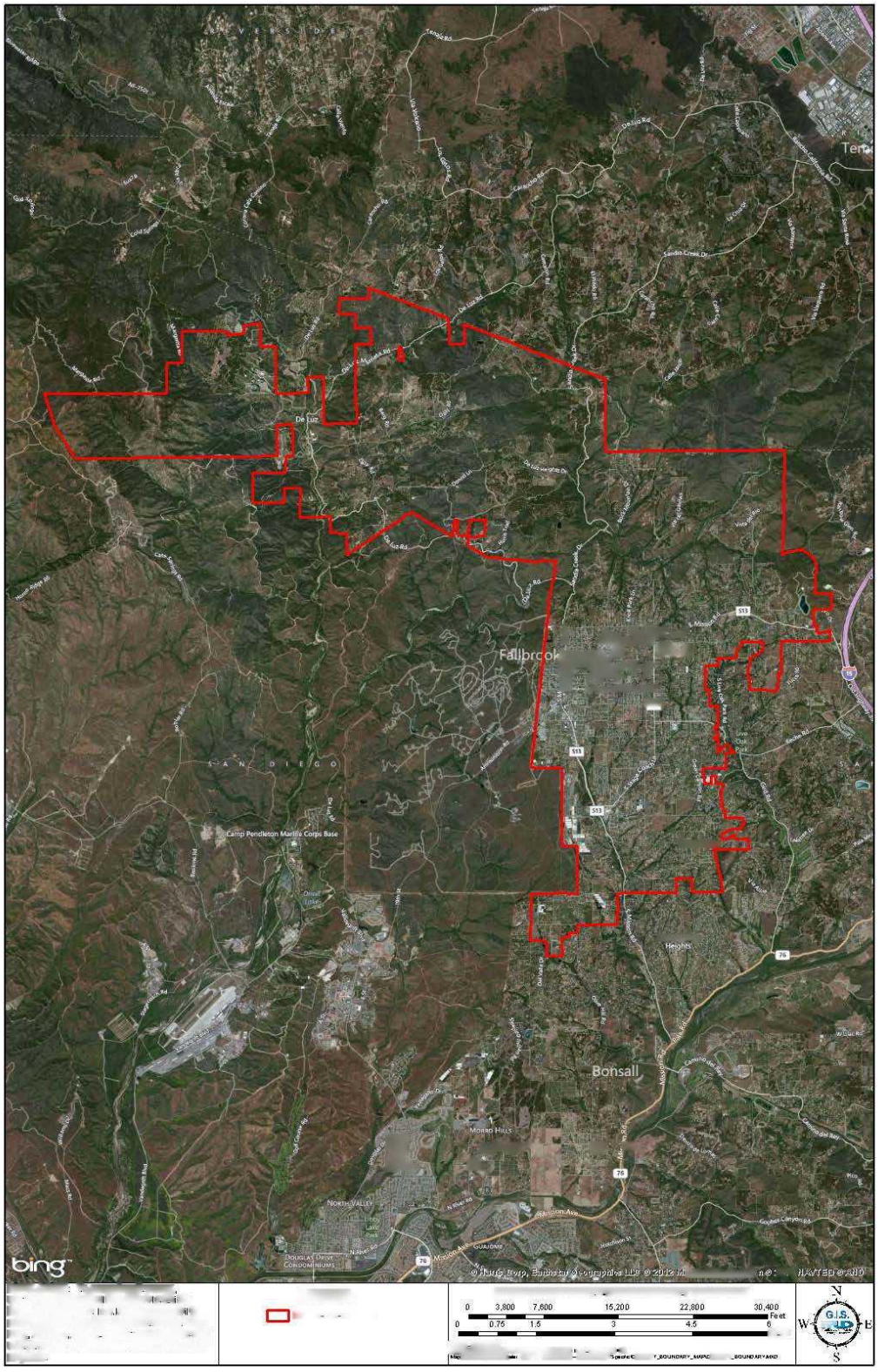
Commitment to Conservation and Efficient Water Use

FPUD is a signatory to the Memorandum of Understanding (MOU) Regarding Urban Water Conservation in California, which created the California Urban Water Conservation Council (CUWCC) in 1991. As a signatory, FPUD is required to submit biannual reports that detail the implementation of current water conservation practices. FPUD voluntarily agreed to implement the fourteen water conservation BMPs beginning in 1992and submits its annual reports to the CUWCC every two years.

FPUD water conservation programs are developed and conducted on the premise that water conservation increases the water supply by reducing the demand on available supply, which is vital to the optimal operation. Education is an important component to all of these programs. As a member agency of the SDCWA, FPUD also participates in many water conservation programs designed and conducted as a shared-cost participation program among other member agencies, the SDCWA, and MWD.

Additionally, FPUD has been a consistent supporter of the efforts of MRCD to provide water management assistance to growers in its service area. MRCD has been under contract to the SDCWA to operate regional agricultural water management services since 1990 as part of the SDCWA's AWMP. The goal of the program is to provide technical assistance to growers to enable them to irrigate crops as efficiently as possible in order to obtain the maximum economic benefit from limited water resources. The WUE programs have included direct assistance to retail water users, implementation of University of California Cooperative Extension (UCCE) BMPs, funding information assistance, and water purveyor efficiency practices. For more information on the regional WUE programs FPUD supports, see Part 1.

Figure 7-1 FPUD Boundaries



7.2 Water Management Facilities

FPUD receives water from the SDCWA through 4 treated water connections (turnouts) to the regional aqueduct system. Although FPUD is a member agency of SDCWA its physical connection to the system is to MWD owned pipelines. For the purpose of emergency supply in the event of leaks or maintenance, FPUD entered into an emergency exchange agreement with RMWD in 1986. Both agencies own and operate water pipeline systems connected to the SDCWA aqueduct and along a common boundary. Interconnections were constructed linking both agencies' systems for this emergency exchange purpose. Rancho California Water District is the only other adjacent water agency and planning is being completed for emergency connections in the DeLuz area.

FPUD maintains over 270 miles of water pipelines ranging in size from 2-inches to 30- inches in diameter. In general, the pipelines are predominantly cement mortar lined & coated steel, and the majority of FPUD's system has been installed since the 1960s and thus should have many years of remaining functionality based on the expected useful life of the pipe materials.

FPUD operates 4 pump stations and 20 potable water storage tanks plus an uncovered finished water reservoir with UV disinfection.

7.3 Operating Rules and Regulations

Operating Rules and Regulations for water service are addressed in Article 19 of District Administrative Code.

7.4 Water Delivery Measurements

FPUD receives water from the SDCWA through four potable water connections (turnouts) to the MWD owned pipelines of the regional aqueduct system which are all metered. All FPUD customers, both urban and agricultural, receive deliveries through water meters using positive displacement meters (95+ % accuracy.) Additionally, FPUD monitors those meters and regularly tests them for accuracy through scheduled maintenance and replacement programs. Consistent with the CUWCC Best Management Practices, all new and existing FPUD water service connections are metered. For large parcels and commercial developments, separate, dedicated irrigation meters are issued, where feasible, to encourage accuracy in tracking irrigation water consumption and assist in designing WUE programs.

7.5 Water Rate Schedules and Billing

FPUD's potable water service fees are comprised of two components: (1) a fixed charge Monthly Service Charge and (2) a Commodity Charge. FPUD also passes through the IAC from the SDCWA and MWD's Readiness TO Serve Charge which are fixed charge assessed to the FPUD. The FPUD has an inclining block rate structure for residential and non-agricultural commercial water use. This inclining block rate structure encourages local residents to employ water conservation measures. The rates are designed to recover the costs associated with serving each class and tier.

The Agriculture classes are divided by SAWR participants that pay a flat usage fee for the commodity rate and Commercial Agriculture that pay the full price rate and are not subject to the same cutbacks in supply as SAWR customers. There are also tiered rates for both Residential Agriculture and Commercial Agriculture that are similar to inclining block rates for residential and commercial users. have been combined resulting in one rate for both classes. The Table below provides the rates charged to the agricultural classes of service. All agricultural customers also pay the monthly service fee.

Table 7-1 FPUD Water Rates

FPUD WATER RATES

TSAWR	All usage	$3.28/1,000 Gallons
TSAWR/Domestic	1-5 units/month	$4.62/1,000 Gallons
	6-20 units/month	$5.13/1,000 Gallons
	Over 20 units/month	$3.28/1,000 Gallons
Commercial AG		$4.76/1,000 Gallons
Commercial AG/Domestic	1-5 units/month	$4.62/1,000 Gallons
	6-20 units/month	$5.13/1,000 Gallons
	Over 20 units/month	$4.76/1,000 Gallons

7.6 Water Shortage Contingency Planning and Allocation Policies

In the event of declared water shortages, the FPUD's Water Conservation Ordinance will be implemented. A copy is included in Appendix A. This plan includes both voluntary and mandatory rationing during water supply shortages to help control consumption. It identifies four stages of voluntary and mandatory rationing, it identifies the stages of action FPUD would take in the event of a declared shortage, and illustrates the specific water supply conditions that trigger activation of each stage of action. It should also be noted that FPUD's water wholesaler, the SDCWA, reported regional information and methodology in its 2010 Urban Water Management Plan, and that it has a comprehensive Drought Management Plan in the event the region faces supply shortages. More information can also be found in MWD's 2010 Urban Water Management Plan.

As soon as a particular condition is declared to exist, the water conservation measures provided under that condition would apply to all FPUD water service until a different condition is declared. The chart below is a summary of the requirements of the four stages of actions that would be taken by FPUD in the event of a declared shortage:

Table 7-2 Enforcement and Penalties

Penalty or Charge	When penalty takes effect
Letter of warning	Level 1, first violation
$100 surcharge	Level 1, for a first violation within any 12- month period.
$200 surcharge	Level 1, for a second violation of any provision of this Article within any twelvemonth period.
$500 surcharge	For each additional violation of this Article within any twelve-month period.
Prosecution as a misdemeanor, punishable by imprisonment in the county jail for not more than thirty (30) days, or a fine not exceeding $1,000.00, or by both	* Violation of a provision of this Article is subject to enforcement through installation of a flow-restricting device in the meter.

Revenue & Expenditure Impacts

If FPUD were to encounter an extended water shortage, the result would be a reduced amount of water sold by FPUD to its customers. Since water bills are based on water consumption, the revenue received

would also be reduced. The most severe restrictions are intended to reduce consumption by 50%. A 50% reduction in consumption would also reduce the FPUDs expenditures. The costs for acquiring and delivering the water to customers would be reduced. Some of the FPUD's costs might be increased, such as additional staff time for monitoring water use or enforcing conservation policies. However, these efforts would more than likely be achieved by temporarily re-directing staff from other tasks. These changes in operation, therefore, would not be expected to cause a significant increase in total expenditures

If the reduction were due to a short term situation, FPUD could absorb the entire shortfall by drawing on its general fund reserves, which are maintained at a minimum of $3 million. After conditions returned to normal, the FPUD would replenish its reserves. The reserve fund could be restored to its full level by increasing rates 1% and directing the additional revenue to reserves for five years. But depending on the duration of the shortage, this rate increase might not be necessary because FPUD's service charges have been calculated to recover up to 80% of the fixed costs. This built-in calculation is something FPUD takes great pride in as it would help the FPUD, and therefore its customers, to have a steady stream of revenue when water purchases would fluctuate, or restrictions on water purchases from the Water Authority might be imposed.

7.7 Water Use

7.7.1 Agricultural Water Use

Table 7-3 Agricultural Water Use (AF)

Agricultural Water Use (AF)													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	Total
FY 2013	673	639	798	685	494	280	119	174	197	387	421	513	5,380
FY 2014	620	602	686	528	420	222	366	398	229	333	508	584	5,496
FY 2015	582	623	642	567	471	222	101	264	217	392	360	329	4,770

7.7.2 Municipal & Industrial Water Use

Table 7-4 Municipal & Industrial Water Use (AF)

Municipal & Industrial Water Use (AF)													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	Total
FY 2013	751	773	803	701	609	411	284	333	330	522	581	688	6,786
FY 2014	728	764	785	654	561	371	479	500	381	448	639	729	7,039
FY 2015	703	716	691	637	565	395	299	379	373	545	491	480	6,274

7.7.3 Environmental, Recreational, Groundwater Recharge, Transfers and Exchanges, And Other Uses

Table 7 -5 Other Water Uses

Environmental, Recreational, Groundwater Recharge, Transfers and Exchanges, And Other uses													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	**Total**
FY 2013													
FY 2014													
FY 2015*	3	3	3	4	4	7	4	4	3	3	4	4	**45**

Representative year of interagency exchanges

7.8 Water Supplies

7.8.1 Local Surface Water

Santa Margarita River

A potential source of water is the lower Santa Margarita River. Fallbrook used to produce some of its water from the Santa Margarita River under a 2 ½ cfs direct diversion license from the state of California. Those facilities were destroyed by floods in 1969 and have not been rebuilt. Subsequently the state cancelled the license for lack of use.

For more than 50 years the FPUD has been attempting to develop a permanent local water supply on the Santa Margarita River by constructing a dam and reservoir to capture flood flows and provide a storage facility for these flows. In 1948, water permits were obtained from the state for diversion and storage of 30,000 acre-feet. The federal government filed suit against the FPUD in 1951 over water rights on the river to quiet its title to the adjudicated rights accruing to Camp Joseph H. Pendleton U.S. Marine Corps Base Camp Pendleton (Camp Pendleton.) Those water rights had been adjudicated in the Ranch Santa Margarita vs. Vail Co. litigation, which was settled in 1940. The U.S. Congress authorized construction of the Santa Margarita Project in 1954 which was to be a single dam and 175,000 AF reservoir located on Camp Pendleton for the benefit of the Marine Corps Base (60%) and FPUD (40%). The U.S. Justice Department did not concur with this legislative solution and pursued the lawsuit.

Use of Santa Margarita River water continued until 1969 when floods destroyed the FPUD's diversion works. These facilities were not replaced because in 1968 a Memorandum of Understanding & Agreement was signed with the Federal Government to develop a two -dam and reservoir project on the river for the benefit of this FPUD and Camp Pendleton. This agreement was the culmination of 17 years of water rights litigation in the U.S. vs. Fallbrook case and the federally sponsored project was known as the Santa Margarita Project.

Currently, FPUD and Camp Pendleton are moving forward with the conjunctive-use project. Fallbrook is anticipated to realize a reliable annual local water supply from this project of 3,100 AF per year, or about one-third of its anticipated demand. Draft Environmental Documents (EIR/EIS) have been issued for public review & design is underway.

Lake Skinner

The Lake Skinner agreement solves a decades-old water-rights problem for FPUD. FPUD had rights to collect water in the Santa Margarita River, but no place to store it. Lake Skinner had the storage space, but no rights to the local water. The deal enables FPUD to store river water in Lake Skinner, and then the water is later delivered to Fallbrook, increasing FPUD's overall supply. MWD benefits by collecting a "wheeling charge." FPUD expects to collect, on average, 300 acre-feet of "new" water per year from the river, with the majority available in wet years.

7.8.2 Recycled Water

FPUD provides water and sewer services for portions of the rural town of Fallbrook. Sewer service is provided for a population of approximately 22,500 in an unincorporated area of about 6.6 square miles.

The remainder of customers in the FPUD's service area is on a septic system. Currently the wastewater treatment plant treats an average of 1.8 million gallons per day (MGD) and has a rated capacity of 2.7 MGD. Treated effluent is used for agriculture and irrigation purposes and the remainder is discharged to the ocean via our 18-mile ocean outfall. FPUD has 26 recycled water meters over 16 recycled water user sites. Seven of the sites use recycled water for agriculture irrigation and 9 sites use recycled water for landscape irrigation. Approximately 47% of the recycled water is used for agricultural purposes and 53% is used for landscape irrigation. In the past, FPUD has recycled an average of 171 million gallons (MG), or 526 acre-feet per year.

FPUD has made recycled water available and its use is mandatory where available and cost-effective. FPUD made the commitment and commenced its wastewater recycling efforts in 1994. A major component of the commitment to recycle was to enact an ordinance that requires recycled water and other non-potable water be used within the recycled water system's jurisdiction, and where it is technically and financially feasible. The use of potable water for irrigation or other non-potable uses is prohibited where recycled water is suitable and available within the FPUD's service lines. The FPUD has also established financial incentives for the use of recycled water within its service area. The incentive is determined by the philosophy that recycled water is an offset to potable water; the recycled water rate is set at 80% of the average Tier 1 and Tier 2 rates. FPUD also recently completed a major expansion of the recycled system to add five large nurseries which are expected to approximately double demand for recycled water.

7.8.3 Groundwater

Although historically a source of water in the FPUD's service area, groundwater usage is currently very limited. In 1946 three 1,000 gallons -per -minute wells were in operation. The FPUD also obtained additional water from rights on the Santa Margarita River. Wells were added over the years until 1953 when, due to the generally over -drafted condition of the San Luis Rey River, the FPUD was restricted from extracting water after April 1, 1954, when the average static water level in the basin was greater than 18 feet below the surface of the ground. The source of ground water for the FPUD's Capra well is a small fractured rock aquifer in a localized watershed of Red Mountain below the FPUD's Red Mountain Reservoir. A ground water management plan is not required and one has not been adopted for this groundwater source. The groundwater basin is not adjudicated and requirements that FPUD must indicate the amount of water it has a right to pump from the well do not apply.

7.8.4 Annual Water Supply

Table 7-6 Annual Water Supply (AF)

Annual Water Supply (AF)					
	Imported Water	Local Surface	Recycled Water	Local Groundwater	Total
FY 2013	12,922		759	135	13,816
FY 2014	13,346		747	39	14,132
FY 2015	11,729		599	120	12,448

7.9 Water Balance and Reliability

Reliability is discussed in detail in Part I of this RAWMP. FPUD's focus is on continuing to diversify its supply as described previously and to maintain an aggressive approach to water conservation and water use efficiency for all its customers including commercial agricultural users. The Table below provides the water balance for FPUD for the Fiscal Years 2013-2015.

Table 7-7 Annual Water Supply Balance (AF)

Annual Water Supply Balance (AF)				
	Water Supplies	Water Use	Drain Water Leaving Service Area	Water Balance
FY 2013	13,816	12,923	0	893
FY 2014	14,132	13,278	0	854
FY 2015	12,448	11,639	0	809

System losses and unaccounted for water are within accepted industry standards

7.10 Water Quality (See Part 1 Section 10)

7.11 Water Use Efficiency and EWMPs

FPUD participates in the Regional WUE Program described in Part 1., Section 12. Please see the tables for details of the regional commitment to implementing EWMPs.

Specific information on FPUD's projects to address Conditional EWMP 2 is detailed in 7.8.2 Recycled Water above.

Additionally, 7.5 Water Rate Scheduling and Billing, discusses commitment to implement Conditional EWMP 4. That section indicates that Agriculture and Commercial classes have been combined resulting in one rate for both classes. In other words, growers pay the same commodity rate for water as other business in the FPUD service area.

Finally, in 7.8.1 Local Surface Water, the investigation of an opportunity for a conjunctive use project is discussed. This project would be consistent with Conditional EWMP 8.

Sources

Fallbrook Public Utilities District .2011. *2010 Urban Water Management Plan*

8. Olivenhain Municipal Water District

Agency Chapter

Draft San Diego Regional Agricultural Water Management Plan: Part II

8 Olivenhain Municipal Water District

8.1 Size, History and Location of Service Area

OMWD is a public agency organized under CWC § 71000, et seq., and is comprised of a five-member, publicly-elected board of directors and appointed general manager committed to its customers. Consistent with this commitment, OMWD has established the following policy relative to conservation and efficient use of urban water supplies:

> "OMWD strives to balance the needs of its customers, water resources management, water use efficiency, a reliable water supply, local storage, and water quality issues in the most economically feasible manner."

OMWD provides water, wastewater services, recycled water, hydroelectricity, and operation of Elfin Forest Recreational Reserve, and has been serving water to its customers since 1961. OMWD was originally incorporated on April 9, 1959, for the purpose of developing an adequate water supply for the landowners and residents of its service area where the predominant use was for commercial agriculture. OMWD's service area is approximately 30 miles north of downtown San Diego and includes portions of the cities of Encinitas, Carlsbad, San Diego, Solana Beach, and San Marcos, including the communities of Olivenhain, Leucadia, Elfin Forest, Rancho Santa Fe, Fairbanks Ranch, Santa Fe Valley, and 4S Ranch.

Settlement and agricultural uses in the Olivenhain area date back to the mid-1800s when the Mexican government awarded a land grant of a 4,431-acre rancho called "Los Encinitos." The land grant was awarded on July 3, 1842. In 1848, when California became part of the United States, the claim to the rancho was confirmed and accepted, but the spelling was changed to "Las Encinitas." In 1860, the land was sold to two San Diego merchants, and in 1900 to the Kimball brothers who owned vast parcels of land in the southern and eastern parts of San Diego County in National City, Chula Vista, and Jamul. The rancho was sold to a colony of German immigrants in 1884 that began farming activities based on groundwater availability. The colonists began to dig wells and regularly found that the new wells they were boring came up dry. Only a few wells in the San Elijo flood plain basin and a few ravines produced any water, and what little water was in them was alkaline and brackish. Agricultural uses and settlement were limited by the availability of sufficient water. What settlement and farming that did take place was reliant on the few productive wells in the area and collection of rainwater with privately-owned

cisterns. By January 1887, most of the colony farms were abandoned. By mid-1887, the population stabilized at about 80 people.

With the formal establishment of OMWD in 1959 and its dedication in 1961, OMWD voted to become a member of SDCWA in 1960, which is a member of MWD, thus becoming eligible to purchase imported water from SDCWA aqueducts and distribute this water throughout its service area. OMWD is one of 24 member agencies of SDCWA. Member agency status entitles OMWD to directly purchase water for its needs on a wholesale basis. OMWD relies on SDCWA to plan for and provide a reliable water supply to their entire service area.

As recently as Fiscal Year 1969-70, agriculture accounted for over 70 percent of OMWD's total water use, but this percentage has decreased over the years. As total agricultural use has declined, domestic use has grown. Agriculture today represents only 3 to 4 percent of the total water demand in OMWD, using 834 acre feet of water in FY 2013-2014 and 709 AF in FY 2014-2015. For the fiscal year that ended on June 30, 2015, approximately 68 percent of delivered water was for residential use, 23 percent for irrigation purposes, 3 percent for agricultural use, and 6 percent for commercial purposes. (Numbers used are rounded up to the nearest whole number.)

Commitment to Conservation and Efficient Water Use

OMWD has been active in the development and implementation of water use efficiency programs and water conservation measures, including those programs administered by SDCWA and MWD. As an original signatory to the California Urban Water Conservation Council's memorandum of understanding, OMWD demonstrates generally accepted, cost-effective, environmentally and socially acceptable water conservation planning and implementation. Through the cooperative efforts of OMWD, SDCWA, and MWD, all of the CUWCC best management practice measures are now being implemented within OMWD's service area.

OMWD, Vallecitos Water District, San Dieguito Water District, and Rincon del Diablo Municipal Water District have formed a regional alliance pursuant to CWC § 10608.28(a), the California Department of Water Resources Guidebook, and DWR Methodologies to cooperatively determine and report progress toward achieving their water use targets on a regional basis. All of these members are recipients of water from a common wholesale water supplier, in this case SDCWA, and all of the members are located within the South Coast Hydrologic Region as shown in the California Water Plan.

The members have entered into a cooperative agreement to establish and carry out a regional alliance and they have jointly notified DWR of the formation of their regional alliance. In accordance with the DWR Guidebook and DWR Methodologies, the members have prepared an urban water use target and an interim urban water use target for the region, which is further set forth herein and within each of the members' individual urban water management plans. Furthermore, each member of the regional alliance has developed its own set of interim and urban water use targets, along with other supporting data and determinations, all of which are included in each member's individual UWMP. OMWD's individual Interim Reduction Target is 319 gallons per capita per day and the 20 percent Reduction Target is 283 GPCD. The regional alliance targets are listed in Table 22. The 10 percent Interim Reduction Target is 227 gallons per capita per day and the 20 percent Reduction Target is 201 GPCD.

Additionally, OMWD has been a consistent supporter of the efforts of MRCD to provide water management assistance to growers in its service area. MRCD has been under contract to the SDCWA to operate regional agricultural water management services since 1990 as part of the SDCWA's Agricultural Water Management Plan. The goal of the program is to provide technical assistance to growers to enable them to irrigate crops as efficiently as possible in order to obtain the maximum economic benefit from limited water resources. The water usage effectiveness programs have included direct assistance to retail water users, implementation of University of California Cooperative Extension BMPs, funding information assistance, and water purveyor efficiency practices. For more information on the regional WUE programs OMWD supports, see Part 1.

Figure 8-1 OMWD Service Area

8.2 Water Management Facilities

Olivenhain Municipal Water District is home to one of the most complex systems in Southern California. With system elevations ranging from 58 ft to 1,276 ft, OMWD's 60 pressure reducing stations, 24 pressure zones, and 7 pump zones ensure customers are always provided adequate pressure. All of the water supply delivered by OMWD for potable use is purchased as either treated or raw water from SDCWA. SDCWA water is delivered to OMWD through six service connections, all from SDCWA's Second San Diego Aqueduct. Four are treated water connections and two are raw water connections: one to serve water to the David C. McCollom Water Treatment Plant and one to supplement the 4S Ranch Water Reclamation Facility's recycled water system. The majority of water purchased from SDCWA is raw water that is treated by OMWD's DCMWTP, and served to customers throughout its service area.

OMWD provides potable water service to customers through a distribution system that currently includes over 410 miles of potable water pipelines, 18 closed storage reservoirs, one covered in-ground reservoir, seven pump stations, a 450 kW hydroelectric generation station at Roger Miller

Reservoir, and the inlet turbines at DCMWTP that generate kW ranging from 180 to 700, depending on flow.

OMWD has proactively updated its distribution system with state-of-the-art telemetry used to monitor and maintain reservoir levels and system pressure; this program is also used to alert operators automatically of emergency situations within the system. The OMWD service area is unique in that the majority of its water pressure is fed through hydraulic gradients, or gravity fed. OMWD's 60 pressure reducing stations feed into 24 separate pressure zones. Pressure reducing stations decrease high pressure to acceptable levels for consumers. Each pressure reducing station is equipped with a pressure relief that act as safeguards for over pressurization in the zones. OMWD has telemetry in almost every pressure zone to alert operators when a pressure relief valve opens to relieve pressure, allowing the operator to respond and minimize water loss.

OMWD owns and operates the David C. McCollom Water Treatment Plant, which was the largest ultrafiltration membrane plant in the world upon its completion in 2002. It incorporates the latest technology, ensuring the removal of waterborne health threats in a cost-effective, environmentally safe manner. Originally capable of treating 25 million gallons per day, it was expanded by 9 MGD in FY 2004-05 to its present capacity of 34 MGD.

8.3 Operating Rules and Regulations

Rules relating to customer accounts can be found online at www.olivenhain.com/code.

8.4 Water Delivery Measurements

All water delivered to OMWD through six SDCWA service connections is metered. There are four treated water connections and two raw water connections. All agricultural and urban customers in OMWD's service area receive deliveries through water meters using positive displacement meters (95+ percent accuracy). Additionally, OMWD monitors those meters and regularly tests them for accuracy through scheduled maintenance and replacement programs. Metering of all water use and billing by volume has long been the standard practice at OMWD. The growth in number of installed meters has paralleled OMWD's growth in water use, with the number of installed meters increasing from 1,250 in 1972 to 28,724 at present. The number of service connections for customer meters vary in size from 5/8-inch to 8-inch. Approximately 60 percent of customer meters are 3/4-inch and smaller, and these

are mostly residential customers which account for approximately 68 percent of OMWD's total water use. The remaining 32 percent of water is used by the 40 percent of customers with 1-inch and larger meters.

8.5 Water Rate Schedules and Billing

OMWD charges its customers for water under an increasing block rate structure, in which the unit price of water increases as the volume used by each customer goes up. The lowest tier for residential users is a "lifeline" account, typically for basic human consumptions, and the rate in this tier is set at a much lower rate than the other tiers that are designed for conservation. The highest tier is typically used for outdoor water use and/or irrigation.

OMWD residential meter sizes are assigned in terms of equivalent dwelling units, where one EDU represents a single family residence with a typical 3/4-inch meter and a maximum flow capacity of 27 gallons per minute. Water revenues are collected from commodity rates and monthly system access fees. About 70 percent of OMWD's water sales are collected from commodity revenue. OMWD adopted an inclining block structure for collecting water user fees based on monthly consumption and to promote water conservation.

OMWD's rate structure was also designed to ensure users pay a proportionate share of costs. Residential/domestic users have a rate structure based on volume use in blocks that are priced at a non-shortage, base rate ranging from $2.25 to $4.73 per 748 gallons. For commercial and industrial customers, OMWD implemented a tiered rate structure based on meter capacity, adjusted seasonally to promote conservation. Tier break points for commercial/irrigation customers were established based on meter size and set in both winter and summer seasons, based on water use during each season because commercial/irrigation customers are on a seasonal schedule. It is anticipated that greater conservation efforts will also enhance revenue stability.

For agricultural users, OMWD implemented a uniform rate consistent with the second tier of the residential/domestic block. For accounts that include a dwelling on the property, the first 26 units are charged at the residential rate, as it is assumed that at least this amount will be used indoors in kitchens, bathrooms, etc.

OMWD's Agricultural Water Rate Program was established more than 40 years ago to support and promote the agricultural producers in OMWD's service area. The agricultural water rate is available only to those who meet minimum program criteria:

- Have at least one acre of property dedicated to agricultural use.
- Have documentation on sale or donation of products of an agricultural, horticultural, or floricultural nature.
- Have proof of an approved backflow prevention device and current test results if required.

OMWD established an Agricultural Water Use Exclusion Program in 2015 that certified agricultural water use by customers not enrolled in its AWRP. Applicants are required to provide evidence of an agricultural business via sales receipts and/or tax returns documenting at least $1,000 in annual agricultural commodity sales or donations to be accepted into this program.

OMWD has designated staff to assist customers in applying for or recertifying in SDCWA's TSAWR program, OMWD's AWRP and its AWUEP. Staff attends community meetings to review program requirements and water-related information. Agricultural meetings are hosted at OMWD headquarters. Agricultural program participants are contacted each year to recertify, provided water usage reports, and offered a free agricultural water use evaluation. An auditing process to ensure compliance with SWRCB, SDCWA and OMWD guidelines is currently underway.

Table 8-1 OMWD Water Rates

WATER RATES PER UNIT (1 unit = 748gallons)

The rates include costs from San Diego County Water Authority (SDCWA) from which OMWD must purchase 100% of its potable water supply.

	NON-SHORTAGE	WATER SUPPLY SHORTAGE For updates, please visit: www.olivenhain.com			
CUSTOMER TYPE	(BASE) RATES	WATCH/LEVEL 1 Voluntary	ALERT/LEVEL 2 Mandatory	CRITICAL/LEVEL 3 Mandatory	EMERGENCY/LEVEL 4 Mandatory
Domestic					
0 - 6 Units	$2.25	$2.25	$2.36	$2.48	$2.70
7 - 25 Units	$3.74	$3.93	$4.11	$4.68	$5.42
26 - 80 Units	$4.23	$4.65	$5.29	$6.35	$7.40
Over 80 Units	$4.73	$5.44	$5.91	$7.10	$9.46
Agricultural	$3.74	$3.93	$4.02	$4.49	$5.24

A system access charge is a cost recovery mechanism that is generally included in the rate structure to pay for wholesaler fixed charges, customer service billing, meter costs, and other operations and maintenance costs, such as debt service. Due to fluctuations in water sales that are driven predominately by variation in weather conditions and uncontrollable state and federal mandates, OMWD needs to recover a portion of its revenue stability. It is an OMWD goal not to exceed 30 percent of its revenue requirements from fixed charges. OMWD has three outstanding bonds that were issued for water infrastructure and improvements, and the water system revenue is a pledge to pay those fixed costs.

8.6 Water Shortage Contingency Planning and Allocation Policies

OMWD's Water Supply Shortage Ordinance was originally passed July 2008, then updated July 2010, and most recently on July 1, 2015, in response to current drought conditions. It establishes regulations to be implemented during times of declared water shortages, or declared water shortage emergencies. It contains four levels of drought response actions to be implemented in times of shortage, with increasing restrictions on water use in response to worsening drought conditions and decreasing available water supplies. The WSS Ordinance was based upon and is similar to the Model Regional Drought Response Ordinance that was adopted by SDCWA in March 2008. The WSS Ordinance outlines penalties for violations of mandatory water conservation requirements. The ordinance provides

for progressively severe stages of water use restrictions as necessary to accomplish service area-wide water use reductions of up to and over 40 percent. The ordinance describes the effects that a drought or water supply shortage may have on OMWD's water supply, its water conservation stages, and the implementation, violation, and penalties of the stages. OMWD incorporated the Regional Drought Response Plan in the development of its ordinance and participated in the cooperative effort between the San Diego County water agencies' general managers in the creation of the RDRP.

OMWD is presently faced not only with increasing imported water costs, but also limitations on water supply. To overcome these challenges, in addition to the planned and regular increases (Non-WSS Rates and Charges), staff also adopted WSS Pricing to meet two important objectives. The first objective is to quickly reduce the volume of water used by customers in order to meet the challenge of water supply limitations including the Water Conservation Bill of 2009; the second objective is to remain revenue-neutral in the event of revenue shortfall. WSS Pricing was developed consistent with OMWD's WSS Ordinance.

Before adopting WSS Pricing, OMWD conducted a study to determine the price elasticity of water as it relates to triggering and achieving reductions in water use. Price elasticity measures the responsiveness of water use to price changes. The rate model assumes 0.25 percent price elasticity for nondiscretionary water use and 0.45 percent for discretionary water use. A 1 percent increase in water rates would result in a 0.25 percent reduction in water demand. As described in Table 8-X, agricultural customers will see an increase from $3.74 per hundred cubic feet to as much as $5.24/HCF under a Level 4 shortage as a part of the broader strategy at reducing water use through pricing signals.

During a water supply shortage, such as a drought or declared emergency shortage, OMWD monitors production and distribution records daily and will increase public outreach. All meters in OMWD have been installed within the last ten years and are read through an automated meter reading system. OMWD has also implemented a monthly exception report for high water use as a tool to detect customer water leaks. Short-term changes in pumping, flow rates, or reservoir levels are shown through OMWD's Supervisory Control and Data Acquisition, or SCADA system, and the system is continually monitored by staff.

OMWD may establish a water allocation for property served by OMWD using a method that does not penalize customers for the previous implementation of water use efficiency methods or the installation of water-saving devices. If OMWD establishes a water allocation, it shall provide notice of the allocation by including it in the regular billing statement for the fee, or charge, or by any other mailing, to the address to which OMWD customarily mails the billing statement for fees or charges for ongoing water service. OMWD is not required to comply with Proposition 218 to impose fines on persons using water in violation of its restrictions on water use or in passing through penalties levied upon it by MWD as a result of excessive use by some OMWD customers.

Penalties for Excessive Water Use

Any person who uses, causes to be used, or permits the use of water in violation of OMWD's ordinance may be subject to administrative fines levied at the sole discretion of OMWD's general manager. The progressive nature of the penalties for each violation is as follows:

- A warning will be issued for the first violation.
- The customer will be fined one hundred dollars for a second violation.
- The customer will be fined two hundred dollars for a third violation of any provision of this ordinance within one year.
- The customer will be fined five hundred dollars for each additional violation of this ordinance within one year.

Revenue & Expenditure Impacts

This section discusses OMWD's preparedness to manage its finances during periods when water sales to customers are reduced by a water supply shortage and increased conservation measures. OMWD's water supply shortage rate structure is designed to be consistent with OMWD's water supply shortage response conservation program to dampen OMWD's financial impact in a declining sales situation.

OMWD's financial goal as a public agency is to be revenue-neutral; that is, to maintain revenues equal to costs and budgeted expenses, and maintain adequate reserves for economic uncertainties and changes in water sales and costs. OMWD's base (non-shortage) and water supply shortage rates are developed based on the historical financial trend and water demand average of demand. OMWD has

its rate stabilization fund reserve to mitigate the risk of large unexpected rate increases that are more difficult for its customers to budget, plan, and manage. Water sales generate over 70 percent of OMWD's revenue requirements to sustain operations. Fluctuations in demand will dramatically impact OMWD's financial stability.

Additionally, in order to avoid operational deficits, depletion of reserves, an inability to address infrastructure and water quality improvements, and to continue to provide a safe and reliable water supply, OMWD issued a notice in 2014 pursuant to Proposition 218 proposing to pass through charges imposed upon OMWD to its customers over a five-year period. These charges included: any future SDCWA charges and rate increases to any existing SDCWA charges imposed upon OMWD; any future wholesale recycled water cost charges that are imposed on OMWD; annual cost of living increases to the rates for both potable and recycled water for OMWD's costs of operations, maintenance, and capital facilities; and any property tax revenue lost in the event the State of California suspends Proposition 1A or otherwise reallocates property tax allocations. These strategies have ensured that OMWD will maintain adequate revenue even in water supply shortage conditions.

8.7 Water Use

8.7.1 Agricultural Water Use

Table 8-2 Agricultural Water Use (AF)

Agricultural Water Use (AF)													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	Total
FY 2013	91	104	84	70	47	14	24	34	42	74	79	82	745
FY 2014	93	100	79	66	43	45	45	60	37	44	75	103	790
FY 2015	89	88	83	81	74	78	26	36	60	62	37	58	771

8.7.2 Municipal & Industrial Water Use

Table 8-3 Municipal & Industrial Water Use (AF)

Municipal & Industrial Water Use (AF)													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	Total
FY 2013	2,274	2,371	2,182	1,806	1,482	876	960	937	1,409	1,653	1,993	2,196	20,139
FY 2014	2,263	2,313	2,163	1,805	1,307	1,236	1,546	1,116	1,265	1,693	2,337	2,256	21,298
FY 2015	2,371	2,153	2,117	1,948	1,450	673	997	1,191	1,455	1,641	1,279	1,509	18,784

8.7.3 Environmental, Recreational, Groundwater Recharge, Transfers and Exchanges, And Other Uses

Table 8 -4 Other Water Uses

Environmental, Recreational, Groundwater Recharge, Transfers and Exchanges, And Other uses													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	**Total**
FY 2013													
FY 2014													
FY 2015*	7	8	0	0	1	2	1	0	44	0	0	1	64

Representative year of interagency exchanges

8.8 Water Supplies

8.8.1 Recycled Water

OMWD serves nearly one million gallons of recycled water every day to two separate portions of its service area. In the southeastern portion of the service area, wastewater is collected and treated to tertiary levels at the 4S Ranch Water Reclamation Facility, which is a 2 MGD capacity water reclamation facility. The 4S Ranch WRF currently treats all wastewater that it receives to tertiary levels, and recycled water from the facility is used for non-potable irrigation. Facilities associated with the 4S

Ranch WRF include a 3 MG recycled water storage reservoir, 15 pump stations, a 1 MG recycled water tank, and approximately 34 miles of recycled water pipeline.

To meet recycled water demands in the southern portion of OMWD's service area, OMWD also purchases additional recycled water from the City of San Diego (up to 800 acre-feet per year) and the Rancho Santa Fe Community Services District (up to 560 AFY).

In the northwestern portion of the service area, OMWD purchases recycled water from Vallecitos Water District's Meadowlark WRF and San Elijo Joint Powers Authority's San Elijo WRF. OMWD's 4S Ranch WRF does not currently have the capacity to provide additional recycled water to the northwest portion of OMWD's service area. Recycled water facilities in the northwest area also include approximately 15 miles of recycled water pipelines. As part of the North San Diego County Regional Recycled Water Project, the northwestern distribution system will be expanding throughout northern San Diego County with over 29,000 feet of recycled water pipelines, pump stations, reservoirs, pressure reducing stations, or other facilities as necessary.

8.8.2 Groundwater

Improved uses of groundwater supplies have the potential to benefit the region by reducing the need for imported water. Currently, OMWD purchases all of its potable water from SDCWA and does not utilize local surface or groundwater supplies; however, it is currently studying the opportunity for brackish desalination of groundwater in its service area. OMWD is planning a brackish groundwater desalination project, the San Elijo/San Dieguito Valley Groundwater Project, to further diversify its supply portfolio by providing an additional reliable local water supply for its customers. The project has been supported by several local, state, and federal agencies, including the City of Encinitas, the City of Solana Beach, the County of San Diego Department of Parks and Recreation, San Elijo Joint Powers Authority, San Elijo Lagoon Conservancy, the United States Geological Survey, and the United States Bureau of Reclamation.

The supply would come from wells in the vicinity of San Elijo Lagoon, either near Manchester Avenue and Interstate 5 or near La Orilla Road and El Camino Real. A pipeline would deliver the raw water to a reverse osmosis desalination treatment plant near Manchester Avenue and I-5. The product water would then be delivered to a new reservoir at the treatment plant site or directly into OMWD’s existing

potable water distribution system. The brine from the RO membranes would be conveyed through a new pipeline to the San Elijo Joint Powers Authority's Water Reclamation Facility or directly to their ocean outfall.

A feasibility study was completed and the study results were presented to OMWD's Board of Directors in March 2014. The study determined that either groundwater basin may provide sufficient flows to support a brackish groundwater desalination facility. It was also found that a previously unknown, but new well field in the San Dieguito Basin may be capable of producing sufficient water flow.

A monitoring program of wells in the San Dieguito Valley was established in 2014, and recording of surface flows continues to be collected by staff. Additional study work is expected to begin in San Dieguito Valley in 2016. If all testing results indicate that groundwater beneath the lagoon is of sufficient quality and quantity to be used as a source of potable water, OMWD will pursue the development of a brackish groundwater desalination facility near San Elijo Lagoon. Potential for a 1 to 2 million gallon per day brackish groundwater treatment facility continues to appear realistic, which could address up to 15 percent of OMWD's potable water demand. Indirect potable reuse also remains a possibility in the groundwater basins.

8.8.3 Annual Water Supply

Table 8-5 Annual Water Supply (AF)

Annual Water Supply (AF)					
	Imported Water	Local Surface	Recycled Water	Local Groundwater	Total
FY 2013	20,885	0	2,785	0	23,670
FY 2014	22,088	0	2,922	0	25,010
FY 2015	19,555	0	2,673	0	22,228

8.9 Water Balance and Reliability

Reliability is discussed in detail in Part 1 of RAWMP. OWMD's focus is on continuing to diversify its supply as described previously and to maintain an aggressive approach to water conservation and water use efficiency for all its customers including commercial agricultural users. The table below provides the water balance for OMWD for Fiscal Years 2013-2015. SDCWA invoices were used to calculate water supplies, and water use reports by billing codes were used to determine water used. Water balance includes water used in system operations, estimated loss due to leaks and fire prevention, and unknown water loss. OMWD's unknown water loss is within acceptable industry standards.

Table 8-6 Annual Water Supply Balance (AF)

Annual Water Supply Balance (AF)				
	Water Supplies	Water Use	Drain Water Leaving Service Area	Water Balance
FY 2013	23,670	23,670	0	0
FY 2014	25,010	25,010	0	0
FY 2015	22,228	22,228,	0	0

8.10 Water Quality (See Part 1 Section 10)

8.11 Water Use Efficiency and EWMPs

OMWD participates in the Regional Water Use Efficiency Program described in Part 1, Section 12. Please see the tables for details of the regional commitment to implementing EWMPs.

Specific information on OMWD's projects to address Conditional EWMP 2 is detailed in Recycled Water above.

Sources

Olivenhain Municipal Water District.2011. *2010 Urban Water Management Plan*

Olivenhain Municipal Water District.2011. *Update of Potable and Recycled Water Master Plan Capital Improvement Program*

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9. Ramona Municipal Water District

Agency Chapter

Draft San Diego Regional Agricultural Water Management Plan: Part II

9 Ramona Municipal Water District

9.1 Size, History and Location of Service Area

The Ramona Municipal Water District (RMWD/District), organized under the Municipal Water District Law of 1911, Water Code Section 71000, provides water for urban and agricultural uses to unincorporated areas in the central area of San Diego County, including the census designated places of Ramona and San Diego Country Estates. The District's service area covers a total of 45,796-acres (72-square miles) and is the eastern boundary of the San Diego County Water Authority (SDCWA) and Metropolitan Water District of Southern California (MWD.) The District encompasses the Santa Maria Valley, San Vicente Valley and surrounding hillsides with elevations from 840-feet mean sea level (MSL) to over 2,800-feet MSL.

The District's service area was primarily agricultural prior to 1970 when the District annexed the San Diego Country Estates and further suburban development began in the region. The County's Multiple Species Conservation Plan (MSCP) has identified large areas of the community of Ramona for grasslands and native habitat preservation. The District provides service to approximately 7,000 urban parcels and 3,000 rural parcels (greater than 1 -acre) with average yearly water deliveries to its customers between 2006 and 2010 of 9,204-AF. The District provides water for urban and agricultural uses to unincorporated areas in the central

The area has a long history of settlement and agricultural production. In 1843, the 17,700 acre Santa Maria Land Grant was granted to Joaquin Ortega and his son-in-law, Adolpho Stokes, who settled on the eastern fringe of the large valley where they built homes and raised families, sheep, cattle and horses. After the discovery of gold at Julian in 1869-70, Santa Maria Valley, which was located on the trail to the mines, became a stopping off point for miners and travelers. In 1884, a general store with a well on 2 1/2 acres on the trail and the place became known as Nuevo. Then in 1886, the Santa Maria Land and Water Company purchased 3,855 acres and laid out the town site that by 1895 would become known as Ramona.

The valley became settled and soon a solid farming community was established on the former Land Grant lands. In the early years' agriculture consisted primarily of dairies, poultry, sheep and cattle. Also, Ramona was famous for honey, fruit, grain and other dry-farming products, as well as being noted for gems, minerals and mineral water. By the 1920s, Ramona was well-known for turkey and egg production which led to its becoming known as "The Turkey Capital of the World". When turkey production waned, chicken and egg production grew.

Also during 1920s, Ramona leaders first began talking about incorporation; were instrumental in bringing electricity to the valley; organizing the Ramona Irrigation District and forming a volunteer fire department. RMWD's predecessor entity, the Ramona Irrigation District, was organized in 1925 to encompass 660-acres, utilizing water obtained from wells. Before 1947, the District like the rest of the San Diego region relied on local surface water runoff and groundwater pumped from local aquifers. As the economy and population in Ramona continued to grow, local resources became insufficient to meet the area's water supply needs. With the arrival of imported Colorado River water in the region sufficient water supplies were available to support continued growth in the Ramona area and specifically commercial agriculture.

The RMWD was organized on August 15, 1956, to encompass 20,600-acres that surrounded the Irrigation District and provide imported Colorado River Water to predominantly agricultural customers. Also in 1956 the Poway Pump Station was built to deliver imported water to the District. In 1967 the District acquired the Ramona Irrigation District. In 1970 the RMWD annexed San Vicente Valley to accommodate the new development called San Diego Country Estates and annexed much of Highland Valley.

The District's service area was primarily agricultural prior to 1970 when the District annexed the San Diego Country Estates and further suburban development began in the region. The District provides service to approximately 7,000 urban parcels and 3,000 rural parcels (greater than 1-acre) with average yearly water deliveries to its customers of approximately 9,000-AF.

Commitment to Water Conservation

The District is a signatory to the MOU and submits biennial BMP reports to show compliance with the appropriate BMPs.

Additionally, RMWD has been a consistent supporter of the efforts of the Mission Resource Conservation District (MRCD) to provide water management assistance to growers in its service area. MRCD has been under contract to the SDCWA to operate regional agricultural water management services since 1990 as part of the SDCWA's AWMP. The goal of the program is to provide technical assistance to growers to enable them to irrigate crops as efficiently as possible in order to obtain the maximum economic benefit from limited water resources. The WUE programs have included direct assistance to retail water users, implementation of University of California Cooperative Extension

(UCCE) BMPs, funding information assistance, and water purveyor efficiency practices. For more information on the regional WUE programs RMWD supports, see Part 1 Section 13.

9.2 Water Management Facilities

The District purchases treated and untreated water from the SDCWA, delivers recycled water to three recycled water customers, and owns three wells that may be used in an emergency. The District has both a treated water connection form SDCWA from the second Aqueduct's Ramona Pipeline and a raw water connection off the SDCWA First Aqueduct at the Poway pump station for delivery to Lake Ramona.

The District's water delivery system consists of 209-miles of water mains, 15 treated water reservoirs with a capacity of 28 million gallons (MG), and 7 untreated reservoirs with a capacity of 13.5-MG, a 4.0 million gallons a day (MGD) water treatment plant (currently off-line), and two water reclamation plants producing recycled water at a capacity of 0.35-MGD and 0.50-MGD. The Poway Pump Station was built in 1958 and began delivery of treated imported water to the District. In 1972 the Bargar Water Treatment Plant (BWTP) was placed in service to treat water from Lake Sutherland. In 1978 the untreated water Poway Pump Station and Pipeline was built to deliver SDCWA water to the District. In August 1988 Lake Ramona was dedicated and the Poway Pump Station began delivery of untreated water to the lake. In 2003 an additional Poway Pump Station and 30-inch pipeline were added to the treated water system, bringing the ultimate capacity to 18.6 million gallons per day (MGD). Since 2007 the District's BWTP has been offline and does not currently provide any water; further detail is provided in Section 9.7. Currently SDCWA provides all of the District's treated and untreated water supply.

The District has two surface storage reservoirs available for use, Lake Ramona and Lake Sutherland. Lake Ramona is owned by the District and the capacity of the lake is 12,000 acre feet. It is filled with untreated water purchased from the SDCWA. Minimal amounts of surface water runoff enter the lake. Lake Ramona is used to supply untreated irrigation water through a separate non potable distribution system to customers in the agricultural area on the northwest end of the District.

Lake Sutherland is owned by the City of San Diego; local runoff provides the lake's primary source of untreated water. The District's contract with the City of San Diego provides the District with up to 10,000-AF/YR of untreated water; additional water may also be supplied through an exchange of

SDCWA water – up to 10,000-AF/YR. When the BWTP is online, Lake Sutherland supplies the plant's source of untreated water through a connection to the Sutherland Aqueduct which connects Lake Sutherland with San Vicente Reservoir.

9.3 Operating Rules and Regulations

No operating rules for delivery of water to retail customers exist at this time.

9.4 Water Delivery Measurements

Metering of all water use and billing by volume has long been the standard practice at the District. The water delivered to the District through its two connections to the SDCWA aqueduct system is all metered. Water delivered by the City of San Diego form Lake Sutherland is also metered at the BWTP, which is currently off line. As directed by the CUWCC BMP, all new and existing water service connections are metered. For large parcels and commercial developments, separate, dedicated irrigation meters are placed where needed. The City's water delivery points to customers are metered using positive displacement meters (95+ % accuracy) and are actively monitored by the District Staff.

9.5 Water Rate Schedules and Billing

The District has five classes of service for its customers and a pumping rate. All customers pay a monthly service charge and a commodity charge. The table on the following page provides the District's rates which are charged per Hundred Cubic Feet (HCF) of delivered water.

Table 9-1 Ramona Water Rates

WATER SERVICE CHARGES		WATER RATES	
Meter Size	**Monthly System Charge**	**Published Water Rates**	**Cost Per Unit**
5/8"	**$ 32.3**	**General Treated Water**	**5.52**
3/4"	**$ 32.3**	**General Untreated Water**	**4.72**
1"	**$ 52.1**	**Construction**	**6.23**
1 1/2"	**$ 101.**	**Electrical Pumping Rate**	**1.02**
2"	**$ 161.**	**TSAWR Treated Rate**	**4.78**
3"	**$ 301.**	**TSAWR Untreated Rate**	**3.98**
4"	**$ 500.**		

9.6 Water Shortage Contingency Planning and Allocation Policies

On May 12, 2009, The District's Board of Directors adopted the District's Drought Response Conservation Program (DRCP.) The Drought Conservation Program establishes regulations to be implemented during times of declared water shortages, or declared water shortage emergencies. It establishes four levels of drought response actions ("Drought Response Levels") to be implemented in times of shortage, with increasing restrictions on water use in response to worsening drought conditions and decreasing available supplies. Drought Response Level 1 drought condition response measures are voluntary and will be reinforced through local and regional public education and awareness measures that may be funded in part by the District. During Drought Response Levels 2 through 4, all conservation measures and water-use restrictions are mandatory and become increasingly restrictive in order to attain escalating conservation goals. The District may establish a water allocation for property served by the District using a method that does not penalize persons for the prior implementation of conservation methods or the installation of water saving devices.

Violations of this Chapter are subject to criminal, civil, and administrative penalties and remedies specified in this District's legislative code and as provided by law.

Enforcement and Penalties

The District's ordinance provides for the establishment of customer allocations that depending on the declared shortage level penalties and charges are levied for exceeding the customer allocation amount. The penalty for excess water usage sis cumulative to any other remedy or penalty that may be imposed for violation of the DRCP and each billing period in which an allocation is exceeded counts as a separate violation. Administrative fines may be levied for each violation as follows:

1.One hundred dollars ($100) for a first violation.

2. Two hundred dollars ($200) for a second violation of any provision of this ordinance within one (1) calendar year.

3. Five hundred dollars ($500) for each additional violation of this ordinance within one (1) calendar year.

Revenue & Expenditure Impacts

The District has taken significant steps to reduce potential revenue impacts resulting from fluctuating water sales. In 2002, the District created a Rate Stabilization Fund (RSF) to provide funds that would mitigate the need for rate increases in the event of an unexpected decline in water sales.

9.7 Water Use

9.7.1 Agricultural Water Use

Table 9-2 Agricultural Water Use (AF)

Agricultural Water Use (AF)													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	Total
FY 2013	220	249	301	257	180	182	63	83	79	140	174	221	2,149
FY 2014	207	257	199	212	157	107	106	196	109	93	133	226	2,002
FY 2015	195	264	216	230	252	116	37	77	109	104	174	103	1,876

9.7.2 Municipal & Industrial Water Use

Table 9-3 Municipal & Industrial Water Use (AF)

Municipal & Industrial Water Use (AF)													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	Total
FY 2013	560	494	637	433	428	317	274	240	254	261	351	404	4,653
FY 2014	617	535	542	467	471	300	268	317	319	293	376	478	4,982
FY 2015	606	509	486	446	464	310	247	239	255	284	347	369	4,560

9.7.3 Environmental, Recreational, Groundwater Recharge, Transfers and Exchanges, And Other Uses

Table 9 -4 Other Water Uses

Environmental, Recreational, Groundwater Recharge, Transfers and Exchanges, And Other uses													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	**Total**
FY 2013													
FY 2014													
FY 2015*	0	0	0	0	120	0	98	0	0	0	0	0	**218**

Representative year of interagency exchanges

9.8 Water Supplies

9.8.1 Local Surface Water

The District's only source of local surface water is through an Exchange Agreement with City of San Diego from supplies it owns in Lake Sutherland. The District has not taken delivery of any of these supplies in the three-year period reported in the RAWMP.

9.8.2 Recycled Water

Recycled water which meets Title 22 standards is produced by two wastewater treatment plants operated by the District. The Santa Maria Water Reclamation Plant (SMWRP) produces an effluent which meets secondary treatment standards. This treated effluent is then conveyed to the tertiary treatment facilities located at the Rangeland Road treatment site. The San Vicente Water Reclamation Plant (SVWRP) produces secondary and tertiary level treated effluent. The District currently has a recycled water use of 729-AF/YR

The SMWRP utilizes conventional treatment processes to produce an effluent which meets secondary treatment standards. This treated effluent is then transported through a force main to the tertiary treatment facilities located at the Rangeland Road treatment site. This site is co-located with the plant's

wet weather storage ponds and the Rangeland Road spray field disposal location, where effluent not treated to tertiary standards is disposed of. The tertiary plant is permitted to produce up to 350,000-gallons of Title 22 tertiary water per day. This recycled water is currently contracted to deliver up to 250-AF/YR to the Mount Woodson Golf Course where it is used to provide irrigation water for the golf course. Title 22 tertiary recycled water is produced at the SVWRP and sent to the San Vicente Golf Course ponds, where the water is then used for irrigation of the golf course and landscaped common areas, and Spangler Peak Ranch.

The District provides recycled water at a discounted rate to its agricultural and irrigation customers. The discount is dependent on the agreement terms that are established at the time the contract is developed. Credits are provided to the customer based on usage requirements, delivery commitments, and offsetting potable water benefits. The District is working to expand and develop its recycled water projects by working with local golf courses, farmers and developers. Additional uses of recycled water at the existing golf courses, as well as future housing developments remain a focus for District staff.

9.8.3 Groundwater

The District owns three wells with a total capacity of 330-gpm and a potential yield of 200-AF/YR. The District wells are currently not used due to high nitrate concentrations and would require recertification prior to being placed back in service. Groundwater from private wells is used by local landowners. Because the District does not rely on any groundwater for its water supply, the District does not prepare a Groundwater Management Plan. Due to issues that limit District involvement in groundwater development, which include economic and financial considerations, legal, institutional, regulatory, environmental, and water quality issues, the District has not moved forward with plans to utilize groundwater with its service area.

The Santa Maria basin lies within a major portion of the District's service area. The Santa Maria basin has numerous private wells and water rights, which are a major concern that would need to be resolved before groundwater projects could move forward.

9.8.4 Annual Water Supply

Table 9-5 Annual Water Supply (AF)

Annual Water Supply (AF)					
	Imported Water	Local Surface	Recycled Water	Local Groundwater	Total
FY 2013	6,956	-	762	-	7,718
FY 2014	7,053	-	695	-	7,748
FY 2015	6,016	-	651	-	6,667

9.9 Water Balance and Reliability

Reliability is discussed in detail in Part 1 of RAWMP. The District's focus is on continuing to diversify its supply as described previously and to maintain an aggressive approach to water conservation and water use efficiency for all its customers including commercial agricultural users. The following Table provides the water balance for the Fiscal Years 2013-2015.

Table 9-6 Annual Water Supply Balance (AF)

Annual Water Supply Balance (AF)				
	Water Supplies	Water Use	Drain Water Leaving Service Area	Water Balance
FY 2013	7,718	6,802	0	916
FY 2014	7,748	6,984	0	764
FY 2015	6, 667	6,436	0	231

9.10 Water Quality (See Part 1 Section 10)

9.11 Water Use Efficiency and EWMPs

Ramona participates in the Regional WUE Program described in Part 1., Chapter 12. Please see the tables for details of the regional commitment to implementing EWMPs.

Specific information on Ramona's projects to address Conditional EWMP 2 is detailed in 9.8.2 Recycled Water above.

Additionally, 9.5. Water Rate Schedules and Billing, discusses commitment to implement Conditional EWMP 4. For agricultural users, Ramona implemented a TSAWR uniform rate and an electrical pumping rate per hcf pumped.

Sources

Ramona Municipal Water District.2011. *2010 Urban Water Management Plan*

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10. Rincon Del Diablo Municipal Water District

Agency Chapter

Draft San Diego Regional Agricultural Water Management Plan: Part II

10 Rincon Municipal Water District

10.1 Size, History and Location of Service Area

Rincon Del Diablo Municipal Water District (Rincon/District) is located in northern San Diego County within the greater Escondido Valley, approximately 25 miles north of the City of San Diego. Being located in the Escondido Valley has given the District a long history of being in the center of San Diego County's commercial agriculture. Currently, most of the remaining agriculture in the Escondido Valley is served by the City of Escondido, although Rincon still has several remaining agriculture customers, it predominantly serves residential, commercial, and industrial water users.

The District was organized and incorporated on February 19, 1954 pursuant to Section 71000 of the California Water Code per the Municipal Water District Act of 1911. It is comprised of a parent district, which is divided into five divisions. The voters within these divisions elect a five-member Board, each of whom serves a four-year term. The Board oversees the District through an appointed General Manager, who in turn oversees a staff of 19 employees.

Rincon Annexed into the San Diego County Water Authority (SDCWA) and the Metropolitan Water District of Southern California (MWD) service areas in 1954 for the purpose of securing additional water supplies for predominantly agricultural uses. The District derives its name from Rancho Rincon del Diablo, once located in the general proximity. Today, Rincon water customers are partially located within the cities of Escondido and San Marcos and within various unincorporated areas of San Diego County. Rincon delivers potable and recycled water to a population of 30,000 through nearly 8,000 connections representing residential, agricultural, landscape, and commercial/industrial water users.

Most of the District's service area is located either within the City of Escondido or in unincorporated portions of San Diego County (County), with smaller areas within the cities of San Marcos. Its boundary lines cross into various city and county communities that receive services provided by the District or neighboring agencies. Although the District's parent district encompasses approximately 27,000 acres (42 square miles), potable and recycled water are served only through its two improvement districts

(ID). ID-1 consists of 7,945 acres while ID-A is 1,210 acres, totaling 9,155 acres and approximately 7,800 domestic water connections.
The District includes portions of the San Dieguito and Carlsbad watersheds as well as the Escondido Valley groundwater basin. Additionally, the District shares service area boundaries with Vallecitos Water District (VWD), Olivenhain Municipal Water District (OMWD), Valley Center Municipal Water District (VCMWD), City of Escondido Water Utilities (City), the City of San Diego and Del Dios Mutual Water Company.

The District currently supplies approximately 10,000 acre-feet of water per year to serve customer demands. Of this amount, approximately 70 percent is potable treated water supply purchased from the SDCWA, and 30 percent is non-potable recycled water purchased from the City of Escondido. District records from 1965 indicate that agricultural water constituted approximately 83 percent of all water deliveries. Over the years, the District, which once served chiefly agricultural operations, has slowly urbanized. In recent years, agricultural water use represents fewer than 3 percent of total potable water deliveries, while residential water sales represented approximately 50 percent.

Commitment to Conservation and Efficient Water Use

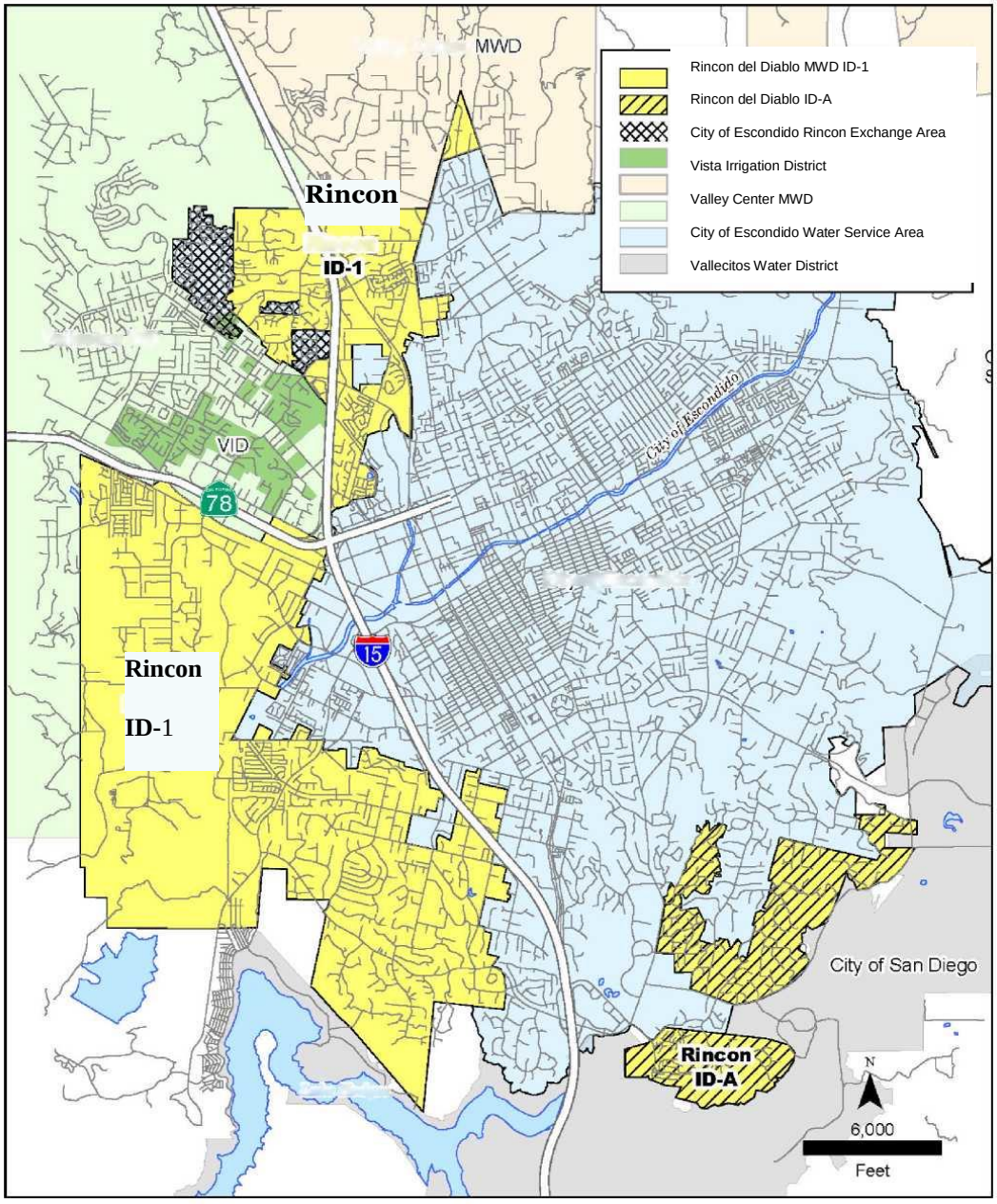
As a signatory to the Memorandum of Understanding (MOU) Regarding Urban Water Conservation in California, the District is a member of California Urban Water Conservation Council (CUWCC). As such, the District has agreed to make a good faith effort to implement the best management practices (BMPs) adopted by CUWCC, in lieu of Demand Management Measures.

Through the cooperative efforts of Rincon, SDCWA, and MWD, the BMP measures are now being implemented within Rincon's service area. Rincon, OMWD, VWD, and SDWD have formed a regional alliance pursuant to CWC § 10608.28(a), the DWR Guidebook, and the DWR Methodologies to cooperatively determine and report progress toward achieving their water use targets on a regional basis. All of these members are recipients of water from a common wholesale water supplier, in this case SDCWA, and all of the members are located within the South Coast Hydrologic Region as shown in the California Water Plan.

Additionally, Rincon has been a consistent supporter of the efforts of Mission Resource and Conservation District (MRCD) to provide water management assistance to growers in its service area. MRCD has been under contract to the SDCWA to operate regional agricultural water management

services since 1990 as part of the SDCWA's Agricultural Water Management Plan (AWMP). The goal of the program is to provide technical assistance to growers to enable them to irrigate crops as efficiently as possible in order to obtain the maximum economic benefit from limited water resources. The Water Utility Efficiency (WUE) programs have included direct assistance to retail water users, implementation of University of California Cooperative Extension (UCCE) BMPs, funding assistance, information and water purveyor efficiency practices. For more information on the regional WUE programs Rincon supports, see Part 1 Section 13.

Figure 10-1 Rincon Service Boundaries



10.2 Water Management Facilities

In addition to its regular potable supply from the SDCWA, the District also maintains service interconnections with its neighboring agencies, including the VID, City of Escondido, Valley Center Municipal Water District (VCMWD), and VWD. These interconnections allow the District to be supplied by its neighbors during times when its supply from the SDCWA is interrupted due to a maintenance shutdown of the First Aqueduct or other causes. In some cases, the interconnections also allow the District to reciprocate by providing water to a neighboring agency should the need arise. These interconnections play an important role in helping the District provide water supply reliability during SDCWA aqueduct outage events.

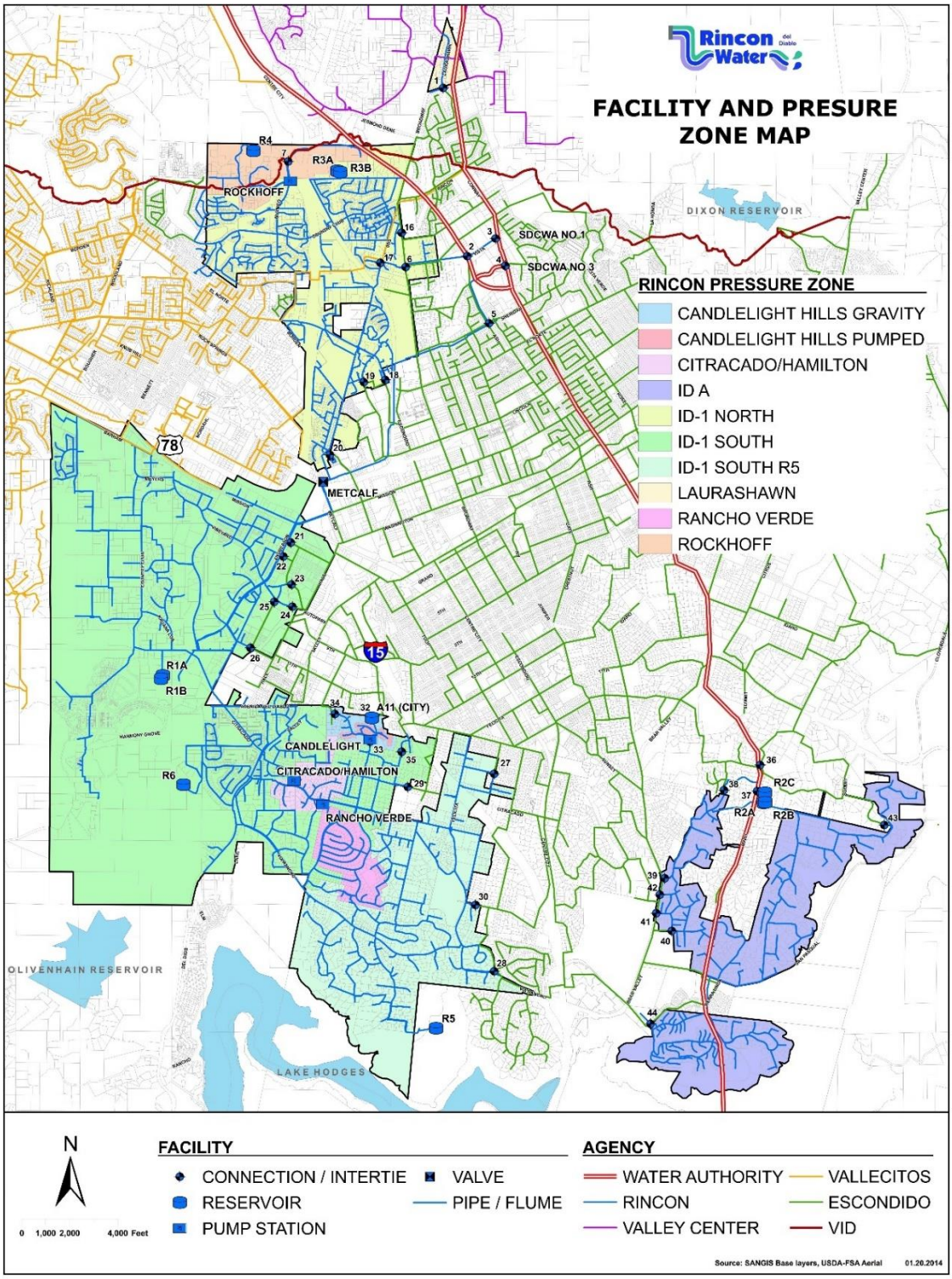
The District's potable water distribution system includes 117 miles of water main (8-inches or larger in diameter), ten reservoirs with a total storage capacity of 25.7 million gallons (MG), and four pump stations. Average distribution is calculated at 10 million gallons per day (MGD). The District's recycled water system consists of 6.7 miles of water mains (8-inch or larger in diameter), two pump stations, and 72 service connections.

The District currently maintains over 149 landscape irrigation meters and 20 agricultural irrigation meters connected to the potable water system. In FY 2015, 408.5 AF/yr of potable water was used for landscape irrigation and 49 AF/yr was used for agricultural irrigation. Rincon is exploring conversion of a large portion of this use to recycled water as well as develops estimates for future recycled water use within the District. Rincon will also be responsible for the distribution of recycled water within the Harmony Grove Village development. As part of the project, this distribution system will be expanded with over 58,000 feet of recycled water pipelines, pump stations, reservoirs, pressure reducing stations, or other facilities as necessary.

10.3 Operating Rules and Regulations

No operating rules for delivery of water to retail customers exist at this time.

Figure 10-2 Rincon Water Facilities



10.4 Water Delivery Measurements

Metering of all water use and billing by volume has long been the standard practice at Rincon. The District receives water from the SDCWA through two potable water connections (turnouts) to the SDCWA aqueduct system. The District also takes flows through its interconnection facilities described in Section 11.2. All sources of potable and recycled water supply to Rincon are metered.

As directed by the CUWCC's BMP's, all new and existing water service connections are metered. For Home Owner Associations and commercial developments, separate, dedicated irrigation meters are placed where needed. District water delivery points to customers are metered using positive displacement meters (95+ % accuracy) and are actively monitored by the District staff.

10.5 Water Rate Schedules and Billing

The current water rate structure of the District consists of four main components: a monthly system operations charge (Rincon service charge), a monthly SDCWA Infrastructure Access Charge (IAC), a water usage rate or commodity charge, and a pumping charge. Both the Rincon service charge and SDCWA IAC vary based on meter size whereas the water usage rate varies by customer class and usage and is charged on units of 1,000 gallons.

The District's commodity rate structure is comprised of inclining tiers for residential customers, budget based tiers for agricultural / landscape customers, and a flat or uniform rate for commercial and construction customers using potable water. In order to comply with the Governors drought proclamation and balance revenue requirements in relationship to fixed costs, including capital projects, ongoing maintenance, storage, pumping, and water quality, the Board found it necessary to adopt Drought Level 1 rates on October 13, 2015. These drought rates are temporary in nature and will be rescinded once the Board of Directors determines they are no longer necessary. The following table represents the Drought rates currently in effect.

Table 10-1 Rincon M&I Water Rates

Residential Potable Water Rate Structure		Water Supply	Pass-Through	Total
Tier 1	1-5 units	$ 5.05	$ 0.29	$ 5.34
Tier 2	6-24 units	$ 5.92	$ 0.29	$ 6.21
Tier 3	25 units or more	$ 6.30	$ 0.29	$ 6.59

Below are the commodity charges to agricultural customers based on units of 1,000 gallons:

Table 10-2 Rincon Agricultural Water Rates

Agricultural Rates/ Domestic		Agricultural Discount
1-5 units	$5.05	N/A
6-19 Units	$5.92	N/A
Up to ET Budgeted Units	$5.92	(.90) per unit
Above ET Budgeted Units	$21.16	(.90) per unit

Agricultural Rates		Agricultural Discount
Up to ET Budgeted Units	$5.92	(.90) per unit
Above ET Budgeted Units	$21.16	(.90) per unit

10.6 Water Shortage Contingency Planning and Allocation Policies

On May 27, 2015 the District's Board passed Ordinance 15-120.2 – "Drought Response Plan." The Drought Response Plan, attached to this report was developed to provide a response strategy as required by the California Water Code, by establishing methods and procedures to ensure that, in a time of shortage, available water resources are put to maximum beneficial use, and that the unreasonable method of use is prevented. The Response Plan contains four levels, and is consistent with SDCWA Model Drought Response Ordinance and supported by regional messaging.

Penalties for Excessive Water Use

Rincon actively monitors customer water usage. If compliance is not achieved, in Levels 2 through 4, continual non-compliance will result in the installation of a flow restrictor or discontinuance of service. Table 10-3 below describes the penalties for non-compliance.

Table 10-3 Rincon Penalties for Excessive Water Use

Level	Stage	Percent Reduction	Penalty
1	Voluntary	10%	None
2	Mandatory	20%	$200 for each violation
3	Mandatory	30%	$600 for each violation
4	Mandatory	31% or more	$1,000 for each violation

Revenue & Expenditure Impacts

The District has considered the financial implications of both long-term and short-term water shortages. Currently, the District's commodity rate comprises approximately 70 percent of the District's revenues, while fixed charges are approximately 30 percent. In short-term water shortages (less than 6 months), the fluctuation of revenue would be managed through the District's reserve funds. Longer shortages however, have required an adjustment of the current rate structure, as previously mentioned and moderate restructuring of District operations.

10.7 Water Use

10.7.1 Agricultural Water Use

Table 10-4 Agricultural Water Use (AF)

Agricultural Water Use (AF)													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	Total
FY 2013	37	45	42	33	26	9	13	19	17	23	23	20	**307**
FY 2014	25	23	25	22	22	15	24	15	4	7	14	9	**205**
FY 2015	10	6	6	6	4	2	1	3	2	4	2	3	**49**

10.7.2 Municipal & Industrial Water Use

Table 10-5 Municipal & Industrial Water Use (AF)

Municipal & Industrial Water Use (AF)													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	Total
FY 2013	780	687	764	737	531	385	339	270	343	487	546	639	**6,508**
FY 2014	735	726	758	653	568	349	511	440	400	515	581	735	**6,971**
FY 2015	701	684	658	671	467	319	276	375	352	496	374	494	**5,867**

10.7.3 Environmental, Recreational, Groundwater Recharge, Transfers and Exchanges, And Other Uses

Table 10 -6 Other Water Uses

Environmental, Recreational, Groundwater Recharge, Transfers and Exchanges, And Other uses													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	**Total**
FY 2013													
FY 2014													
FY 2015*	150	154	140	129	92	45	53	90	77	133	27	111	1,201

Representative year of interagency exchanges

10.8 Water Supplies

10.8.1 Recycled Water

The District began delivery of recycled water to customers in October 2004. Today the District administers approximately 70 recycled water meters and approximately 32,000 feet (5.8 miles) of recycled water pipeline serving homeowner associations, several commercial businesses, and the largest recycled water customer in the County: the cooling towers of the Sempra Energy plant, officially the Palomar Energy Center. With an average annual recycled water demand of approximately 2,700 AF/yr, the Sempra Energy facility is the largest recycled water customer in the County.

Although the District provides recycled water to its customers for landscape irrigation and industrial use, the District is not a waste water collection or treatment agency. The District's purchases from the City consist of water treated at Hale Avenue Resource Recovery Facility (HARRF). HARRF is an activated sludge, secondary treatment facility, consisting of physical, biological, and chemical treatment methods, which includes screening, sedimentation, chemical precipitation, and biological processes. HARRF is designed to treat a flow of 18 MGD. Currently, the District's supplies of recycled water are limited by the HARRF's capacity to produce recycled water.

In addition to its current recycled water supply from the City of Escondido, the District anticipates an additional source of recycled water will become available from the planned Harmony Grove Village

Water Reclamation Facility (WRF), which will serve a major residential development currently under construction in the Harmony Grove Village portion of the District service area. The Harmony Grove WRF is a new 0.2 MGD tertiary plant proposed to provide wastewater and recycled water services for 750 new homes planned as part of the Harmony Grove Village development project within the Rincon del Diablo MWD service area. The WRF will be owned and operated by the County of San Diego to treat wastewater and produce recycled water for irrigation and industrial uses as part of the development project. This water reclamation facility will be constructed by the developer as a condition of development, and will be owned and operated by the County of San Diego. Recycled water produced at the plant will be used within the development for irrigation and other non-potable uses, and any surplus water will be delivered to the District's recycled water distribution system.

10.8.2 Groundwater

The District service area contains only very limited groundwater resources. Historically, the District has not developed local groundwater supplies due to constraints of costs, water quality, and environmental degradation concerns. In recent years however, as the costs of imported water have risen considerably, the District and other agencies have begun re-examining the potential for groundwater development. The District in 2012 completed groundwater investigations related to its evaluation of a possible project in the Harmony Grove Village area, but these investigations showed that the quantity, quality, and reliability of the available resource were all problematic. Subsequently, the District determined to suspend its investigations of the project.

10.8.3 Annual Water Supply

Table 10-7 Annual Water Supply (AF)

Annual Water Supply (AF)					
	Imported Water	Local Surface	Recycled Water	Local Groundwater	Total
FY 2013	6,781	3,290	0	0	10,071
FY 2014	7,617	2,848	0	0	10,465
FY 2015	5,787	3,138	0	0	8,925

10.9 Water Balance and Reliability

Reliability is discussed in detail in Part 1 of RAWMP. Rincon's focus is on continuing to diversify its supply as described previously and to maintain an aggressive approach to water conservation and water use efficiency for all its customers including commercial agricultural users. The Table Below provides the water balance for Rincon for the Fiscal Years 2013-2015.

Table 10-8 Annual Water Supply Balance (AF)

Annual Water Supply Balance (AF)				
	Water Supplies	Water Use	Drain Water Leaving Service Area	Water Balance
FY 2013	6,781	6,815	0	34 AC/Ft from storage
FY 2014	7,617	7,558	0	58 AC/FT to storage
FY 2015	5,787	5,916	0	129 AC/FT from storage

10.10 Water Quality (See Part 1 Section 10)

10.11 Water Use Efficiency and EWMPs

Rincon participates in the Regional WUE Program described in Part 1., Section 12. Please see that table for details of the regional commitment to implementing EWMPs.

Specific information on Rincon's projects to address Conditional EWMP 2 is detailed in 10.8.1. Recycled Water above. Additionally, 10.5 Water Rate Schedules and Billing, discusses commitment to implement Conditional EWMP 4. For agricultural users, Rincon implemented an inclining rate schedule with up to a five tiers.

Sources

Rincon Del Diablo Municipal Water District.2011. *2010 Urban Water Management Plan*

11. San Dieguito Water District

Agency Chapter

Draft San Diego Regional Agricultural Water Management Plan: Part II

11 San Dieguito Water District

11.1 Size, History and Location of Service Area

The San Dieguito Water District (SDWD/District) provides potable (drinking) and recycled water to over 37,000 citizens through 11,670 connections in the communities of Leucadia, Old Encinitas, Cardiff and portions of New Encinitas. The remainder of the City is served by the Olivenhain Municipal Water District (OMWD.)

The SDWD was formed in 1922 by a local developer to obtain water for about 1,000 acres of land in the town of Leucadia. Arrangements were later made to purchase water from the Santa Fe Land Company at Lake Hodges to accommodate the towns of Encinitas and Cardiff-by-the-Sea as well as Leucadia. Although the SDWD was originally established to provide irrigation water to surrounding farms, ranches and fruit groves, the area eventually developed into a suburban residential community. The SDWD now furnishes the majority of the water to residential and commercial customers.

When the City of Encinitas (City) incorporated in 1986, the SDWD became a subsidiary district of the City. The five City Council members also serve as the Board of Directors of the District. The SDWD now covers an area of 5,647 acres and serves a population of approximately 37,168. The SDWD is approximately 88 percent built-out, therefore projected growth is expected to be low. The SDWD is bordered on the north by the Carlsbad Municipal Water District, on the east by the OMWD and on the south by the Santa Fe Irrigation District (SFID.) The terrain of the SDWD consists of rolling hills and valleys with elevations ranging from sea level to approximately 400 feet above sea level.

The District joined the San Diego County Water Authority (SDCWA) in 1948 to acquire the right to purchase and distribute imported water throughout its service area. SDCWA purchases the water from the Metropolitan Water District of Southern California (MWD). The SDWD receives local runoff water from Lake Hodges and imported raw water from the SDCWA. Both sources are treated at the R.E. Badger Filtration Plant which is jointly owned with the SFID. Treated water from the SDCWA can also be delivered directly to the SDWD. The SDWD receives recycled water from San Elijo Joint Powers Authority (SEJPA).

SDWD's service area has a long and storied agricultural history. After Hodges Dam was completed in the 1920's and water began to flow to the coastal Encinitas, area floriculturists from Los Angeles began moving south because of rapid development in their area and the increasing expense of land for expansion. Agriculture, specifically the growing of ornamental flowers, then became an important factor in the history and local economy of Encinitas and the SDWD service area. The 1920's ushered in a decades long era where the Encinitas area became known as the "Flower Capital of the World". The poinsettia has been particularly important to the agricultural history of the City and the legacy of the horticultural industry. In 1923 Paul Ecke Sr. established Ecke Ranch and began growing and dominating the global market for Poinsettias. At its peak, the Paul Ecke Ranch in Encinitas produced over 90 percent of the world's poinsettia stock.

Agricultural demand within the SDWD has steadily decreased as the land has been converted to residential use. Growing urbanization pressures combined with a large portion of the poinsettia business moving to Latin America, has significantly reduced the viability of commercial agriculture in Encinitas. This trend is expected to continue in the future. There are currently 931.15 acres in the north-central portion of the City that are designated as "Agricultural Preserve". Within this preserve area, there are approximately 28.4 acres which are currently contracted under the Williamson Act Program. Water use in this sector was at its highest in 1975 with agriculture customers using 2,492 acre-feet. In 2015, demand was only 225 acre-feet, a 91 percent reduction from the peak demand. Most agricultural customers with long-term plans to continue operations will be encouraged to convert to recycled water.

The City has recognized the importance of maintaining agriculture in the area despite urbanization and has adopted General Plan Goals to achieve that objective. These Goals and supporting Policies are as follows:

> ***Goal 11*** *The City recognizes the important contribution of agricultural and horticultural land uses in the local economy and the emphasis of the need to maintain these activities*
>
> ***Goal 12*** *The City will encourage the preservation of "prime" agriculture lands within its sphere of influence. (Coastal Act/30241)"*

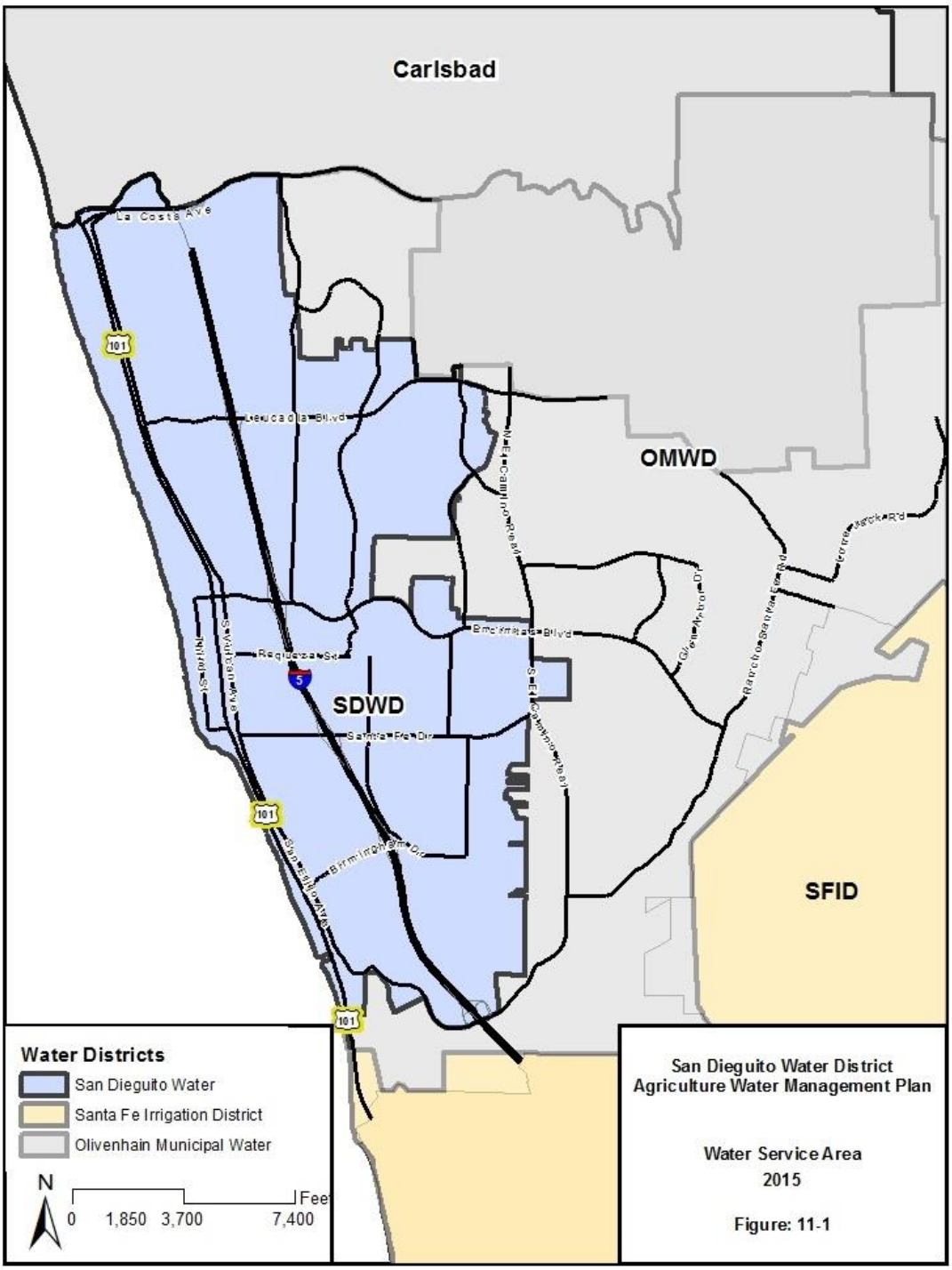
Commitment to Conservation and Efficient Water Use

The California Urban Water Conservation Council (CUWCC) was formed to assist water retailers in implementing an effective conservation program through the use of DMMs. The CUWCC was formed in 1991 through a Memorandum of Understanding (MOU) regarding urban water conservation in California. The DMMs were included in the MOU as means for reducing California's long-term urban water demands. The SDWD adopted the MOU on August 26, 1991 as Resolution 91-25 and is in compliance with CUWCC reporting. As a signatory to the Memorandum of Understanding (MOU) Regarding Urban Water Conservation in California, the District is a member of CUWCC. As such, the District has agreed to make a good faith effort to implement the BMPs adopted by CUWCC, in lieu of Demand Management Measures.

Through the cooperative efforts of the SDWD, the SDCWA, and the MWD, all of the BMP measures are now being implemented within SDWD's service area. SDWD, along with Vallecitos Water District, OMWD, and Rincon del Diablo Municipal Water District have formed a regional alliance pursuant to CWC § 10608.28(a). The Department of Water Resources (DWR) Guidebook and the DWR Methodologies provide guidance to urban water retail suppliers to cooperatively determine and report progress toward achieving their water use targets on a regional basis. All of these members are recipients of water from a common wholesale water supplier, in this case the SDCWA, and all of the members are located within the South Coast Hydrologic Region as shown in the California Water Plan.

Additionally, the SDWD has been a consistent supporter of the efforts of Mission Resource Conservation District to provide water management assistance to growers in its service area. MRCD has been under contract to the SDCWA to operate regional agricultural water management services since 1990 as part of the SDCWA's AWMP. The goal of the program is to provide technical assistance to growers to enable them to irrigate crops as efficiently as possible in order to obtain the maximum economic benefit from limited water resources. The WUE programs have included direct assistance to retail water users, implementation of University of California Cooperative Extension (UCCE) BMPs, funding information assistance, and water purveyor efficiency practices. For more information on the regional WUE programs SDWD supports, see Part 1.

Figure 11-1 San Dieguito Service Boundaries



11.2 Water Management Facilities

The SDWD operates and maintains 175 miles of pipelines, the 7.5 million gallon (MG) Encinitas Ranch reservoir, the 2.5 MG Balour Reservoir, 19 pressure reducing stations, 1 pump station, and 11,670 water meters. In addition, the SDWD also jointly owns the 40 MGD Badger Filtration Plant, a 13 MG clearwell, a hydroelectric plant, the San Dieguito Pump Station, the 850 AF San Dieguito Reservoir and 14 miles of transmission mains. The SDWD receives untreated water for the SDCWA's second aqueduct. The SDWD has one-third ownership in a three million-gallon treated water storage reservoir (OMWD owns the remaining two-thirds).

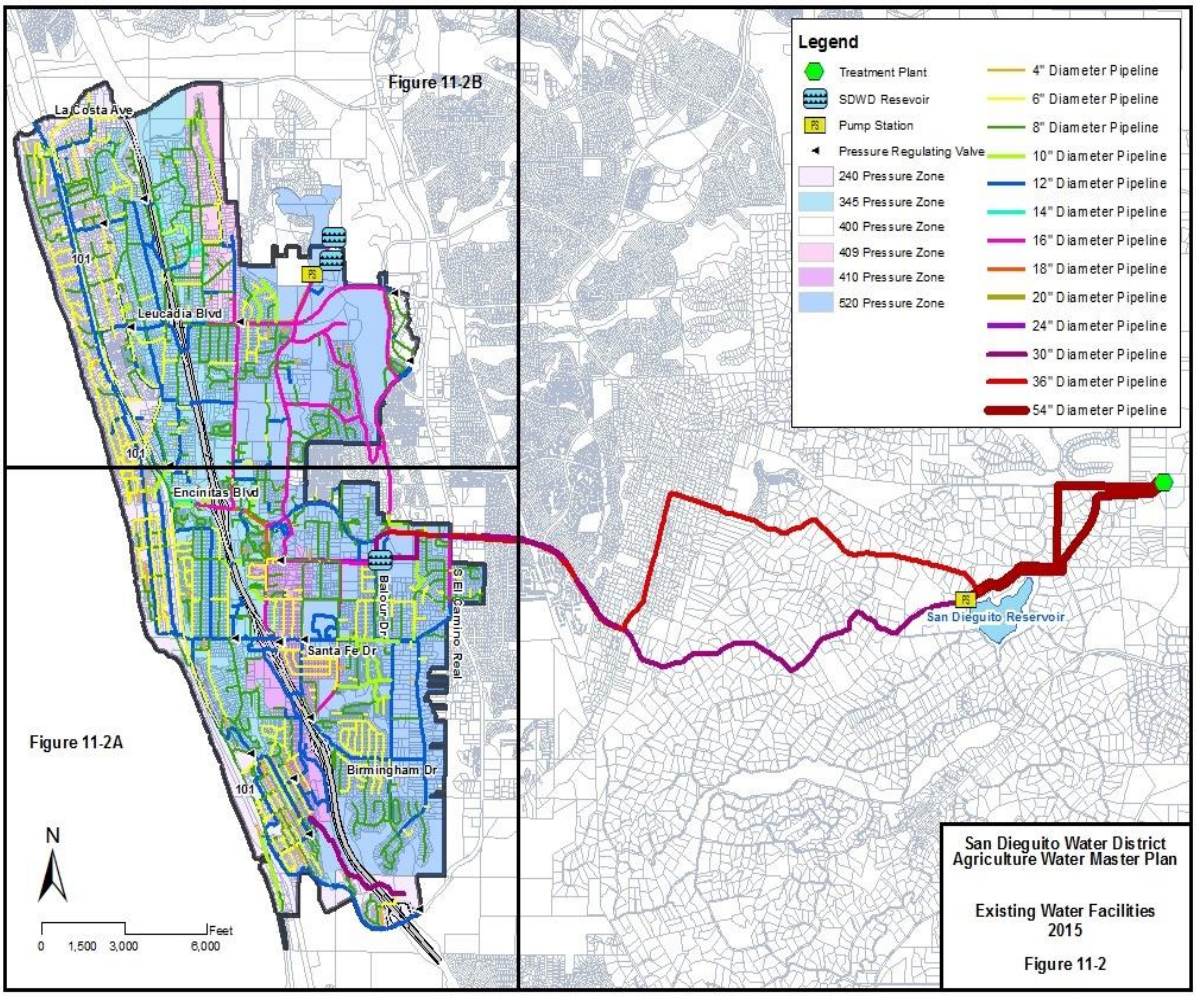
11.3 Operating Rules and Regulations

Operating rules and regulations for delivery of water to retail customers are detailed in the SDWD Administrative Code.

11.4 Water Delivery Measurements

Metering of all water use and billing by volume has long been the standard practice at SDWD. The District receives water from the SDCWA through untreated and treated water connections to the SDCWA aqueduct system. The SDWD also takes flows at the Badger Treatment Plant. As directed by the CUWCC BMP, all new and existing water service connections are metered. For large parcels and commercial developments, separate, dedicated irrigation meters are placed where needed. SDWD water delivery points to customers are metered using positive displacement meters (95+ % accuracy) and are actively monitored by the District staff. Unaccounted for water is "lost" through the potable water system due to several variables which include the age and efficiency of the pipe system, users' practices, accuracy of the meter, etc. Historically water loss has been approximately 6% of total water purchased and produced. Note that the percentage of unaccounted for water, or "loss," is typical of an agency of this size. Water loss is estimated to remain at 6% in the future years.

Figure 11-2 San Dieguito Water Distribution



11.5 Water Rate Schedules and Billing

The District's potable water service fees are comprised of two components: (1) a fixed charge called a Meter Service Charge and (2) a Commodity Charge. The SDWD also passes through the IAC from the SDCWA which is a fixed charge assessed to the District. The SDWD has an inclining block rate structure for residential water use (which comprises 83% of total water demands in the District's service area). Water bills show gallons of water used per day for the last billing period compared to the same period the previous year. This inclining block rate structure encourages local residents to employ water

conservation measures. The rates are designed to recover the costs associated with serving each class and tier. The Agriculture and Commercial classes have been combined resulting in one rate for both classes. Similarly, the Public and Governmental classes have been combined resulting in one rate for both classes. The basis for combining these classes is that they have similar peaking factors – meaning that the classes use water (during peak times of use) in a similar fashion and thus can be combined - since the basis for grouping customers together into classes is their peaking (extra capacity) demands on the water system.

Table 11-1 Fixed Service Charges (Effective February 1, 2016)

Meter Size	Bi-Monthly Potable Water Meter Service Charge	Bi-Monthly Fire Line / Fire Meter Service Charge	Bi- Monthly SDCWA Infrastructure Access Charge	Monthly Recycled Water Meter Service Charge
5/8"	$37.39	N/A	$5.52	$18.69
3/4"	$37.39	$7.95	$5.52	$18.69
1"	$55.05	$7.95	$8.83	$27.52
1.5"	$98.82	$8.97	$16.56	$49.41
2"	$151.55	$15.63	$28.70	$75.77
3"	$274.67	$39.55	$52.99	$137.33
4"	$450.52	$80.79	$90.52	$225.26
6"	$889.76	$228.82	$165.60	$444.88
8"	$1,417.05	$484.14	$287.04	$708.52

Table 11-2 Residential and Non-Residential Commodity Rates (Effective February 1, 2016)

Per Hundred Cubic Foot (HCF) of Water (1 HCF = 748 Gallons)

Customer Class	Tier	Block	Potable Water Rate	Recycled Water Rate
Single-Family Residential	Tier I	0-12	$2.64	N/A
	Tier II	13-20	$4.19	N/A
	Tier III	21-40	$5.18	N/A
	Tier IV	41 +	$5.89	N/A
SFR –w- Agriculture *	Tier IV	41 +	$5.18	N/A
SFR -w- Commercial *	Tier IV	41 +	$5.18	N/A
Multi-Family Residential	Tier I	0-8	$2.64	N/A
(block per dwelling unit)	Tier II	8-12	$4.19	N/A
	Tier III	13-16	$5.18	N/A
	Tier IV	17+	$5.89	N/A
MFR -w- Agriculture *	Tier IV	17+	$5.18	N/A
MFR -w- Commercial *	Tier IV	17+	$5.18	N/A
Agriculture	Uniform		$4.48	$3.80
Commercial	Uniform		$4.48	$3.80
Public	Uniform		$4.91	$4.17
Government	Uniform		$4.91	$4.17
Landscaping	Uniform		$5.17	$4.39
Construction	Uniform		$5.26	$4.47

11.6 Water Shortage Contingency Planning and Allocation Policies

The SDWD is prepared to deal with drought-induced water shortage by utilizing Article 29 – Water Supply Shortage Response Program (WSSRP). The Program describe the effects a drought may have on the SDWD and include water supply issues, water conservation stages and implementation, violations and penalties of the water conservation stages.

The SDWD will monitor the projected local and imported supply of water and the demand for water. The SDWD, in conjunction with the SDCWA and MWD, will then determine when a particular water management stage is required in order to mitigate water shortages. Water shortages occur when the amount of water available from all sources is below the amount ordinarily available. Stages are determined by comparing the amount of water currently available to the SDWD with the amount ordinarily available.

Article 29 establishes regulations to be implemented during the water shortage levels with increasing restrictions on water use in response to worsening drought conditions and decreasing available supplies.

During a Drought Response Level 2 condition or higher, the water conservation measures and water use restrictions established by Article 29 are mandatory and violations are subject to criminal, civil, and administrative penalties and remedies specified in this ordinance and as provided in District's Administrative Code. The WSSRP was adopted by the District in August 2008. It was based on a model program developed by the SDCWA for its member agencies.

Further, the SDWD has declared that at no time shall water be wasted or used unreasonably. Unreasonable uses of water include, but are not limited to, the following:

- Failure to repair a water leak after notification from the District and opportunity to do so.

- Failure to stop water waste resulting from conditions such as inefficient landscape irrigation excessive runoff, low head drainage, overspray of water flows onto no targeted areas, overspray of water flows onto adjacent property, overspray and water flow onto non-irrigated areas, overspray and water flow onto roadways and adjacent structures.

Enforcement and Penalties

Violation of Article 29 may result in issuance of a warning notice, fines, restriction of service or discontinuance of service. Administrative fines may be levied for each violation of a provision of this ordinance as follows: 1. A warning will be issued at the sole discretion of the General Manger for the first violation within the current twelve-month period from the most recent violation. 2. The customer will be fined one hundred dollars for a second violation within the current twelve-month period from the most recent violation. 3. The customer will be fined two hundred dollars for a third violation within the current twelve-month period from the most recent violation. 4. The customer will be fined five hundred dollars for each additional violation of this ordinance within the current twelve-month period from the most recent violation.

Revenue & Expenditure Impacts

During a drought, the SDWD's revenue requirement (costs) decreases along with revenue. However, the SDWD's revenue decreases more than its costs do. The majority of the SDWD's costs are fixed (salaries, benefits, debt service, etc.) and therefore drought rates are required to recover lost revenue to cover its fixed costs. The SDWD's drought revenue requirement is lower than its non-drought

revenue requirement because as the SDWD serves less water and therefore purchases and treats less water, thereby saving the associated costs. The SDWD has established water rates during a drought which steadily increase at each water management stage. The SDWD created the rate structure to minimize the impacts on the SDWD and to further encourage water conservation.

11.7 Water Use

11.7.1 Agricultural Water Use

Within the District's service area, agricultural water use comprises less than 1% of total demands. Agricultural water use has declined within the District's service area over the past decade.

Table 11-3 Agricultural Water Use (AF)

Agricultural Water Use (AF)													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	Total
FY 2013	25	26	25	26	26	23	14	8	15	12	30	16	**244**
FY 2014	28	33	25	26	20	19	14	6	28	17	23	23	**262**
FY 2015	31	24	29	28	25	22	9	13	14	19	18	25	**258**

11.7.2 Municipal & Industrial Water Use

Table 11-4 Municipal & Industrial Water Use (AF)

Municipal & Industrial Water Use (AF)													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	Total
FY 2013	595	889	481	784	531	563	348	380	339	570	511	732	**6,479**
FY 2014	619	694	627	767	457	573	784	531	454	507	457	774	**6,982**
FY 2015	659	716	644	755	510	568	303	453	391	535	428	609	**6,313**

11.7.3 Environmental, Recreational, Groundwater Recharge, Transfers and Exchanges, And Other Uses

Table 11 -5 Other Water Uses

Environmental, Recreational, Groundwater Recharge, Transfers and Exchanges, And Other uses													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	**Total**
FY 2013													
FY 2014													
FY 2015*	608	799	599	273	433	67	9	387	366	5	1,118	1,288	5,950

*Representative year of interagency exchanges

12.8 Water Supplies

12.8.1 Local Surface Water

The SDWD obtains water from Lake Hodges and imports treated and untreated water from the SDCWA. Lake Hodges is owned and operated by the City of San Diego. Through the 1966 agreement with the City of San Diego, the District and the SFID were able to purchase an average of 7,500 acre-feet of raw water per year from San Diego at a fraction of the cost of imported water. In 1998, the agreement changed the amount of local water that could be purchased. The amount available was

reduced to 5,700 acre-feet of raw water after the completion of the Lake Hodges to Olivenhain Pipeline, because Lake Hodges became part of the SDCWA Emergency Storage Project. In 2014, a new agreement allowed the District to receive 21.33% of Lake Hodges yield, or approximately 2,432 AFY

11.8.2 Recycled Water

In an effort to conserve potable water and to reduce dependence on imported water the SDWD augments its local water supply with wastewater that is collected and treated to tertiary standards. For the SDWD, this recycled water is purchased from SEJPA after treatment at the San Elijo Water Pollution Control Plant. The SDWD purchases recycled water from SEJPA that has been treated at the San Elijo WPCF to irrigate landscaping and the Encinitas Ranch Golf Course. In 2015 the SDWD sold 735 AF of recycled water.

Even though the agricultural market within the SDWD has steadily declined, there is still significant potential for recycled water use within this category. Agricultural customers have expressed interest in the use of recycled water, but they do have concerns regarding the quality of the water and the effects it may have on their product. The SDWD and the SEJPA will be working closely with agricultural customers to study the effects of recycled water on various agricultural products. Such studies should increase the confidence of agricultural customers in recycled water.

11.8.3 Groundwater

Currently, there is no use of groundwater sources by the SDWD. In general, groundwater basins within the District's service area have high concentrations of Total Dissolved Solids (TDS). The potential use of groundwater was evaluated in the *Integrated Water Resources Plan*. However, due to cost and feasibility issues, it was determined that the SDWD should not pursue groundwater sources at this time. Because the SDWD does not currently use or plan to use groundwater, The SDWD service area contains only very limited groundwater resources.

11.8.4 Annual Water Supply

Table 11-6 Annual Water Supply (AF)

Annual Water Supply (AF)					
	Imported Water	Local Surface	Recycled Water	Local Groundwater	Total
FY 2013	2,395	4,200	678	0	**7,273**
FY 2014	5,598	1,136	692	0	**7,426**
FY 2015	5,749	603	736	0	**7,088**

11.9 Water Balance and Reliability

Reliability is discussed in detail in Part I of this RAWMP. SDWD's focus is on continuing to diversify its supply as described previously and to maintain an aggressive approach to water conservation and water use efficiency for all its customers including commercial agricultural users. The Table Below proves the water balance for SDWD for the Fiscal Years 2013-2015.

Table 11-7 Annual Water Supply Balance (AF)

Annual Water Supply Balance (AF)				
	Water Supplies	Water Use	Drain Water Leaving Service Area	Water Balance
FY 2013	7,273	6,967	0	306
FY 2014	7,426	7,244	0	182
FY 2015	7,088	6,829	0	259

11.10 Water Quality (See Part 1 Chapter 10)

11.11 Water Use Efficiency and EWMPs

SDWD participates in the Regional WUE Program described in Part 1., Section 12. Please see the tables for details of the regional commitment to implementing EWMPs.

Specific information on SDWD's projects to address Conditional EWMP 2 is detailed in 11.8.2 Recycled Water above.

Additionally, 11.2 Water Rate Schedules and Billing, discusses commitment to implement Conditional EWMP 4. For agricultural users, SDWD charges the same commodity rate as all commercial customers.

Sources

San Dieguito Water Distirct.2011. *2010 Urban Water Management Plan*

12. Santa Fe Irrigation District

Agency Chapter

Draft San Diego Regional Agricultural Water Management Plan: Part II

12 Santa Fe Irrigation District

12.1 Size, History and Location of Service Area

The Santa Fe Irrigation District (SFID/District) is situated in the northern San Diego County area and includes coastal and inland communities. The SFID was established in 1923. It was originally established as an irrigation district to provide Lake Hodges water to agricultural users in the Rancho Santa Fe and Solana Beach areas. The SFID water was initially delivered to customers directly from the San Dieguito Reservoir with chlorination as the only treatment. Over time the SFID has transitioned from an agricultural district to a municipal district serving predominantly residential uses.

SFID is located in north coastal San Diego County approximately 26 miles from downtown San Diego and serves approximately 20,000 customers on 10,300 acres of land in three communities: Rancho Santa Fe, Fairbanks Ranch. and the City of Solana Beach. Characterized by low-density urban development, the service area includes a large number of estates covering more than three acres. Rancho Santa Fe is recognized as having one of the highest per capita incomes in the United States and provides its residents with a secluded, rural environment with house trails throughout the community. The City of Solana Beach is a coastal community known for its design district on Cedros Avenue. SFID serves a diverse supply of water with 60% imported water, 35% local water and 5% recycled water.

Like elsewhere in San Diego County, Rancho Santa Fe agricultural beginnings can be traced back to the Rancho San Dieguito land grant of two square leagues of land (8,8224.71 acres) awarded by Governor Pio Pico in 1845. Predominantly used for cattle ranching it was in 1906 that the Santa Fe Railway, a subsidiary of the Atchison, Topeka & the Santa Fe, purchased all of the lands that made up the original San Dieguito land grant to grow lumber for railroad ties. Between 1906 and 1914, Santa Fe's California properties, planted 3.5 million Eucalyptus trees from seed on 3,000 acres in the southeast section of the land grant closest to the San Dieguito River. Although the trees grew rapidly in the warm and dry climate they did not have the structural strength to be used as railroad ties and support the trains in use at the time and ultimately Santa Fe's venture was unsuccessful.

Colonel Ed Fletcher, a prominent land and water developer and the Railroad were convinced of the agricultural potential of the property. Fletcher convinced Santa Fe's Land Company that the land could be planted in citrus and avocados and would be very profitable for the railroad in shipping the fruit

back East. A source of reliable irrigation water was required. In 1918, the Lake Hodges Dam was constructed by the San Dieguito Mutual Water Company/Santa Fe Land Improvement Company. The construction of the dam was financed by the Santa Fe Railroad. The 6,200 acres developed from the original Rancho San Dieguito land grant was renamed "Rancho Santa Fe" in 1922. The lake was named after William Hodges, then vice president of the railroad company. A flume was constructed in 1918 to convey water from Lake Hodges to the San Dieguito Reservoir. This flume was 4 miles long and was originally called the Carroll Conduit, but later became known as the Hodges Flume. The City of San Diego purchased Lake Hodges and the Lake Hodges Dam in 1925 and still owns them today.

In 1948, SFID became a member of the SDCWA, the regional wholesale water supplier, and gained access to imported water supplies from Northern California and the Colorado River. Prior to becoming a member of the SDCWA, the SFID provided water to its customers solely from Lake Hodges.

Additionally, the SFID shares service area boundaries with San Dieguito Water District (SDWD) and Olivenhain Municipal Water District (OMWD).

Commitment to Conservation and Efficient Water Use

The California Urban Water Conservation Council (CUWCC) was formed to assist water retailers in implementing an effective conservation program through use of DMMs. The CUWCC was formed in 1991 through a Memorandum of Understanding (MOU) regarding urban water conservation in California. The DMMs were included in the MOU as means for reducing California's long-term urban water demands. The District adopted the MOU on August 26, 2001 as Resolution 91-25 and is in compliance with CUWCC reporting. As a signatory to the *Memorandum of Understanding (MOU) Regarding Urban Water Conservation in California*, the District is a member of CUWCC. As such, the District has agreed to make a good faith effort to implement the BMPs adopted by CUWCC, in lieu of Demand Management Measures.

Additionally, SFID has been a consistent supporter of the efforts of MRCD to provide water management assistance to growers in its service area. MRCD has been under contract to the SDCWA to operate regional agricultural water management services since 1990 as part of the SDCWA's AWMP. The goal of the program is to provide technical assistance to growers to enable them to irrigate crops as efficiently as possible in order to obtain the maximum economic benefit from limited water resources. The WUE programs have included direct assistance to retail water users, implementation of University of California Cooperative Extension (UCCE) BMPs, funding information assistance, and

water purveyor efficiency practices. For more information on the regional WUE programs SFID supports, see Part 1.

12.2 Water Management Facilities

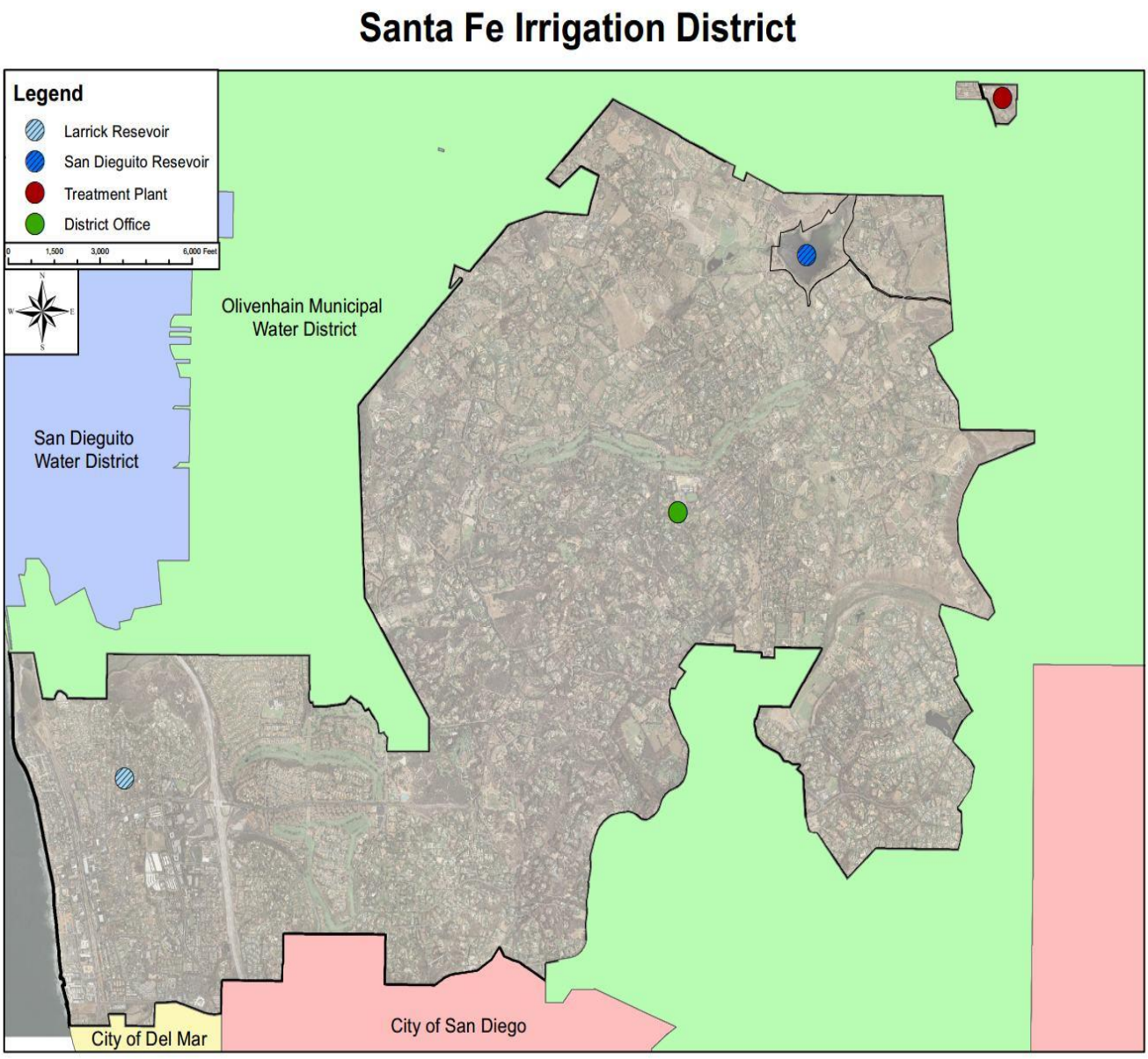
The SFID owns and maintains approximately 160 miles of pipeline and one above-ground storage reservoir with a capacity of 6.0 million gallons. The SFID's water distribution system consists of 14 pressure zones with 39 pressure-reducing stations and the Larrick Pump Station in Solana Beach. This pump station is used to keep pressures stable at peak demands in portions of the Solana Beach service area. The R.E. Badger Filtration Plant (Badger Plant) was constructed in 1967 as a joint venture of the SFID and SDWD. Both local and imported raw water sources are delivered to the 40-million gallons per day (MGD) Badger Plant for treatment. Raw water from Lake Hodges can be pumped directly to the Badger Plant. Typically, over 95 percent of the potable water supply for SFID/SDWD is derived from raw water treated at the Badger Plant.

The SDCWA second aqueduct pipeline 5 is located immediately adjacent to the Badger Plant and provides the source of raw imported water. SFID has untreated water connections to the SDCWA regional aqueduct system. Prior to treatment at the Badger Plant, imported raw water from the high pressure aqueduct pipeline is conveyed through the SFID/SDWD's hydroelectric facility to generate electricity. Generated power not used by the Badger Plant is sold to San Diego Gas and Electric (SDG&E). In addition, a treated water connection to the Water Authority's aqueduct provides additional supplies to meet peak demands or in the event the Badger Plant is out of service for maintenance

Other water facilities jointly owned with San Dieguito Water District (SDWD) include: approximately eight miles of transmission mains, two pumping stations, the 800 AF raw water San Dieguito Reservoir, and a 13- million gallon filtered water reservoir. The SFID is the operator and administrator for the joint water facilities. The historic Lake Hodges Dam Flume was taken out of service in August 2003 and replaced with a new raw water transmission system. The Rancho Cielo Raw Water Pump Station and 36-inch raw water pipeline was constructed to pump raw water from Lake Hodges directly to the Badger Plant. Local water can also be conveyed from Lake Hodges to the 800 AF San Dieguito Reservoir through a new 18-inch raw water pipeline that was installed in the old flume west of Del Dios Highway. The existing San Dieguito Pump Station pumps raw water from the San Dieguito

Reservoir to the Badger Plant. Improvements have been installed within the San Dieguito Reservoir that enables it to pre-treat the raw water supply prior to conveyance to the Badger Plant.

Figure 12-1 SFID Service Area



Reservoir to the Badger Plant. Improvements have been installed within the San Dieguito Reservoir that enables it to pre-treat the raw water supply prior to conveyance to the Badger Plant.

12.3 Operating Rules and Regulations

SFID's rules for delivery of water to retail customers are contained in the SFID Administrative Code.

12.4 Water Delivery Measurements

Metering of all water use and billing by volume has long been the standard practice at SFID. The District receives water from the SDCWA through untreated and treated water connections to the SDCWA aqueduct system. The District also receives local untreated water at the Badger Plant from a City of San Diego metered connection at the Lake Hodges Dam.

As directed by the CUWCC BMP, all new and existing water service connections are metered. For large parcels and commercial developments, separate, dedicated irrigation meters are placed where needed.

12.5 Water Rate Schedules and Billing

The District has an inclining block rate structure for residential water use (which comprises 83% of total water demands in the District's service area). Water bills show gallons of water used per day for the last billing period compared to the same period the previous year. This inclining block rate structure encourages local residents to employ water conservation measures

Currently, the SFID does not have a separate water rate for Agriculture. Customers who have Parcels dedicated to 100% agricultural use are billed under the District's Irrigation classification. Parcels with domestic, residential and agricultural use are billed under the residential, tiered rate. The following table summarizes the District's current water rates and charges:

Table 12-1 Commodity Charges

Commodity Charges				
Tier	**HCF**	**Rate**	**Block**	**Rate**
Single Family	1-15	$ 2.70	Multi-Family Residence	$ 3.84
	16-300	3.84	Non-Residential	3.71
	over 300	4.39	Irrigation	4.04
Residential Surplus	1-15	3.10	Temporary Construction Use	4.39
	16-300	4.24	Fire Line Use	4.39
	over 300	4.79	Recycled	3.19

Table 12-2 Base Meter Fees

Base Meter Fees				
	Bi-Monthly Fee		**Monthly Fee**	
Meter Size	Potable	Private Fire Line	Reclaimed	Temporary Meter
5/8" & 3/4"	$ 58.47	$ 14.21	$ 27.58	
1"	92.93	19.15	43.84	
17₂"	179.10	31.51	84.48	
2"	282.49	46.97	133.25	
3"	523.75	81.58	247.05	
4"	868.39	131.02	409.62	
6"	1,730.02	255.84	816.05	
8"	2,763.97	405.40	1303.76	
10"	3,970.24	579.66	1872.76	

12.6 Water Shortage Contingency Planning and Allocation Policies

The SFID has experienced three droughts – in the 1990s and again in the late 2000s and mid-2010s where supply deficiencies were significant enough to necessitate mandatory water use restrictions. In these events, a statewide drought halted operations of the SWP and simultaneously, a local drought significantly reduced flows into Lake Hodges. The SFID's reaction to drought conditions was to adopt and update water shortage response policies and procedures, implement mandatory and voluntary water use restrictions, and implement new water conservation programs.

The SFID's water shortage response policies and procedures is incorporated in the SFID's *Administrative Code, Article 17, Water Shortage Response Policies and Procedures*. The SFID's water shortage contingency plan includes four drought stages: Levels 1 – 4. The SFID sets drought response levels in accordance with drought response levels determined by the SDCWA. Level 1 represents a reduction in the SFID's water supplies by 10 percent or less. At this stage, the SFID would take actions to encourage reduction of water use voluntarily. Level 2 represents up-to a 20% shortage due to drought or other supply reductions. At this stage, all of the voluntary water use reduction measures in Level 1 become mandatory. Level 3 represents an increased shortage up to 40% due to drought or other supply reductions. At this stage, additional mandatory prohibitions are established and the SFID will suspend consideration of annexations to its service area. Level 4 is implemented when the SDCWA declares a water shortage emergency (>40% shortage). At this stage, all landscape irrigation is stopped, except crops and landscape products of commercial growers and nurseries.

In 2015, because of the severity of the current drought and the SWRCB establishment of Emergency Conservation Regulations for urban water suppliers, the SFID Board of Directors adopted an Ordinance in 2015 to achieve the 36% conservation target set by the state. Ordinance No. 15-01, "*Santa Fe Irrigation District Adopting a Water Allocation and Penalty Policy for Water Shortage Levels 3 And 4*" is operative during the current drought event.

Enforcement and Penalties

Penalties for violators of the water use restrictions include notification and warning, administrative fines, installation of a flow restriction device, and discontinuance of service depending on the water

restriction stage and number of violations. For a willful and excessive violation, a misdemeanor punishable by $1,000 and 30 days in jail could be issued, as authorized in California Water Code Section 377.

In 2015, in response to the drought and State mandated water reductions of 36%, SFID has instituted water allocations, new water use restrictions and penalties, and new water conservation programs. SFID's penalty system for exceeding a parcel's water allocation is patterned after the District's water wholesalers' method of penalizing its member agencies (including the District) during periods of allocation (2X the rate per acre foot up to 11 5% of the allocation and 4X the rate per acre foot for any usage over 115% of the allocation).

Under the current Level 3 water allocation program (Ordinance No. 15-01), any potable water used by a customer in excess of the allocations then in effect during a billing cycle is:

a. deemed a waste of water;

b. a violation of the District's rules and regulations; and

c. subject to a civil administrative penalty of:

i. $3.40/hcf for usage above the allocation up to 11 5%

ii. $6.79/hcf for usage over 115% of the allocation

Revenue & Expenditure Impacts

The SFID has considered the financial implications of both long-term and short-term water shortages. Currently, the SFID's commodity rate provides approximately 85 percent of the District's revenues, while fixed charges generate approximately 15 percent. In short-term water shortages (less than 6 months), the fluctuation of revenue would be managed through the use of SFID's rate stabilization fund. Longer shortages however, would require an adjustment of the current rate structure or significant restructuring of SFID operations. The SFID is currently undergoing a cost of service study and considering a water rate proposal that will include an increase in the percentage of fixed revenue and the development of demand reduction rates.

12.7 Water Use

12.7.1 Agricultural Water Use

Within the SFID's service area, agricultural water use comprises less than 1% of total demands. Agricultural water use has declined within the SFID's service area over the past decade.

Table 12-3 Agricultural Water Use (AF)

Agricultural Water Use (AF)													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	Total
FY 2013	47	47	52	52	36	36	11	11	13	13	34	34	385
FY 2014	48	48	51	51	32	32	21	21	21	21	38	38	422
FY 2015	49	49	48	48	40	40	9	9	20	20	30	30	393

12.7.2 Municipal & Industrial Water Use

Table 12-4 Municipal & Industrial Water Use (AF)

Municipal & Industrial Water Use (AF)													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	Total
FY 2013	1,326	1,367	1,227	997	831	399	480	518	779	840	1,128	1,254	11,146
FY 2014	1,292	1,308	1,215	954	673	654	856	636	737	987	1,343	1,315	11,969
FY 2015	1,366	1,234	1,200	1,089	789	347	499	687	804	910	694	846	10,465

12.7.3 Environmental, Recreational, Groundwater Recharge, Transfers and Exchanges, And Other Uses

Table 12 -5 Other Water Uses

Environmental, Recreational, Groundwater Recharge, Transfers and Exchanges, And Other uses													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	**Total**
FY 2013													
FY 2014													
FY 2015*	1,415	1,283	1,185	1,025	805	191	403	513	677	930	674	812	**9,912**

Representative year of interagency exchanges

12.8 Water Supplies

12.8.1 Local Surface Water

The local raw water supply is derived from surface water captured in Lake Hodges from the surrounding San Pasqual Valley. Since the turn of the century, the SFID and SDWD have jointly maintained property rights to local surface waters entering Lake Hodges. At 250 square-miles, Lake Hodges has the largest drainage basin of any surface water source in the County of San Diego. When full, Lake Hodges spans 1,234 acres and holds approximately 30,000 AF of water. The SFID, SDWD, and the City of San Diego have an agreement that defines property rights for the water entering Lake Hodges. The agreed annual yield is approximately 11,400 AFY. In any single year, 50% of the annual hydraulic yield is the shared property of the District and SDWD, and the remaining 50% is the City of San Diego's. Any surface runoff in excess of 11,400 AF is split 50/50 between the Districts and the City of San Diego.

12.8.2 Recycled Water

The SFID currently makes wholesale purchases of approximately 500 AFY of reclaimed water from SEJPA for retail sale to existing SFID recycled water customers. The SFID currently serves multiple recycled water customers for the irrigation of golf courses, parks, green-belt areas, freeway medians,

and other landscape irrigation uses. Within the SFID's service area, approximately 500 AFY of recycled water is currently supplied to customers within the western portion of the SFID (primarily within the City of Solana Beach) through 47 irrigation meters. All of the existing recycled users were potable water customers that were converted to recycled water users.

As part of the North San Diego County Water Reuse Coalition, SFID is considering a project to expand this distribution system with over 46,000 feet of recycled water pipelines, pump stations, reservoirs, pressure reducing stations, or other facilities as necessary.

12.8.3 Groundwater

The SFID service area contains only very limited groundwater resources. Currently, there is no use of groundwater sources by the SFID. In general, groundwater basins within the SFID's service area have high concentrations of Total Dissolved Solids (TDS). The potential use of groundwater was evaluated in the *Integrated Water Resources Plan*. However, due to cost and feasibility issues, it was determined that the SFID should not pursue groundwater sources at that time.

12.8.4 Annual Water Supply

Table 12-6 Annual Water Supply (AF)

Annual Water Supply (AF)					
	Imported Water	Local Surface	Recycled Water	Local Groundwater	Total
FY 2013	5,944	5,545	547	-	12,036
FY 2014	10,858	1,526	558	-	12,942
FY 2015	9,894	812	523	-	11,229

12.9 Water Balance and Reliability

Reliability is discussed in detail in Part I of this RAWMP. SFID's focus is on continuing to diversify its supply as described previously and to maintain an aggressive approach to water conservation and water use efficiency for all its customers including commercial agricultural users. The Table Below proves the water balance for SFID for the Fiscal Years 2013-2015.

Table 12-7 Annual Water Supply Balance (AF)

Annual Water Supply Balance (AF)				
	Water Supplies	Water Use	Drain Water Leaving Service Area	Water Balance
FY 2013	11,488	11,488	0	0
FY 2014	12,384	11,969	0	415
FY 2015	10,705	10,705	0	0

12.10 Water Quality (See Part 1 Chapter 13)

12.11 Water Use Efficiency and EWMPs

SFID participates in the Regional WUE Program described in Part 1., Section 12. Please see the tables for details of the regional commitment to implementing EWMPs.

Specific information on SFID's projects to address Conditional EWMP 2 is included in 12.8.2 Recycled Water above.

Sources

Santa Fe Irrigation Distirct.2011. *2010 Urban Water Management Plan*

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13. Vallecitos Water District

Agency Chapter

13 Vallecitos Water District

13.1 Size, History and Location of Service Area

The Vallecitos Water District (VWD/District) is a member agency of the San Diego County Water Authority (SDCWA) and currently receives 100% of its potable water supply from this water wholesaler. VWD serves potable water to more than 97,000 people, as well as commercial, light industrial, institutional, construction, landscape irrigation and agricultural customers in a 45-square mile service area. VWD also provides wastewater collection services to a 23-square mile area. VWD is located approximately 36 miles north of downtown San Diego and is bordered by the Carlsbad Municipal Water District (CMWD) and Vista Irrigation District (VID) to the west, Olivenhain Municipal Water District (OMWD) to the South, Rincon del Diablo Municipal Water District (Rincon) to the East and Rainbow Municipal Water District (RMWD) to the North. Figure 13-1 provides the location of the District and adjoining water agencies.

VWD has a long history of providing agricultural users water supplies. During the late 1800s and early 1900s, farming was the primary business in the present service area but by the mid-1900s, dairies and poultry production became critical to the area's economic development. VWD was formed on March 12, 1955, as a water-only district by a group of local farmers who recognized a need for a more substantial water supply than the groundwater found in the San Marcos and Twin Oaks valleys to serve the area. Originally named the San Marcos County Water District, VWD was initially established as an independent special district pursuant to §30000 et seq., Division 12 of the CWC, with the purpose of bringing outside water into the area through the development and operation of a public water supply system that tapped Colorado River water. With the passage of a $998,000 bond issue in 1956, water system construction began.

Initially, water deliveries from the SDCWA to the San Marcos County Water District were handled through the Buena Colorado Municipal Water District. In 1981, the San Marcos County Water District became a member of the SDCWA, from which it now receives 100 percent of its potable water supply. On May 1, 1989, the San Marcos County Water District's name was changed to the Vallecitos Water District. Today, VWD serves a 45-square mile potable water service area with a population of more than 97,000 people. VWD delivers over 15,500 acre-feet per year of potable water to a mix of

residential, commercial, industrial, and agricultural customers. Agricultural use is estimated to currently comprise 1,656 acres and due to anticipated land conversions for residential and other commercial uses is expected to be reduced to 775 acres by 2030.

Commitment to Conservation and Efficient Water Use

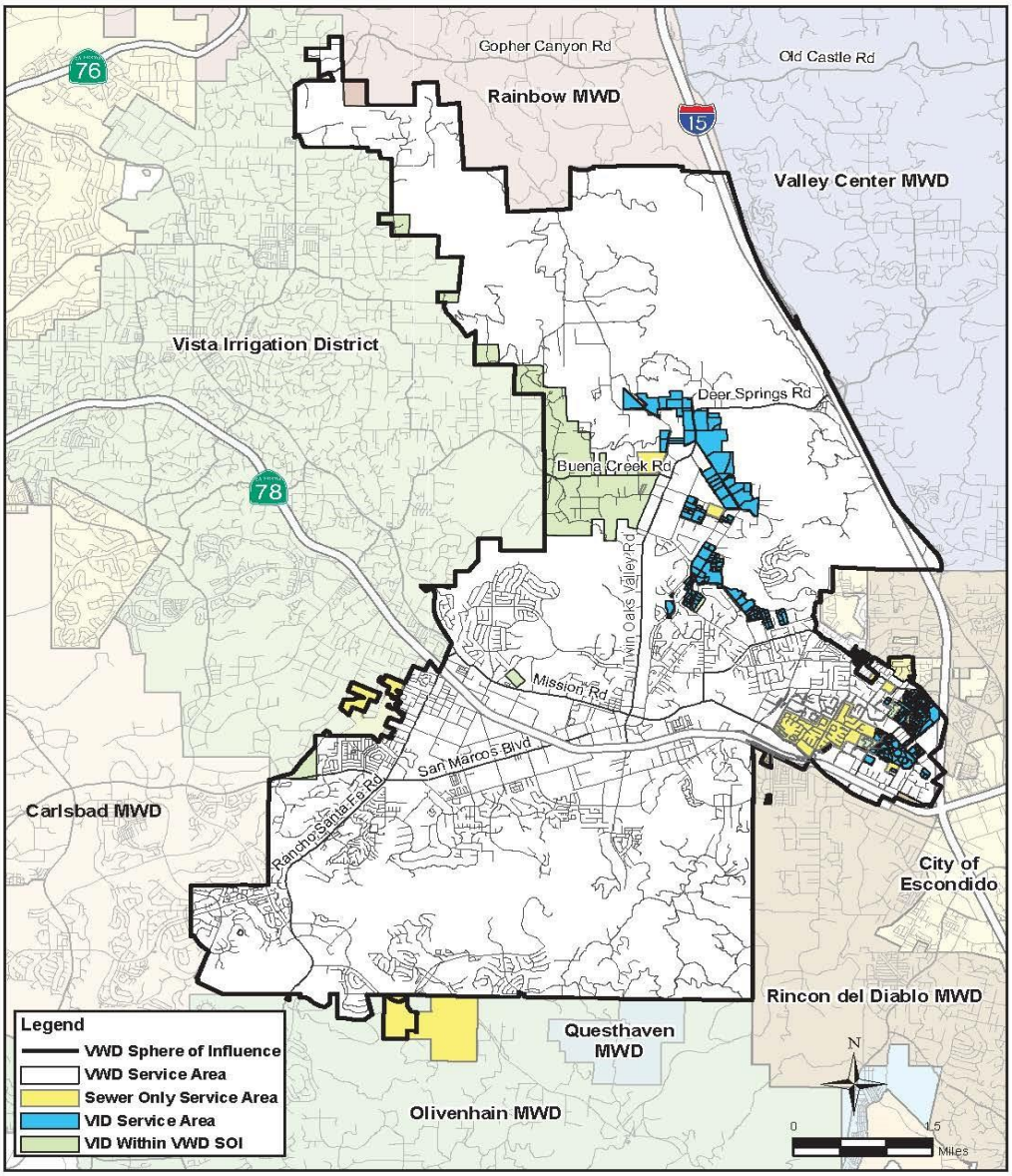
VWD started a water conservation program in 1975, and with the support of the Board of Directors, the program expanded significantly during the drought of 1976-77. At the program's inception, efforts steered toward a long-term public information program and active cooperation with regional water conservation programs of the SDCWA. Though the drought ended, many of the programs that emerged during that time remained focused on switching from an "emergency situation" agenda to a long-term public information effort aimed at outreach in wise water management.

VWD reaffirmed its commitment to conservation and became one of the original signatories to the "Memorandum of Understanding Regarding Urban Water Conservation" (MOU) in California on September 16, 1991. The CUWCC, of which VWD is a long-time member, emerged from the MOU, as well as urban water conservation practices known as the BMPs, which are aimed at reducing California's long-term urban water demands. The District submitted the latest round of BMP reports to the CUWCC in October 2015.

This proved to be extremely valuable in 2009 when prolonged dry periods and judicial pumping restrictions to the region left reservoir levels severely drained. This forced the SDCWA to cut supplies to its member agencies and resulted in supply reductions to VWD customers of approximately 10 percent. Once again in the current drought VWD has built upon the foundation of conservation previously established and has complied with the SWCB Emergency Regulation for urban conservation and outperformed it target by reducing water use by over 24% as of the date of this RAWMP.

Additionally, the VWD has been a consistent supporter of the efforts of Mission Resources Conservation District (MRCD) to provide water management assistance to growers in its service area. MRCD has been under contract to the SDCWA to operate regional agricultural water management services since 1990 as part of the SDCWA's AWMP. The goal of the program is to provide technical assistance to growers to enable them to irrigate crops as efficiently as possible in order to obtain the maximum economic benefit from limited water resources. The WUE programs have included direct assistance to retail water users, implementation of University of California Cooperative Extension (UCCE) BMPs, funding information assistance, and water purveyor efficiency practices. For more information on the regional WUE programs the VWD supports, see Part 1.

Figure 13-1 Vallecitos Service Boundaries



13.2 Water Management Facilities

VWD serves a 45-square mile potable water service area. The District receives water from the SDCWA through five treated water connections (turnouts) to the regional aqueduct system. VWD has recently completed construction of a new turnout that will replace the existing Vallecitos 9 connection to the SDCWA's Aqueduct and will instead deliver desalinated water from the Carlsbad Desalination Project directly to VWD's local distribution system from the newly build Desalinated Water Conveyance Pipeline. In addition to its SDCWA aqueduct and Carlsbad Desalination Project connections, which currently provide 100 percent of the District's normal supply, the District also has the capability to obtain limited deliveries from the City of Escondido, Rincon, VID, OMWD and CMWD.

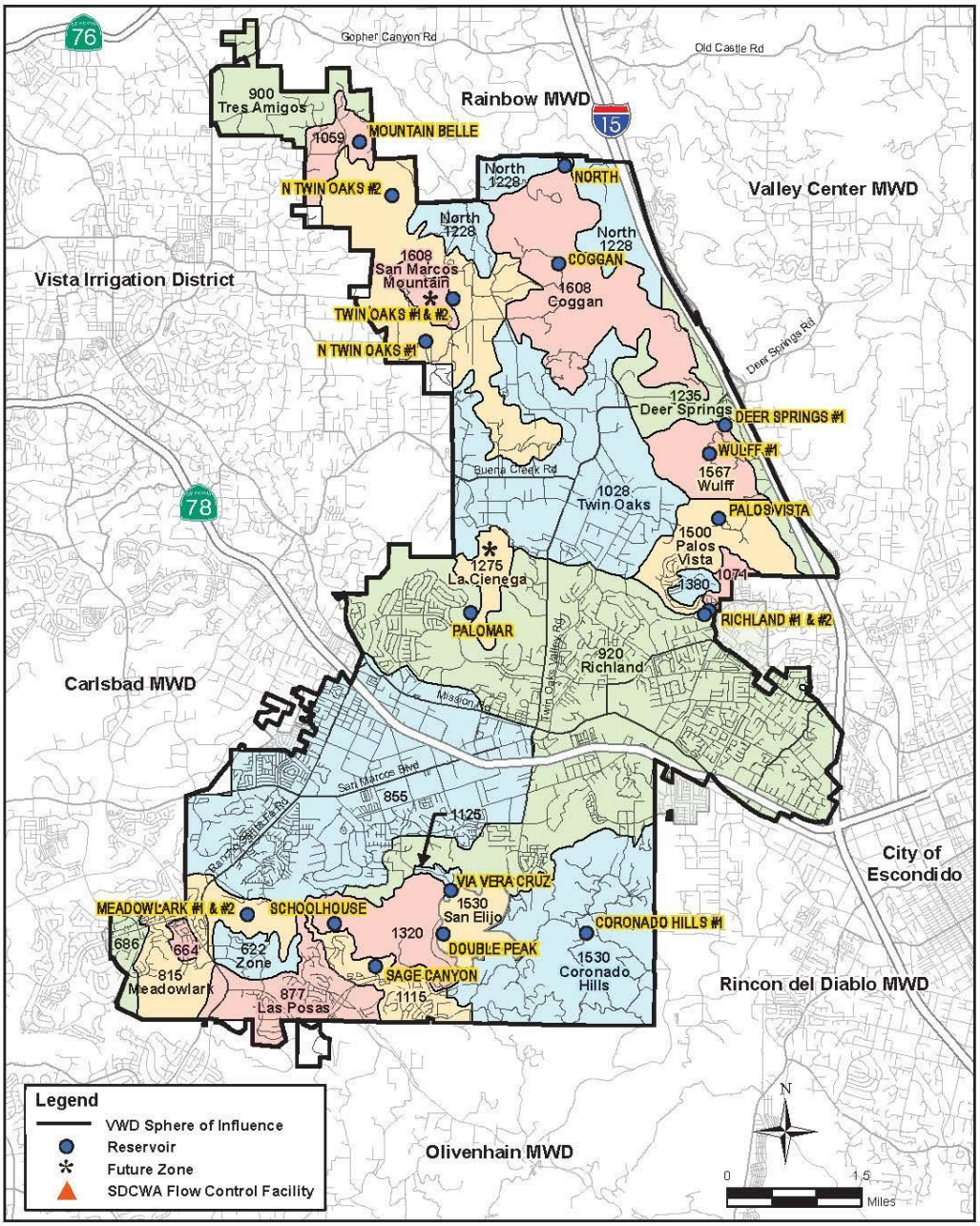
VWD maintains over 323 miles of water pipelines ranging in size from 4-inches to 48- inches in diameter. In general, the pipelines are predominantly asbestos cement pipe (ACP) and ductile iron pipe (DIP), and the majority of VWD's system has been installed since the 1960s and thus should have many years of remaining functionality based on the expected useful life of the pipe materials.

VWD operates 9 pump stations and 20 potable water storage reservoirs ranging in size from 100,000 gallons to 40 million gallons. VWD's total operational storage capacity is 121.6 million gallons. VWD operates and maintains 26 pressure zones to serve customers with appropriate system pressures. The varied topography of VWD dictates a wide range of pressure zones ranging from a 622-foot hydraulic grade to a 1608-foot hydraulic grade. These pressure zones are supplied from the SDCWA connections through a network of pump stations, reservoirs, and pressure reducing stations. Figure 13-2 shows the District's major water facilities.

13.3 Operating Rules and Regulations

No operating rules for delivery of water to retail customers exist at this time.

Figure 13-2 Vallecitos Water Facilities



EXISTING WATER SYSTEM

13.4 Water Delivery Measurements

Metering of all water use and billing by volume has long been the standard practice at VWD. The District receives water from the SDCWA through five potable water connections (turnouts) to the SDCWA aqueduct system. The District also takes flows at the VAL 7 connection for delivery to the CMWD and the OMWD. All sources of supply are metered.

As directed by the CUWCC BMP, all new and existing water service connections are metered. For large parcels and commercial developments, separate, dedicated irrigation meters are placed where needed. District water delivery points to customers are metered using positive displacement meters (95+ % accuracy) and are actively monitored by the District staff.

13.5 Water Rate Schedules and Billing

Customers are billed based on monthly reads and according to "Tier Ranges" adopted by VWD in June of 2009. The "Tier Ranges" are based on meter size to promote conservation by charging a higher rate for each incremental use of water. The table below provides the rates, including those for agricultural customers.

Table 13-1 VWD Water Rates

Non-Drought Tier Structure in Units:				
	Tier 1	Tier 2	Tier 3	Tier 4
Multi-Family per living unit *	1 - 5	limit=6 per living unit	limit=11 per unit	limit=12 per unit
5/8" and 3/4" meters	1 - 5	6 - 17	18 - 36	37 and up
1" meters	1 - 5	6 - 60	61 - 214	215 and up
1 1/2" meters	1 - 5	6 - 157	158 - 627	628 and up
2" meters	1 - 5	6 - 242	243 - 806	807 and up
Certified AG less than 3"	1 - 5	6 - 303	304 - 1,349	3,971 & up
3" and larger meters	1 - 5	6 - 1,133	1,134-3,970	3,971 up
Temporary construction meters				1 and up

* Multi-Family with 3 livng units or less are billed by the meter size tier bounds.

Agricultural Rate Structure per Unit:				
	Tier 1	Tier 2	Tier 3	Tier 4
Agricultural Non-Drought Rate: Certified Non-participating AO & CO category				
VWD	-	$ 1.04	$ 1.04	$ 1.04
MWD/CWA	2.62	2.62	2.62	2.62
Total	$ 2.62	$ 3.66	$ 3.66	$ 3.66
Agricultural Rate: TSA WR AS & CS category				
VWD	$ -	$ 1.04	$ 1.04	$ 1.04
MWD/CWA	1.89	1.89	1.89	1.89
Total	$ 1.89	$ 2.93	$ 2.93	$ 2.93

The first 26 units for combined agricultural / domestic accounts are charged at standard rates. All units are considered when calculating tier usage.

Non-Drought Rate Structure per Unit Effective January 1,2015 Ord 183				
Standard Commodity Rate:	Tier 1	Tier 2	Tier 3	Tier 4
VWD	$ -	$ 1.04	$ 2.25	$ 4.33
MWD/CWA	2.62	2.62	2.62	2.62
Total	$ 2.62	$ 3.66	$ 4.87	$ 6.95

[Monthly Ready-to-Serve Ord. 183 [Effective July 1,2015			
Meter Size	*VWD*	*MWD/CWA*	*Total Fixed*
5/8"	$ 18.42	$ 13.00	$ 31.42
3/4"	22.39	14.13	36.52
1"	31.95	23.34	55.29
1 1/2"	60.15	50.44	110.59
2"	95.87	82.24	178.11
3"	204.48	151.74	356.22
4"	319.50	233.44	552.94
6"	639.00	466.88	1,105.88
10"	1,469.70	1,079.66	2,549.36
Multiple units	11.19	7.07	18.26

Pumping Charges Effective July 1,2015 Ord. 185		
Tank -- HGL	*Zone*	*Rate per Unit*
North Twin Oaks -- 1330	Zone 01	$ 0.50
Deer Springs -- 1235	Zone 02	0.20
Coggan -- 1608	Zone 03	0.15
Coronado Hills -- 1530	Zone 04	0.06
Wulff -- 1549	Zone 05	0.58
Palos Vista -- 1500	Zone 06	0.25
San Elijo -- 1115	Zone 07	0.01
Double Peaks -- 1530	Zone 08	0.18
Meadowlark -- 815	Zone 09	0.15
High Point -- 1608	Zone 10	0.42

[Monthly Sewer Service Charge Ord. 184 [Effective July 1,2015	
Single Family Residential	$ 38.99
Residential Multiple-Unit	35.09
Mobile Home	31.19
Non residential flow (per 100 cu ft)	4.96
Non residential minimum charge:	
Comm/Industrial per employee	$ 3.51
Restaurant per seat	2.34
Hotel/Motel/Conv per living unit	19.50
Laundromat per machine	32.44
Schools per student	0.78
Church/Theater per seat	0.31
Minimum	24.56

Late Fees, Lock Fees, Unlock Fees, and Misc. Fees Effective October 3, 2013 Ord. 186	
10% Late Fee applies to unpaid balance 21 days from bill date.	
Notice of impending lock - 30 days from bill date	$ 25.00
Reconnection charge (lock and unlock)	$ 150.00
Additional fee: After business hours unlock	$ 75.00
Account activation Fee	$ 10.00
Account Deposit	$ 150.00

Fire Service Line Effective October 3, 2013 Ord. 183	
Per service diameter inch size per month	$ 5.87

Temp. Construction Meter Effective October 3, 2013	
Per month Ord. 183	$ 204.48
Deposit required for construction meters and refunded, less an outstanding accrued charges when returned in good working order.	

Backflow Administration Effective October 3, 2013 Ord. 186	
Per month for services requiring backflow prevention	$ 2.50

13.6 Water Shortage Contingency Planning and Allocation Policies

The VWD adheres to regulatory standards requiring that urban water agencies conduct a water shortage contingency analysis as a part of their 2010 Urban Water Management Plans (UWMPs). As an agency that is 100 percent reliant on water supplied by the SDCWA, the VWD Water Shortage Contingency Planning is based on the SDCWA's analysis and addresses supply shortages due to catastrophe, drought, or other situations.

In March 2008, the SDCWA's Board approved for release a Model Drought Response Conservation Program Ordinance (Model Drought Ordinance) for use by VWD and other member agencies in updating their existing ordinances. The Model Drought Ordinance was developed with input from the member agencies to provide regional consistency during periods of shortages. The Department of Water Resources' 2008 Updated Urban Drought Guidebook was also utilized as a reference document for preparation of the Model Drought Ordinance. It identifies four drought response levels that contain water-use restrictions to help achieve demand reduction during temporary shortages. The restrictions become more stringent at each successive level to obtain necessary savings and delay economic impact until higher levels. The Model Drought Ordinance served as a model to VWD in updating its Drought Response Conservation Program (Ordinance No. 162).

Penalties for Excessive Water Use

VWD's Drought Response Conservation Program (Ordinance No. 162) includes a section indicating fines and penalties that may be levied for water waste violations. A copy of VWD Ordinance No. 162 is included in Appendix E. These penalties include:

- $100 for a first violation.
- $200 for a second violation of any provision of the ordinance within one year of the prior violation.
- $500 for each additional violation of this ordinance within one year of the prior violation.
- Violation of a provision of this ordinance is subject to enforcement through installation of a flow-restricting device in the meter.

Revenue & Expenditure Impacts

Although VWD maintains financial reserves, it is possible that additional costs associated with demand reduction could negatively affect VWD's short-term financial situation. Approximately 80 percent of VWD's fixed costs are shared between all water customers via a monthly ready-to-serve charge. This

charge, which varies depending on meter size, recovers water system infrastructure and equipment repairs and maintenance, meter reading, billing, engineering, safety and administration. VWD may compensate for increased costs or reduced water sales by adjusting water rates in succeeding years. Water conservation is a well-established practice in ensuring that there will be a reliable water supply in the future for the increasing population and commerce within VWD's service area. However, conservation occasionally suffers from the perception that it reduces revenues. Over the long-term, conservation measures actually serve to defer or limit rate increases by reducing VWD's need for other, more expensive supplies and increased infrastructure. Conservation programs also reduce imported water demand that in turn allows the SDCWA to purchase less of MWD's more expensive Tier 2 water. Tier 2 water is more expensive since it represents MWD's cost to develop additional supplies.

13.7 Water Use

Water use in VWD is divided into seven categories: single-family residential, multi-family residential, commercial, industrial, institutional and governmental, landscape and agriculture. The predominant water use in VWD is Municipal & Industrial. There are currently 1,656 acres of agricultural production representing 155 commercial agricultural accounts in the VWD service area.

13.7.1 Agricultural Water Use

Table 13-2 Agricultural Water Use (AF)

Agricultural Water Use (AF)													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	Total
FY 2013	131	150	185	182	157	113	56	42	71	75	105	134	1,399
FY 2014	144	152	156	164	127	110	77	113	96	70	109	148	1,466
FY 2015	142	144	154	161	137	106	37	50	79	74	112	69	1,262

13.7.2 Municipal & Industrial Water Use

Table 13-4 Municipal & Industrial Water Use (AF)

Municipal & Industrial Water Use (AF)													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	Total
FY 2013	1,506	1,570	1,669	1,543	1,295	1,068	721	767	822	976	1,208	1,442	14,588
FY 2014	1,521	1,572	1,648	1,458	1,316	998	972	981	936	984	1,226	1,503	15,115
FY 2015	1,506	1,582	1,513	1,429	1,344	1,016	737	758	837	1,012	1,084	917	13,735

13.7.3 Environmental, Recreational, Groundwater Recharge, Transfers and Exchanges, And Other Uses

Table 13 -5 Other Water Uses

Environmental, Recreational, Groundwater Recharge, Transfers and Exchanges, And Other uses													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	**Total**
FY 2013	0	0	0	0	0	0	0	0	0	0	0	0	0
FY 2014	0	0	0	0	0	0	0	0	0	0	0	0	0
FY 2015*	393	390	515	495	548	391	182	505	332	346	400	467	4,964

*Representative year of interagency exchanges

13.8 Water Supplies

13.8.1 Recycled Water

VWD has been a leader in San Diego County in Water Recycling since the state-wide drought of the late 1980s. VWD started as the provider of recycled water to the CMWD for one of the first large scale recycling projects in the region. Although VWD currently produces up to 5 MGD of recycled water at the Meadowlark Water Reclamation Facility (MRF) and maintains the 54 million-gallon (MG) Mahr Reservoir, VWD does not maintain a recycled water service area within its sphere of influence. All of the recycled water produced at MRF is sold to the CMWD and the OMWD. CMWD originally

contracted for up to 2.0 MGD during peak summer months, and in 2003, increased that amount to 3.0 MGD. As part of that agreement, VWD also provides CMWD with 32 MG of recycled water storage in the Mahr Reservoir. Also in 2003, the OMWD contracted for up to 1.5 MGD of recycled water and 16 MG of recycled water storage in the Mahr Reservoir. Excess recycled water produced at MRF is disposed of through a failsafe pipeline that connects to the ocean outfall at the Encina Water Pollution Control Facility.

13.8.2 Seawater Desalination

VWD has been a longtime proponent and supporter of seawater desalination and actively advocated for the Carlsbad Desalination Project through the multi-year permitting process. In 2015 VWD signed a water purchase agreement with SDCWA to obtain 3,500 AFY of treated water from the Carlsbad Seawater Desalination Facility, and may be interested in increasing this amount if possible. At 3,500 AFY, desalinated water would make up approximately 16 percent of VWD's supply at current demand levels.

VWD will receive delivery of this supply at a new direct connection to the desalinated water conveyance pipeline adjacent to its existing VAL 9 connection. Direct delivery of desalinated water at this connection will improve water quality in the District's distribution system by the introduction of much lower salinity water than blended imported water supplied by SDCWA. The purchase price for the desalinated water is set at the purchase price SDCWA pays Poseidon plus additional administrative and capital recovery charges incurred by SDCWA in implementation of the Project.

As a new local water supply independent of the imported water delivery system, seawater desalination would provide a highly reliable addition to VWD's supply portfolio. This supply would be available during droughts, during an emergency event that may lead to the failure of the SDCWA aqueduct pipelines, or during other prolonged reductions in imported water deliveries. This would increase VWD's supply reliability during drought and emergency conditions. The District's agricultural customers would benefit from the higher reliability an improved water quality of these supplies.

13.8.3 Groundwater

Historically, local groundwater supplies have not been used by VWD due to questionable quantity and relatively poor quality. In 1996, a draft groundwater feasibility analysis was performed for VWD to determine the quantity and quality of groundwater potentially available for use as a local groundwater

supply source. The draft groundwater feasibility analysis determined that the volume of water stored in the fractured bedrock aquifer beneath the VWD service area likely ranges between 97,000 and 389,000 acre-feet. The estimated volume of water stored in the combined alluvium and residuum units likely ranges between 9,700 and 38,600 acre-feet. Groundwater yields for wells would likely be small, averaging about 114 gallons per minute.

Groundwater quality in the aquifer is characterized by moderately high levels of total dissolved solids and occurrences of relatively high concentrations of bicarbonate, sodium, chloride and nitrate. The groundwater would require treatment prior to introduction into VWD's potable water distribution system. The draft groundwater feasibility analysis concluded that the storage capacity of the alluvium and residuum is too small to be considered as a long-term source, although the fractured bedrock aquifer may be considered further as a possible source. However, the expected yields from wells in the VWD service area, combined with the water quality issues that would need to be resolved, would not be likely to produce groundwater at an economically viable rate even in the short-term. Therefore, groundwater is not a planned source of water available to VWD.

13.8.4 Annual Water Supply

Table 13-5 Annual Water Supply (AF)

Annual Water Supply (AF)					
	Imported Water	Local Surface	Recycled Water	Local Groundwater	Total
FY 2013	17,429	0	0	0	17,429
FY 2014	17,900	0	0	0	17,900
FY 2015	15,300	0	0	0	15,300

13.9 Water Balance and Reliability

Reliability is discussed in detail in Part I of this RAWMP. VWD's focus is on continuing to diversify its supply as described previously and to maintain an aggressive approach to water conservation and

water use efficiency for all its customers including commercial agricultural users. The Table on the following page provides the water balance for VWD for the Fiscal Years 2013-2015.

Table 13-6 Annual Water Supply Balance (AF)

Annual Water Supply Balance (AF)				
	Water Supplies	Water Use	Drain Water Leaving Service Area	Water Balance
FY 2013	17,429	15,987	0	1,442
FY 2014	17,900	16,581	0	1,319
FY 2015	15,300	14,997	0	303

13.10 Water Quality (See Part 1 Chapter 10)

13.11 Water Use Efficiency and EWMPs

The District participates in the Regional WUE Program described in Part 1., Section 12. Please see the tables for details of the regional commitment to implementing EWMPs.

Specific information on VMD's projects to address Conditional EWMP 2 is detailed in 13.8.1. Recycled Water above.

Additionally, 1.3.5. Water Rate Schedules and Billing, discusses commitment to implement Conditional EWMP 4.

Sources

Vallecitos Water Distirct.2011. *2010 Urban Water Management Plan*

Vallecitos Water Distirct.2008. *Water, Wastewater and Recycled Water Master Plan*

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14. Yuima Municipal Water District

Agency Chapter

Draft San Diego Regional Agricultural Water Management Plan: Part II

14 Yuima Municipal Water District

14.1 Size, History and Location of Service Area

The Yuima Municipal Water District (Yuima/District) is located in the Pauma Valley, a geographic valley, and an unincorporated community between Valley Center and Palomar Mountain in northeastern San Diego County. The District service area is heavily agricultural and comprises citrus and avocado groves. It is also adjacent to several Indian Reservations. California Route 76 crosses the length of the Pauma Valley and through the community of Pauma Valley. The valley is at the western base of the Palomar Mountains.

The District's boundaries are adjoined by Mootamai Municipal Water District (401.8 acres), Pauma Municipal Water District (4,323 acres), and Valley Center Municipal Water District to the West. Mootamai Municipal Water District is a non-operating water district, which provides fire protection services only. Pauma Valley Water Company operates a Mutual Water Company within portions of Mootamai boundaries.

Pauma Valley is predominately an agricultural area. No major housing developments are planned, and if a project were initiated today, it would take at least five years to obtain the appropriate zoning changes and complete construction. It is estimated that population growth will not exceed 0.5% per year over the next five years. Considering that only about 2.5% of total District demand is residential, the increase in population growth is expected to be negligible with respect to overall water demand during the next few years and the character of Yuima's service area will remain agricultural.

The term "Pauma" describes this area's chief characteristic, the San Luis Rey River, which flows through the base of the valley. The name "Pauma" translates as "place where there is water. Agricultural activity in the area dates to 1844, when a Mexican Land Grant of three square leagues (13,310 acres) called Rancho Pauma was given by Governor Manuel Micheltorena to Jose Antonio Serrano. In 1892, much of the original Serrano ranch site was designated as part of the Pauma-Yuima Reservation, home to the Pauma-Yuima Band of Mission Indians, the historical name for the tribe generally known as the Pauma Band of Luiseno Indians. The Reservation today covers 6,000 acres. In the early-to-mid -1900's, new settlers arrived and transformed the valley into the rich agricultural area that it is today.

Agriculture was able to thrive in the valley because of the favorable groundwater conditions that existed in the Mount Palomar drainage basin. The sole source of water was the San Luis Rey River's Pauma Groundwater Basin. Following a period of drought extending back to 1949, coupled with increased agricultural water demands, the water table fell drastically and overdrafts of the underlying Pauma Groundwater Basin lowered groundwater levels as much as 85 feet, forcing the abandonment of some wells and giving rise to increased pumping costs.

The District was formed on January 19, 1963 under the Municipal Water District Act of 1911. Voters approved the sale of general obligation bonds in 1963 concurrently with the annexation of the District to both the San Diego County Water Authority (SDCWA) and the Metropolitan Water District of Southern California (MWD) in order to receive imported water. These bonds were paid off in 1989. One of the District's prime purposes is the importation of water to the area in order to augment groundwater supplies. The District takes its name from a creek tributary to the River, which means "Snow Water" in the Native American Language.

- Over the last 52 years, the District has grown to be a strong agricultural community. Today the District serves a population of approxmately1,336 through 334 service connections provided within approximately 21 square miles of northern San Diego County. Yuima encompasses 13,460 acres (21 square miles) and encompasses several mutual water companies:

- Rancho Pauma Mutual Water Company (P.V. Country Club) which has an area of approximately 1,105 acres.
- Rancho Estates Mutual Water Company (Adams Drive area) which has an area of 490 acres upon which 416 shares of stock are issued.
- Lazy H Mutual Water Company (Lazy H Drive area) which has an area of approximately 35.4 acres.
- Pauma Ridge Mutual Water Company (West of Adams Drive) which has an area of approximately 453.73 acres.
- Rincon Oaks Water Service (Water Mountain Ranch area) formed with CC&R's on deeds which has an area of approximately 294 acres.
- Three Party Water Company (Borden/Hegardt/Borden properties) formed with CC&R's which has an area of approximately 100 acres.

- The District also encompasses two community services districts:
    - Rincon Ranch Road Community Services District - road district.
    - Pauma Valley Community Services District - sewer and security services in vicinity of the Pauma Valley Country Club area.

The area is unique in many ways due to its varying elevations, private water companies and high rate of irrigation. Agricultural customers purchased 92% of the District's total water sales in fiscal year 2013-14 compared to the average of 97% of the District's water sales over the previous ten year period. As water is one of the largest production costs for farmers in San Diego County, rapidly increasing wholesale water rates have the potential to severely affect the profitability of agriculture. The impact of these increases on the District's customers has been mitigated to a significant extent by the District's aggressive efforts to develop new sources of lower cost local groundwater. The significant price increases for imported water along with the fluctuating decreases in water sales have made it difficult to forecast long-term sales demand.

Commitment to Water Conservation

Yuima has been a consistent supporter of the efforts of Mission Resource Conservation District (MRCD) to provide water management assistance to growers in its service area. MRCD has been under contract to the SDCWA to operate regional agricultural water management services since 1990 as part of the SDWCA's AWMP. The goal of the program is to provide technical assistance to growers to enable them to irrigate crops as efficiently as possible in order to obtain the maximum economic benefit from limited water resources. The WUE programs have included direct assistance to retail water users, implementation of University of California Cooperative Extension (UCCE) BMPs, funding information assistance, and water purveyor efficiency practices. For more information on the regional WUE programs Yuima supports, see Part 1.

14.2 Water Management Facilities

Yuima is served off the First Aqueduct, (Pipeline No. 1) near Couser Canyon Road in Valley Center just north of the Lilac Tunnel and receives treated water from the MWD Skinner Plant. Water operators communicate with SDCWA and have the ability to order deliveries three times per day based on estimated system demands in excess of local water delivery ability. Because these connections can access only treated water supplies from MWD Yuima's total access to imported water is affected by the capacity limitations of Skinner Treatment Plant, which has operated recently at or near its design capacity. The imported water is a blend of Colorado River water and State Water Project water.

The District operates 42.18 miles of water main, 33 production wells, 10 potable water tanks, and 2 agriculture-only reservoirs. From the SDCWA's connection to Yuima, water is delivered through a 20" steel pipeline to the 0.5 mg Forebay Tank at the District's Forebay Pumping plant. The current capacity of the SDCWA connection is 15.6 CDS. A 20" steel pipeline conveys this water to the East and West Lateral water main, located in the San Luis Rey Riverbed near Cole Grade Road.

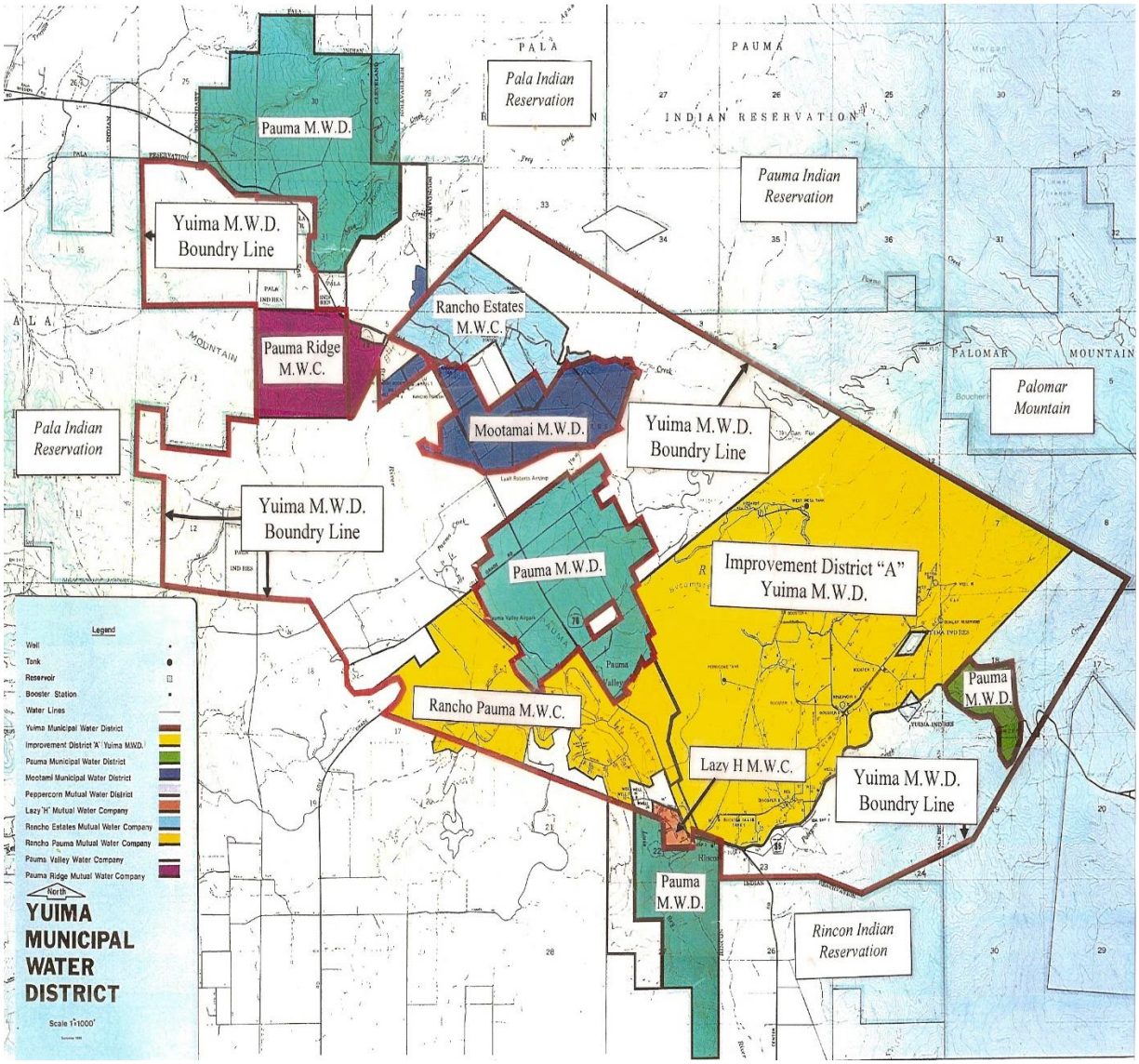
The West Lateral water main terminates in a 12" steel pipeline at Highway 76 on the West side of the valley near Adams Drive. The East Lateral water main terminates as a 14-inch steel pipeline along Highway 76 West of the Valley Center Road intersection.

Based upon long-term demand forecasts for agricultural and urban development within the current boundaries of the District, coupled with a number of annexation requests expected to be driven by local water shortages affecting both agriculture and new housing in adjacent under-served areas, the District has determined that a new transmission pipeline will eventually be required to bring additional imported water into the District from the First San Diego Aqueduct Pipeline No. 1.

Two potential routes are under consideration. The first ("Southern Route") would parallel the District's existing 20" pipeline and would be built at the sole expense of the District. The second ("Northern Route") could be a joint venture between the San Luis Rey Indian Water Authority and the District, and would connect to the MWD portion of the aqueduct at a point just north of the jurisdictional boundary with the SDCWA.

No definitive time-table for the construction of either a Southern or Northern Route pipeline has yet been established. That decision will largely hinge on the availability of low-cost financing, realization of additional demand, and a timely re-assessment of long-term prospect for the availability of imported water from the State Water Project and the Colorado River system.

Figure 14-1 Yuima Service Area Map



14.3 Operating Rules and Regulations

No operating rules for delivery of water to retail customers exist at this time.

14.4 Water Delivery Measurements

Metering of all water use and billing by volume has long been the standard practice at the District. All sources of supply are metered. The District meters its well production from local groundwater sources and its connection to the SDCWA aqueduct system is also metered. All new and existing water service connections are metered. Separate, dedicated irrigation meters are placed where needed. The District's water delivery points to customers are metered using a variety of meters including positive displacement, turbine, ultrasonic, and electromagnetic (95+ % accuracy) and are actively monitored by the District Staff.

14.5 Water Rate Schedules and Billing

The Yuima General District water rates are calculated based on the District's melded supply cost plus Yuima's local component. The TSAWR rate differential for certified TSAWR customers include a credit of $175.56 per acre foot. Table 14-1 on the following page provides a schedule of Yuima's water rates.

Table 14-1 Yuima Water Rates

YUIMA MUNICIPAL WATER DISTRICT
SCHEDULE OF WATER RATES & CHARGES

Water Rate		**per ac ft.**
Agricultural Water Rate (TSAWR)		$ 1,225.10
Commercial Ag. (non-TSAWR)		$ 1,477.69
M&I		$ 1,400.66
Pump Zone charge		$ 95.85
Monthly Meter Charge	**Meter Size**	**Mo. Charge**
	5/8"	35.21
	1"	56.36
	1 1/2	105.66
	2"	183.15
	3"	338.11
	4"	577.61
	5"	817.10

14.6 Water Shortage Contingency Planning and Allocation Policies

Ordinance No. 100 – 08 establishes regulations to be implemented during times of declared water shortages, or declared water shortage emergencies. It establishes four levels of drought response actions to be implemented in times of shortage, with increasing restrictions on water use in response to worsening drought conditions and decreasing available supplies.

The District may establish a water allocation for property served by the District. Following the water allocations established by the District, any person that uses water in excess of the allocation shall be subject to a penalty established by the Board of Directors in the Rules and Regulations of the District Governing Water Service for each billing unit of water in excess of the allocation. The penalty for excess water usage shall be cumulative to any other remedy or penalty that may be imposed for violation of this ordinance

Enforcement and Penalties

Administrative fines may be levied for each violation of a provision of this ordinance as follows:

- One hundred dollars for a first violation.
- Two hundred dollars for a second violation of any provision of this ordinance within one year.
- Five hundred dollars for each additional violation of this ordinance within one year.

Violation of a provision of this ordinance is subject to enforcement through installation of a flow-restricting device in the meter

Revenue & Expenditure Impacts

The District adopts an operating budget annually. The budget is developed based on certain assumptions and projected costs. These assumptions are gathered from the District's historical and current data and trends. Sixty-three percent of the budget is earmarked for the purchase of water and the energy required to pump water through the distribution system. The District sales on average 97% of its water to its agricultural customers. Water sales to a large agricultural base is difficult to project due to fluctuations in rainfall and weather conditions. Currently the District collections 29% of its fixed costs through monthly meter charges. During periods of low water sales due to weather conditions the District relies on its rate stabilization fund to balance its budget.

14.7 Water Use

14.7.1 Agricultural Water Use

Table 14-2 Agricultural Water Use (AF)

Agricultural Water Use (AF)													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	Total
FY 2013	454	520	408	419	272	85	104	76	122	304	367	389	3,519
FY 2014	623	274	672	425	302	333	354	237	167	358	547	613	4,905
FY 2015	658	584	779	602	380	76	144	259	271	430	149	516	4,847

14.7.2 Municipal & Industrial Water Use

Table 14-3 Municipal & Industrial Water Use (AF)

Municipal & Industrial Water Use (AF)													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	Total
FY 2013	6	7	6	7	4	3	2	2	3	5	5	5	54
FY 2014	6	5	8	6	3	4	4	3	3	3	4	12	60
FY 2015	6	4	5	4	3	2	3	3	3	3	2	4	42

14.7.3 Environmental, Recreational, Groundwater Recharge, Transfers and Exchanges, And Other Uses

Table 14-4 Other Water Uses

Environmental, Recreational, Groundwater Recharge, Transfers and Exchanges, And Other uses													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	**Total**
FY 2013	0	0	0	0	0	0	0	0	0	0	0	0	0
FY 2014	0	0	0	0	0	0	0	0	0	0	0	0	0
FY 2015	0	0	0	0	0	0	0	0	0	0	0	0	0

14.8 Water Supplies

14.8.1 Groundwater

Groundwater is the only local resource available to the District. Groundwater is produced chiefly from the flood plain deposits of the San Luis Rey River. The principal water bearing deposits within the basin are Quaternary and younger alluvium. The most productive materials are the sands and gravels. The basin is recharged by imported irrigation water applied on upland areas and by storm-flow in the San Luis Rey River and its tributaries. Movement of groundwater in the alluvial aquifer is westward towards the Pacific Ocean. Well yields can exceed 500 gpm but generally average in the range of 100 to 150 gpm. Water quality in the upper San Luis Rey basin where the District is located is good, with total dissolved solids (TDS) ranging around 500 mg/l.

Heavy pumping by local growers resulted in the groundwater table dropping as much as 13 feet in the San Luis Rey River Valley during the period 1940-1950. Water levels in the basin continued to decline drastically in the 1950's and 1960's due to ground-water development and over pumping.

Currently in the Pauma Basin static groundwater levels are 115' below the land surface.

As a result of that prolonged drought, in 1953 a stipulated judgment in the case of Strub et al. vs. Palomar Mutual Water Company limited Palomar Mutual to withdrawal of no more than 1,350 acre-feet per year from wells in the Pauma Groundwater Basin (below 1,000 ft. above mean sea level and upstream of Cole Grade Road) for use on the lands it served. In 1968, the Palomar Mutual Water

Company dissolved and became what it now known as Improvement District A and Yuima became successor in interest to Palomar Mutual, and continues to operate the former Palomar Mutual system and properties (now known as Improvement District A or IDA) as an independent water system (California State System No. 3700938). Yuima is responsible for administering IDA's compliance with Strub et al.

There are 33 wells operated by the district and dozens more operated by the Mutual Water Companies within its service area. All these wells produce on average 7088AF annually ranging from 3758AF to 9583AF over the last five years. Water rights continue to be a factor in groundwater production in the service area, and the District will continue to have the need to supplement local water with imported water from SDCWA.

14.8.2 Annual Water Supply

Table 14-5 Annual Water Supply (AF)

Annual Water Supply (AF)					
	Imported Water	Local Surface	Recycled Water	Local Groundwater	Total
FY 2013	2,149	0	0	1,398	3,547
FY 2014	4,596	0	0	448	5,044
FY 2015	4,468	0	0	424	4,892

14.9 Water Balance and Reliability

Reliability is discussed in detail in Part I of this RAWMP. The Table Below provides the water balance for Yuima for the Fiscal Years 2013-2015.

Table 14-6 Annual Water Supply Balance (AF)

Annual Water Supply Balance (AF)				
	Water Supplies	Water Use	Drain Water Leaving Service Area	Water Balance
FY 2013	3,547	3,574	0	(27)
FY 2014	5,044	4,965	0	79
FY 2015	4,892	4,889	0	3

14.10 Water Quality (See Part 1 Chapter 10)

14.11 Water Use Efficiency and EWMPs

Yuima participates in the Regional WUE Program described in Part 1., Section 12. Please see that table for details of the regional commitment to implementing EWMPs.

Additionally, specific information above in 5. Water Rate Schedules and Billing, discusses commitment to implement Conditional EWMP 4. For agricultural users, Yuima has implemented both TSAWR and commercial agricultural (non-TSAWR) uniform rates. Additionally, a pumping zone charge is in place.

Sources

Yuima Municipal Water District. 2015. ***http://www.yuimamwd.com/***

San Diego County. 2010. *Water, General Plan Update Appendix D Groundwater Study*

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