EXECUTIVE SUMMARY

ES.1 INTRODUCTION

The Casitas Municipal Water District (Casitas MWD) is pleased to release this combined Urban Water Management Plan/Agricultural Water Management Plan (UWMP/AWMP). The Casitas MWD is required to prepare the UWMP as per requirements by the California Department of Water Resources. The Casitas MWD does not meet the requirements of an agricultural water supplier, but is voluntarily including elements of the AWMP in this document. The UWMP elements comply with requirements in California Water Code (Section 10610-10656). The AWMP elements comply with requirements of SB X7-7 Water Conservation Act (California Water Code, Section I, Part 2.55, Division 6, Section 10608.48-10608.64), Agricultural Water Management Planning Act of 1986 (California Water Code, Section I, Part 2.8, Division 6, Section 10800-10853), Agriculture Water Measurement Regulation (California Code of Regulations, Title 23, Section 597), and Governor Brown's Executive Order B-29-15. Casitas MWD chose to prepare a combined UWMP/AWMP since there are many similar requirements for each document.

This combined UWMP/AWMP meets the requirements for the UWMP. Urban water suppliers serving more than 3,000 customers or providing more than 3,000 AF of water annually must prepare an UWMP to promote water demand management and efficient water use. This UWMP provides planning information on the reliability and future availability of the Casitas MWD water supply. This UWMP is a public statement of the goals, objectives, and strategies needed to maintain a reliable water supply for the Casitas MWD's customers. It is important to understand that this UWMP should be viewed as a long-term, general planning document, rather than as policy for supply and demand management.

Primary objectives of this UWMP include the following:

- Quantify anticipated water demands over a 20-year period
- Identify and quantify water resources over a 20-year period
- Summarize reliability of water resources for existing and future demands, in normal, dry, and multiple dry years, over a 20-year period
- Summarize water conservation and efficient water use programs.

This UWMP provides information on present and future water supplies and demands, and provides an assessment of Casitas MWD's water resource needs. It serves as a long-range planning document for Casitas MWD's water supply. Droughts, limited supplies, environmental demands - all of these factors must be taken into consideration to provide a safe and reliable water supply for western Ventura County. The intention of the UWMP is to demonstrate Casitas MWD's water supply reliability over the next 25 years in 5-year increments. The plan addresses Casitas MWD's water system and includes a description of water supply sources, magnitudes of historical and projected water use, and a comparison of water supply to water demands during a normal water-year, single-

dry water-year, and multiple dry water-years. It also describes Casitas MWD's efforts to implement water conservation and water efficient uses for urban and agricultural water supplies. The combined UWMP/AWMP is Casitas MWD's commitment to a long-term plan to ensure water reliability into the future.

The California Agricultural Water Management Planning Act (Act) requires agricultural water suppliers to develop and adopt an AWMP (California Water Code, Section 10800-10853). The Casitas MWD does not meet the requirements of an agricultural water supplier, but is voluntarily including elements of the AWMP in this document. The AWMP is regarded as a guideline subject to revision, with each update incorporating new strategies and requirements in response to new legislation and other changing conditions. Similar to the UWMP requirements, the AWMP includes quantification of water supplies and demands, reliability, drought management, and summary of efficient water management practices (similar to demand management measures and best management practices).

The Casitas MWD notified applicable local agencies and organizations regarding preparation of the UWMP/AWMP and planned public meeting dates and times Casitas MWD encourages representatives from those organizations and the public to attend Casitas MWD's public meetings. Casitas MWD invited comments from organizations and the public as well. Casitas MWD held a community workshop on May 18, 2016 to provide a summary of the UWMP/AWMP and receive public comments and questions. Casitas MWD held a public hearing on June 22, 2016 in Casitas MWD's Board Room. The Board of Directors adopted the UWMP/AWMP following the public hearing. The UWMP/AWMP was than submitted to the California Department of Water Resources.

ES.2 SYSTEM DESCRIPTION

Casitas MWD lies in southern California's semi-arid coastal plain. Specifically, the Casitas MWD is located in western Ventura County (see **Figure 2-1**) where there is a history of drought, water supply shortages, and corresponding efforts to develop local water supplies. The Casitas MWD service area includes approximately 137.5 square miles. The area has and continues to be solely dependent upon local water supplies. Local rainfall contributes to the Ventura River Watershed by replenishing Lake Casitas, local groundwater sources, and the Ventura River. **Figure 2-2** indicates the service area for Casitas MWD.

The climate within Casitas MWD' service area is Mediterranean, which is characterized by cool, wet winters and warm, dry summers. However, climate does vary significantly based on distance from the Pacific Ocean, elevation, area drainage, and slope aspect. Winter low temperatures can fall below freezing in inland areas and rise above 100 degrees Fahrenheit in the summer, affecting higher water demand from customers. Temperatures along the coast are moderated by the ocean and seldom reach the inland extremes. Average monthly temperatures range from 35.9 F (January low) to 91.5 F (August high). Maximum recorded temperature is 119 F (June 16, 1917), while the minimum recorded temperature is 13 F (January 6, 1913). Precipitation, as reported at Ojai, averages 21.2 inches annually. Nearly 96 percent of annual local rainfall occurs from October to April. Maximum recorded

annual precipitation is 47.30 inches (1978), while the minimum recorded annual precipitation is 4.35 inches (1947). Maximum recorded daily precipitation is 9.05 inches (February 24, 1913).

The western portion of Ventura County, California, which includes unincorporated portions of Ventura County, the City of Ojai, and the City San Buenaventura, struggled with water shortage issues in the early to middle 1900's. At the beginning of the 1900's, western Ventura County began to experience growth in agriculture and population. The primary growth areas, the City of Ventura and Ojai Valley, relied on either diverting river flows or groundwater pumping to satisfy water demands. By the 1930's, the local agriculture and cities began to experience drought conditions and question the reliability of their water supplies. The first half of the twentieth century experienced several drought periods and caused western Ventura County to consider various options to increase local water supply reliability. In 1952, formation of the Ventura River Municipal Water District (VRMWD, which later was renamed Casitas Municipal Water District, in 1971) was quick to follow with a request of the United States Department of the Interior, Bureau of Reclamation (USBR) to make a water requirement and water supply study for western Ventura County. By the fall of 1953, USBR investigators completed reconnaissance-level studies to determine the approximate long-range water requirements, comparison of the merits of available dam sites, and determination of the river diversion and storage capacity required to meet the long-term water needs of the area. Construction of the Project was completed in 1959 and Lake Casitas filled for the first time in 1978. The Project serves as a primary supply for many direct customers and as a supplemental, or backup supply, for groundwater users during times of drought.

The main source of water supply for Casitas MWD is Lake Casitas, which has a full capacity of 254,000 acre-feet of water. Casitas MWD also maintains and operates one (1) well with a capacity of approximately 300 acre-feet per year. Casitas MWD's distribution system includes approximately ninety-seven (97) miles of main and distribution pipelines, nine (9) pumping plants, four (4) chlorination stations, and thirty million (30,000,000) gallons of treated water stored in fourteen (14) steel reservoirs. Casitas MWD meters all of its direct service customers, including meters on all connections to other water agencies. In 1995, Casitas MWD added a sixty-five million (65,000,000) gallon per day pressure filtration treatment plant. Casitas MWD further treats filtered water with a chloramination process and additives for corrosion control.

Population growth in the district paralleled population growth in southern California up until 1960. Population within the Casitas MWD's service area in 1960 was approximately 45,000. Casitas MWD serves directly and indirectly a population of approximately 70,847 (see **Table ES-1**). Casitas MWD is the primary and or backup water supply for nine water purveyors within the Casitas MWD and for some individual agricultural customers with groundwater wells. Casitas MWD has nearly 3,200 customers in total with 2,925 direct urban customers, 249 agricultural meters, and 23 resale meters. The current population forecast for the Casitas MWD's service area reflects a very low growth period through the year 2040. Population within Casitas MWD service area is anticipated to reach 73,137 in the year 2020 and approximately 85,431 in 2040 (see **Table ES-1**). The Casitas MWD is not anticipating a significant change in population growth within its service area boundaries within the next twenty-five years. The low population growth is likely to limit overall customer water demand

in the future because most of this growth is likely to occur in resale agencies service area, which will allow other agencies groundwater sources to supplement the increased demand.

TABLE ES-1
CASITAS MWD SERVICE AREA POPULATION

Population	2015	2020	2025	2030	2035	2040
CMWD Service Area (1,2)	70,847	73,137	75,725	78,312	82,914	85,431

Notes:
(1) CMWD, 2016.
(2) Population for 2035-2040 based on growth rate for 2030-2035; per CMWD staff, 2016.

Land use within the Casitas MWD service area includes agriculture, residential, and commercial properties. Land use within the CMWD service area is regulated by the City of Ojai and City of Ventura within their respective boundaries, and by the County of Ventura for the unincorporated area of the Casitas MWD. Agricultural customers within the Casitas MWD service area include approximately 5,372 acres of irrigated crops. Irrigated crops in 2014 include avocados, hay, lemons, oranges, strawberries, tangerines, and walnuts.

ES.3 SYSTEM WATER USE

Total annual water demand includes water delivered to the various Casitas MWD customer classifications, minor losses in the distribution system due to leaks, and flushing of the system for water quality maintenance. The phrase “water demand” and “water use” will be used interchangeably throughout this document. Casitas MWD water demand can vary dramatically from year to year. Casitas MWD water demand can range from 11,694 acre-feet in 1993 (wet water-year) to 24,416 acre-feet in 1989 (dry water-year). (CMWD, 2016) Water demand is closely tied to local precipitation. During wet years, there is a major reduction in water demand compared to dry years.

During dry water-years, resale and agricultural water demand for Casitas MWD water supply can increase dramatically when local groundwater sources become diminished or no longer available. During dry periods, resale and agricultural customers rely more on Casitas MWD’s surface water, and in some cases rely exclusively on water deliveries from Lake Casitas, until groundwater supplies are replenished by rainfall events. Depending on the severity and duration of the drought period, it could be anticipated that any one or more resale agencies and or agricultural customer will have limited groundwater supply and may rely on Casitas MWD for the balance of essential water supply needs.

Casitas MWD’s Lake Casitas reservoir is managed as a long term water supply with a 21-year safe yield of 20,840 acre-feet (current safe-yield) based on the historical 1944-1965 drought cycle under certain conditions as highlighted in the “Water Supply and Use Status Report” (CMWD, 2004). In 1989, Casitas MWD’s supply and demand studies indicated water demand was approaching the annual safe-yield and any significant increase above existing levels could ultimately lead to demand

out-stripping supplies. A continued water supply deficit could lead to future supply shortages during long-term drought conditions. In 1992, Casitas MWD' Water Efficiency and Allocation Program was adopted by the Casitas MWD's Board of Directors to encourage efficient use of water to reduce overall water demand and to ensure the safe annual yield of supply would not exceed the critical 21,920 acre-feet per year average (as it was determined at that time).

Table ES-2 summarizes the Casitas MWD water demands for recent fiscal years 2000, 2005, 2010, and 2015. **Table ES-2** indicates the 2000 demands were 19,389 AF (average water-year), including sales to other agencies of 7,186 AF (37%), agricultural sales of 9,115 AF (47%), and non-agricultural retail sales of 3,088 AF (16%). In comparison, **Table ES-2** indicates that Casitas MWD water demands for 2015 (dry water-year) were 16,747 AF, including sales to other agencies of 6,192 AF (37%), agricultural sales of 8,048 AF (48%), and non-agricultural retail sales of 2,507 AF (15%). By comparison of 2000 demands and 2015 demands, **Table ES-2** indicates that total demands decreased by nearly 14 percent, sales to other agencies decreased by 994 AF (14%), agricultural sales decreased by 1,067 AF (12%), and retail sales decreased by 581 AF (19%). Much of this decrease in water demand is the direct result of demand management measures implemented by the Casitas MWD and regional water agencies. In 2015, Casitas MWD total retail water demands were 10,554 AF, including agriculture sales (historically the category with highest water demand) of 8,048 AF (76%), and residential sales (including single-family and multiple-family accounts) of 1,512 AF (14%).

TABLE ES-2
PAST AND CURRENT POTABLE WATER USES 2000-2015

Category (1)	**2000**	**2005**	**2010**	**2015**
Sales to other agencies	7,186	7,118	6,482	6,192
Agricultural sales (2)	9,115	8,939	6,398	8,048
Retail sales (2)	3,088	2,821	2,427	2,507
Total	**19,389**	**18,877**	**15,307**	**16,747**

Notes:
(1) Source, CMWD, 2016. All values in AF, rounded. Data does not include water losses.
(2) Direct sales to CMWD customers.

As previously noted, local agricultural water demand is historically the highest water demand for Casitas MWD. In addition, agricultural water demand within the Casitas MWD service area can vary dramatically from year to year. Agricultural customer groups have a much stronger influence on Casitas MWD water demands during low rainfall periods. Agricultural customers have a higher rate of increase in water demand during low annual rainfall years because their primary groundwater sources become depleted quickly and they then must rely on Casitas MWD's surface water supplies.

Annual average agricultural water use within the service area was 7,425 AF for the period 2011-2015, including a low of 5,206 AF in 2011 to a high of 9,427 AF in 2014.

Table ES-3 summarizes the Casitas MWD projected water uses for the period 2020-2040. **Table ES-3** indicates the total water demands for the period 2020 to 2030 are projected to be approximately 17,200 AF (average water-year). For the period 2020 to 2030 (during average water-years), sales to other agencies are projected to be 6,200 AF, agricultural sales 8,000 AF, and non-agricultural retail sales of 3,000 AF. For the period 2030 to 2040, total water demands are projected to be approximately 17,500 AF. For the period 2030 to 2040, **Table ES-3** indicates that sales to other agencies are projected to be 6,500 AF, agricultural sales 8,000 AF, and non-agricultural retail sales of 3,000 AF. Casitas MWD estimates that agricultural sales and retail sales will remain fairly consistent for the period 2015 to 2040 due to current and future demand management measures implemented within the service area.

TABLE ES-3
PROJECTED POTABLE WATER USES 2020-2040

Category (1)	**2020**	**2025**	**2030**	**2035**	**2040**
Sales to other agencies	6,200	6,200	6,500	6,500	6,500
Agricultural sales (2)	8,000	8,000	8,000	8,000	8,000
Retail sales (2)	3,000	3,000	3,000	3,000	3,000
Total	**17,200**	**17,200**	**17,500**	**17,500**	**17,500**

Notes:
(1) Source, CMWD, 2016. All values in AF, rounded. Data does not include water losses.
(2) Direct sales to CMWD customers.

Average water demand is not anticipated to increase above the current safe-yield of 20,840 acre feet that is derived from the "Water Supply and Use Status Report". (CMWD, 2004). Casitas MWD has taken additional steps to limit future demand including changes in the allocation program. The Ojai City Council adopted a growth management plan that restricted housing and population growth to less than 1 percent annually.

ES.4 SYSTEM SUPPLIES

Casitas MWD relies on surface water and groundwater sources to meet the water demands of the area. **Table ES-4** summarizes the quantities of water supplies in the Casitas MWD water portfolio for fiscal years 2011-2015. **Table ES-4** indicates that for the period 2011-2015, the Casitas MWD average water supply is 17,293 AF with a range from 14,745 AF (2011) to 20,457 AF (2014).

TABLE ES-4
PAST AND CURRENT WATER SUPPLIES 2011-2015

Water Supply Sources (1)	**2011**	**2012**	**2013**	**2014**	**2015**
Local surface water (Lake Casitas)	14,678	15,233	18,233	20,415	17,339
Local groundwater (Mira Monte Well)	67	232	173	42	54
Imported surface water	0	0	0	0	0
Transfers in or out (2)	0	0	0	0	0
Exchanges in or out	0	0	0	0	0
Recycled water	0	0	0	0	0
Desalination	0	0	0	0	0
Other	0	0	0	0	0
TOTAL	**14,745**	**15,465**	**18,406**	**20,457**	**17,393**

Notes:
(1) Source, CMWD, 2016. All values in AF, rounded. Fiscal years.
(2) Transfer to Carpinteria Valley Water District.

The primary source of water for the Casitas MWD is from the collection and storage of precipitation and runoff from the local Ventura River watersheds (Ventura River Project or "Project"). Precipitation in the Ventura River watershed is extremely unpredictable and characterized by long periods of little or no rainfall followed by short periods of intense precipitation with high runoff peaks. Annual average precipitation within the watershed is approximately 14 inches (and 22 inches at Casitas Dam), with a range from 5 to 40 inches. Flow in the Ventura River fluctuates seasonally and from year to year as is typical with many southern California systems. Annual average flow of the Ventura River is approximately 13,600 acre-feet. The Ventura River is an interrupted stream made up of reaches that flow perennially (Lower Ventura River) with intervening reaches that flow intermittently.

The Ventura River watershed is upstream of Casitas Dam and the Matilija watershed that is partially diverted from the Ventura River to storage behind Casitas Dam. The Project has been modeled several times in the past to determine a safe-yield of the Project storage, and recently Casitas MWD has considered additional influences on water supply resulting from the Biological Opinion for the Robles Fish Passage and the planning in progress to remove Matilija Dam. According to the peer reviewed Casitas MWD "Water Supply and Use Status Report" (2004), safe-yield of the Project during a 21-year drought period is approximately 20,840 acre-feet. All water extractions from Lake Casitas are made at Casitas Dam through the intake structure, pipelines, and treated to meet State water quality standards prior to the delivery to the first water customer. Water quality in Lake Casitas is typical for any deep lake. Key water quality issues that are addressed by Casitas MWD are algae blooms resulting in taste and odors, turbidity, dissolved oxygen levels, protection from human contamination and invasive species. Lake Casitas does provide a limited recreational opportunity, but does not allow body contact activities with the waters of Lake Casitas. Casitas MWD manages the recreational aspect of Lake Casitas and provides strict oversight to assure lake water quality is maintained at all times.

Table ES-4 indicates that for the period 2011-2015 average surface water supplies is 17,180 AF with a range from 14,678 AF (2011) to 20,415 AF (2014). The quantity of Project water is dependent on local rainfall and runoff from the local watershed. As previously noted, the Ventura River watershed is prone to frequent periods of drought which significantly reduces local precipitation and runoff thereby decreasing inflow to Lake Casitas. Lake Casitas storage in April 2006 was 252,381 AF, while storage in April 2016 was 106,158 AF. This represents a reduction of over 146,000 AF over 10 years.

Casitas MWD acquired the Mira Monte Mutual Water Company (MMMWC) in November 1982 along with its Mira Monte Well. **Table ES-4** summarizes the volume of groundwater extracted by Casitas MWD for fiscal years 2011-2015. **Table ES-4** indicates that for the period 2011-2015 average annual groundwater extracted is 114 AF with a range from 42 AF (2014) to 232 AF (2012).

The Casitas MWD has both surface water and groundwater sources which present very different water quality issues. Surface water comes from Lake Casitas (from the Ventura River watershed) and the groundwater is locally produced via Mira Monte Well. The Casitas MWD potable water meets all water quality requirements of the California Division of Drinking Water.

Currently, Casitas MWD relies on local surface water and local groundwater for 100 percent of water supplies to meet water demands. Casitas MWD currently does not produce nor receive desalinated water, recycled water, transfers, or exchanges.

Casitas MWD will continue to rely on surface water and groundwater sources to meet the anticipated water demands of the service area. **Table ES-5** summarizes the quantities of projected water supplies in the Casitas MWD water portfolio for the period 2020-2040. **Table ES-5** indicates that for the period 2020-2040 available water supplies will be 20,840 AFY. **Table ES-5** indicates that local surface water will be approximately 20,540 AFY (98.5%) for the period 2020-2040. **Table ES-5** indicates that for the period 2020-2040 average annual groundwater extracted will be approximately 300 AF (1.5%).

Casitas MWD does not anticipate any specific future infrastructure projects that will develop more water for the system for the period 2020-2040. Casitas MWD plans to utilize the program management of the safe-yield of Lake Casitas to balance water supplies within the CMWD service area, understanding also that water demands placed on CMWD are likely to exceed safe-yield levels during periods of long-term drought. In addition, Casitas MWD anticipates implementation of additional demand management measures to offset an increase in population and reduce inefficient use of water. Casitas MWD will continue to support the water use allocation program with customer specific allocations. Casitas MWD does not anticipate producing nor receiving desalinated water, recycled water, transfers, or exchanges for the period 2020-2040.

TABLE ES-5
PLANNED WATER SUPPLIES 2020-2040

Water Supply Sources (1)	**2020**	**2025**	**2030**	**2035**	**2040**
Local surface water (Lake Casitas)	20,540	20,540	20,540	20,540	20,540
Local groundwater (Mira Monte Well)	300	300	300	300	300
Imported surface water	0	0	0	0	0
Transfers in or out (2)	0	0	0	0	0
Exchanges in or out	0	0	0	0	0
Recycled water	0	0	0	0	0
Desalination	0	0	0	0	0
Other	0	0	0	0	0
TOTAL	**20,840**	**20,840**	**20,840**	**20,840**	**20,840**

Notes:
(1) Source, CMWD, 2016. All values in AF, rounded.
(2) Transfer to Carpinteria Valley Water District.

Current climate change projections suggest that California will continue to enjoy a Mediterranean climate with the typical seasonal pattern of relatively cool and wet winters and hot, dry summers. However, climate patterns are different now and may continue to change at an accelerated pace. Increases in global emissions of greenhouse gases are leading to serious consequences for California including, but not limited to, the following: higher air and water temperatures, rising sea levels, increased droughts and floods, decreased amount and duration of state-wide snow pack, and extreme variability in weather patterns. These changes are anticipated to intensify over the 20-year planning horizon of this UWMP/AWMP. Even if all emissions of greenhouse gases ceased today, some of these consequences would be unavoidable because of the increase in greenhouse gases recorded over the last 100 years and the fact that the climate system changes slowly. Many of these climate changes would affect the availability, volume, and quality of California water resources.

As climate change continues to unfold in the coming decades, water agencies, may need to mitigate and adapt to new strategies, which may require reevaluating existing agency missions, policies, regulations, facilities, funding priorities, and other responsibilities. There will be more competition for scarce water supplies between people and the environment. Resolving this conflict will be one of the biggest challenges confronting water agencies. The goal of the Casitas MWD is to manage the available surface water and groundwater resources as efficiently as possible while meeting the requirements of the customers. It is worth noting, however, that the Casitas MWD control over local water supplies is limited; thus management practice changes will need to be adaptive in nature.

ES.5 WATER SUPPLY RELIABILITY ASSESSMENT

Analysis of water supply reliability is one of the primary requirements of the Urban Water Management Plan This assessment includes an average water-year, single dry water-year, multiple dry water-years, and minimum three-year supply. In order to plan for a reliable water supply Casitas MWD staff examined both the possibility of short-term and long-term shortages. A short-term water shortage could result from a disaster such as an earthquake, flood, or even a widespread power outage. A long-term water shortage would most likely result from a long period of drought in the region.

A normal water-year can be defined as a year in the historical sequence that most closely represents median local runoff levels and patterns. The Casitas MWD selected fiscal year 2011 to represent the normal or average water-year. For the purposes of this assessment, normal and average water year will be used interchangeably. Fiscal year 2011 is the most recent year that closely represents a normal water-year. Local precipitation for fiscal year 2011 is 24.8 inches. The fiscal year 2011 total surface water delivery from Lake Casitas is 14,678 acre-feet. The minimum storage level of Lake Casitas in fiscal year 2011 is 221,751 acre-feet. The actual water use in fiscal year 2011 is 13,549 acre-feet.

Table ES-6 summarizes the Casitas MWD projected normal water-year supply and demands for the period 2020-2040. For planning purposes, Casitas MWD projected that 100 percent of the safe-yield will be available for both Lake Casitas surface water at 20,540 acre-feet and 300 AF of Mira Monte Well groundwater. However, the Casitas MWD may extract more than the safe-yield in any one year (or years) to meet demands. For example, in 1989, the Casitas MWD extracted 26,180 AF from Lake Casitas to meet local demands. Casitas MWD chose to use a conservative (high) projection of water demand at 17,200 AFY (more than the recent average 16,000 AFY for years 2010-2015) for the period 2020-2025, and 17,500 AFY for the period 2030-2040. **Table ES-6** indicates that, for a normal water-year during the period 2020-2025, Casitas MWD's water supply will exceed water demand by 3,640 AFY. For a normal water-year during the period 2030-2040, **Table ES-6** indicates that Casitas MWD's water supply will exceed water demand by 3,340 AFY.

Lake Casitas is sized, constructed, and operated as both a primary water source and a backup water supply for the groundwater basins of western Ventura County. Lake Casitas is a long-term water storage facility so precipitation (or lack of precipitation) in any single year does not change the projected safe-yield of a long term period. As previously noted, Casitas MWD selected fiscal year 2014 as the most recent year that closely represents a single dry water-year. Local precipitation for fiscal year 2014 is 9.50 inches with over 82 percent recorded in February and March. The fiscal year 2014 total surface water delivery from Lake Casitas is 18,811 acre-feet. The minimum storage level of Lake Casitas in fiscal year 2014 is 131,511 acre-feet. The actual water use in fiscal year 2014 is 19,093 acre-feet.

TABLE ES-6
PROJECTED SUPPLY AND DEMAND COMPARISON FOR NORMAL WATER-YEAR FOR 2020-2040

	2020	2025	2030	2035	2040
Supply totals (AFY)	20,840	20,840	20,840	20,840	20,840
Demand totals (AFY)	17,200	17,200	17,500	17,500	17,500
Difference (supply minus demand) (AFY)	**3,640**	**3,640**	**3,340**	**3,340**	**3,340**

Notes:
Source, CMWD, 2016. All values in AF, rounded.

Table ES-7 summarizes the Casitas MWD projected single dry water-year water supply and water demands for the period 2020-2040. For planning purposes, Casitas MWD projected that 100 percent of the safe-yield will be available for both Lake Casitas surface water at 20,540 acre-feet and 300 AF of Mira Monte Well groundwater. However, the Casitas MWD may extract more than the safe-yield in any one year (or years) to meet demands. For example, in 1989, the Casitas MWD extracted 26,180 AF from Lake Casitas to meet local demands. Casitas MWD chose to use a conservative (high) projection of water demand at 20,840 AFY for the period 2020-2040 (exceeding than the maximum demand during the period 2010-2015 of 19,093 AF in 2014). **Table ES-7** indicates that, for a single dry water-year during the period 2020-2040, Casitas MWD's water supply will be equivalent to water demand.

TABLE ES-7
PROJECTED SUPPLY AND DEMAND COMPARISON FOR SINGLE DRY WATER-YEAR FOR 2020-2040

	2020	2025	2030	2035	2040
Supply totals (AFY)	20,840	20,840	20,840	20,840	20,840
Demand totals (AFY)	20,840	20,840	20,840	20,840	20,840
Difference (supply minus demand) (AFY)	**0**	**0**	**0**	**0**	**0**

Notes:
Source, CMWD, 2016. All values in AF, rounded.

The historical record provides information regarding 'a multiple dry year' occurrence in a drought period, which results in an escalation of water demands. During multiple dry years, surface flow in the Ventura River becomes non-existent and the groundwater in the Ventura River and Ojai Basins are diminished due to well extractions, natural drainage, and a lack of replenishment from rainfall. Water demands on Lake Casitas have been observed to escalate significantly due to multiple years of less than average rainfall and the transition from groundwater sources to the Lake Casitas supply. Further escalation in Lake Casitas demands resulted from the water demands of local agriculture that needed to supplement the lack of rainfall with an alternate water supply in order to continue to produce crops.

As previously noted, Lake Casitas is a long-term water storage facility so precipitation (or lack of precipitation) in any three-year does not change the projected safe-yield of a long term period. Casitas MWD selected fiscal years 1987-1988-1989 as the most recent three-year period that closely represents the multiple dry water-years. Local average precipitation for fiscal years 1987-1989 is 12.55 inches. The average surface water delivery for fiscal years 1987-1989 is 23,289 acre-feet. The minimum storage level of Lake Casitas for fiscal years 1987-1989 is 160,587 acre-feet. The actual average water use in fiscal years 1987-1989 is 23,216 acre-feet.

Table ES-8 summarizes the Casitas MWD projected multiple dry water-year water supply and water demands for the period 2020-2040. For planning purposes, Casitas MWD projected that 100 percent of the safe-yield will be available for both Lake Casitas surface water at 20,540 acre-feet and 300 AF of Mira Monte Well groundwater. However, the Casitas MWD may extract more than the safe-yield in any one year (or years) to meet demands. For example, in 1989, the Casitas MWD extracted 26,180 AF from Lake Casitas to meet local demands. Casitas MWD chose to use a conservative (high) projection of water demand at 20,840 AFY for the period 2020-2040 (exceeding the maximum demand during the period 2010-2015 of 19,093 AF in 2014). **Table ES-8** indicates that, for the multiple dry water-years during the period 2020-2040, Casitas MWD's water supply will be equivalent to water demand.

The Casitas MWD evaluated minimum water supplies which would be available during a three-year period 2016-2018. For planning purposes, Casitas MWD projected that 100 percent of the safe-yield will be available for both Lake Casitas surface water at 20,540 acre-feet and 300 AF of Mira Monte Well groundwater. Therefore, the three-year minimum water supply is 20,840 AF for the period 2016-2018 as summarized in **Table ES-9**. However, the Casitas MWD may extract more than the safe-yield in any one year (or years) to meet demands. For example, in 1989, the Casitas MWD extracted 26,180 AF to meet local demands.

TABLE ES-8
PROJECTED SUPPLY AND DEMAND COMPARISON FOR MULTIPLE DRY WATER-YEARS FOR 2020-2040

		2020	2025	2030	2035	2040
First Year	Supply totals (AFY)	20,840	20,840	20,840	20,840	20,840
	Demand totals (AFY)	20,840	20,840	20,840	20,840	20,840
	Difference (supply minus demand) (AFY)	**0**	**0**	**0**	**0**	**0**
Second Year	Supply totals (AFY)	20,840	20,840	20,840	20,840	20,840
	Demand totals (AFY)	20,840	20,840	20,840	20,840	20,840
	Difference (supply minus demand) (AFY)	**0**	**0**	**0**	**0**	**0**
Third Year	Supply totals (AFY)	20,840	20,840	20,840	20,840	20,840
	Demand totals (AFY)	20,840	20,840	20,840	20,840	20,840
	Difference (supply minus demand) (AFY)	**0**	**0**	**0**	**0**	**0**

Notes:
Source, CMWD, 2016. All values in AF, rounded.

TABLE ES-9
PROJECTED MINIMUM WATER SUPPLY FOR 2016-2018

	2016	2017	2018
Available Water Supply (AFY)	**20,840**	**20,840**	**20,840**

Notes:
Source, CMWD, 2016. All values in AF, rounded.

ES.6 WATER SHORTAGE CONTINGENCY PLANNING

The Casitas MWD has a variety of programs to respond to water shortage contingencies. These include prohibitions on water waste, water allocations for all customers, and staged demand reduction measures. The Casitas MWD has the authority to restrict the use of CMWD water during any emergency caused by drought, or other threatened or existing water shortage. The Casitas MWD prohibits the wastage of CMWD water or the use of CMWD water during such periods for any purpose other than household uses or such other restricted uses as the CMWD determines to be necessary. The Casitas MWD may also prohibit use of CMWD water during such periods for specific uses which it finds to be nonessential.

Casitas MWD Resolution 15-02 includes permanently prohibited uses (15 categories) of water that are in effect year round. Provisions of this Ordinance shall apply to all persons, corporations, public or private entities, governmental agencies or institutions, or any other direct water customers of the Casitas MWD. The water customers of other water purveyors shall be governed by the prohibitions that are adopted by the other water purveyors.

Casitas MWD has developed water allocations for all its customers. Casitas MWD water allocations are assigned to properties or water purveyors, are not transferable from one property or water purveyor to another, and may not be sold or traded by Casitas MWD customers. Casitas MWD Board of Directors reserve the right to alter allocations for any customer class at any time and the term allocation shall not mean an entitlement or imply a water right. Each and every water service provided by Casitas MWD is metered and a basic water use allocation is established for each customer account that provides a reasonable amount of water for the customer's needs and property characteristics. Each Casitas MWD water service shall be assigned either a monthly water allocation in the terms of units or an annual water allocation in terms of units and acre-feet. The assignment of allocations shall be based on reasonable and necessary water use, the application of water conservation practices and standards, and other relevant factors associated with water use during Stage 1 conditions at Lake Casitas. Water allocations may change by action of the Casitas MWD Board of Directors based on the Lake Casitas storage level or trend, water use trends, and the performance by customer classification in meeting water consumption reduction goals.

The primary source of water that is available to the Casitas MWD is the amount of water stored behind Casitas Dam, forming Lake Casitas. The quantity of water stored in Lake Casitas is dependent upon the local hydrology, watershed conditions, diversions from the Ventura River, and the outflow from lake evaporation and water deliveries to beneficial uses. There may be times during which Casitas MWD must consider implementing staged water demand reductions to ensure a sustainable water supply and prevent a complete depletion of water supply in Lake Casitas. The Casitas MWD has assigned five stages of water storage in Lake Casitas that serve as a guidance to triggering the implementation of water use reduction goals and measures.

The overarching goals of the Staged Demand Reduction Program are the following:

1) conserving the water supply for the greatest priority and public benefit; and
2) mitigating the effects of a water shortage on public health, safety, and economic activity.

The General Manager shall report to the Board of Directors each year with an assessment of the current water storage in Lake Casitas and local groundwater basins, current water use trends, predicted weather conditions, and an evaluation of current water use reduction goals. The Casitas MWD Board of Directors may, at their sole discretion, declare that a specific stage condition of water supply in Lake Casitas exists and implement the appropriate demand reduction goals and measures in response to current and/or predicted water availability conditions. The resolutions will address a particular water shortage with the appropriate guidelines, procedures and regulations, and to announce to the public the implementation of the Water Shortage Contingency Plan. Provisions of the resolution shall be developed and implemented in a timely manner to provide water service during emergency conditions to all of Casitas MWD's customers in a fair and equitable manner and in recognition of the given conditions.

Casitas MWD has established the implementation of various Stages of action based on the amount of water in storage in Lake Casitas, as shown in **Table ES-10**.

TABLE ES-10
STAGE CONDITIONS

Stage	Stage Title	Lake Casitas Storage (%)	Lake Casitas Storage Action Level (AF)
1	Water Conservation	100% to 50%	254,000 to 127,000
2	Water Shortage Warning	50% to 40%	127,000 to 100,000
3	Water Shortage Eminent	40% to 30%	100,000 to 75,000
4	Severe Water Shortage	30% to 25%	75,000 to 65,000
5	Critical Water Shortage	25% to 0%	65,000 to 3,000

Notes:
Source, CMWD, 2016.

Demand reduction goals and measures begin with Stage 1, where reasonable and appropriate water allocation assignments are made to each Casitas MWD service connection. End water users are encouraged to implement Best Management Practices that conform to State requirements for water conservation and water use efficiency measures. Upon determination of a Stage 2 condition and continuing through Stage 5 conditions, the primary actions to achieve the demand reduction goal is the adjustment of allocations that were made available for each classification during Stage 1 by a reduction of the allocation during the duration of the declared Stage condition.

ES.7 DEMAND MANAGEMENT MEASURES

Casitas MWD has a long history and strong commitment to water use efficiency. In 1992 the Casitas MWD Board of Directors adopted a series of ordinances, resolutions, and a Water Efficiency and Allocation Program (WEAP) in response to the increasing water demands and declining water storage in Lake Casitas experienced during the 1987-1991 drought period. The collective work in 1992 set the starting point for a system of water allocation assignments and demand response criteria that are based on the level of water storage in Lake Casitas. Casitas MWD Board of Directors adopted a Water Shortage Contingency Plan in 1992, by Resolution No. 92-11, that set water use reduction goals for the various stages of Lake Casitas storage. Casitas MWD Board adopted Resolution 2014-0038 drought emergency regulations, that supplemented the Water Shortage Contingency Plan, limited the outdoor irrigation of ornamental landscapes or turf with potable water. Casitas MWD Resolution 15-02 includes permanently prohibited uses of water that are in effect year round. Provisions of this Ordinance applies to all persons, corporations, public or private entities, governmental agencies or institutions, or any other direct water customers of the Casitas MWD. The Casitas MWD Board approved Resolution 15-30 which authorized implementation of a Conservation Penalty. Casitas MWD recently updated the WEAP (2015). The purpose of the WEAP is to provide guidance on water supply and demand strategies that implement the following:

1) Conserve the water supply of the Ventura River Project, Lake Casitas and other water resources that are in the direct control of Casitas MWD, for the greatest public benefit;
2) Mitigate the effects of a water shortage on public health and safety and economic activity;
3) Allocate water use so that a reliable and sustainable supply of water will be available for the most essential purposes under all water storage conditions of Lake Casitas; and
4) Adapt to changing conditions of water supply demand and constraints.

In addition, Casitas MWD is a signatory to the Memorandum of Understanding (MOU) with the California Urban Water Conservation Council (CUWCC). This essentially declares Casitas MWD's intent to implement all cost effective water conservation Best Management Practices (BMPs) as noted by the CUWCC.

The UWMP Act currently requires wholesale agencies to provide narrative descriptions of metering, public education and outreach, conservation program coordination and staffing, and other demand management measures that significantly impact water use.

Casitas MWD is a retail water agency, wholesale water agency, and an agricultural water agency. However, for the purposes of this UWMP, the Casitas MWD is considered a wholesale agency. The Casitas MWD will comply with the UWMP requirements as a wholesale agency.

All of the Casitas MWD surface water supplies and ground water supplies are metered. Accuracy of the District's meters is generally 98 percent to 102 percent. All of the Casitas MWD direct customers are metered. Casitas MWD has meters for all of the Resale customers.

The extensive Casitas MWD public education and outreach program promotes the water conservation ethic and informs the public of the benefits derived from conserving a valuable resource. Implementing water conservation and demand management strategies will allow Casitas MWD to manage local water supplies throughout a long-term drought and avoid supply depletion. **Section 7** summarizes many of the diverse public education and outreach activities implemented by Casitas MWD.

Casitas MWD has a full-time Water Conservation Manager, full-time Water Conservation Specialist, full-time Water Conservation Analyst, and part-time Water Conservation Coordinator. Casitas MWD staff provide many water conservation services including report preparation, respond to customer questions, perform water use surveys, administer rebate programs, coordinate public information and outreach programs, plan and participate in special events and education programs, and conduct public speaking. In addition, Casitas MWD also utilizes consulting firms to assist with the implementation of demand management measures.

Casitas MWD provides water survey programs for single-family and multi-family residential customers for direct retail customers and for whole agency customers. The Casitas MWD's direct survey program includes evaluating all indoor and outdoor water use. All water appliances are inspected. All toilets and faucets are inspected for leaks. A meter test is provided to check for leaks, landscape is thoroughly inspected for irrigation efficiency and plant type. These survey programs include distribution of low flow showerheads, toilet leak detection tablets, kitchen and faucet aerators, and rulers to measure toilet tank size. The customer is provided with a summary report on the improvements that can be completed both inside and outside the home to improve water use efficiency. The report also includes water and dollar savings, and a summary of rebate opportunities provided by Casitas MWD for appliances and smart irrigation controllers.

Additional DMMs are summarized in **Section 7** including residential plumbing retrofit, system water audits, large landscape program, high efficiency toilet and washing machine program, commercial programs, wholesale agency programs, conservation pricing, and school education program.

The AWMP Act requires agricultural water suppliers to address Efficient Water Management Practices (EWMP) including two categories of measures: 1) critical activities, and 2) conditional activities. Critical activities are required to be implemented by agricultural water suppliers. Casitas MWD has implemented the critical EWMPs as required: 1) accurate measurement of water deliveries to individual farming operations, and 2) adopting a pricing structure for agricultural water customers based at least in part on quantity of water delivered. Conditional activities must be implemented by agricultural water suppliers if they are locally cost-effective and technically feasible. Each of these EWMPs are summarized in **Section 7**.