CITY OF MOUNTAIN VIEW
2015 URBAN WATER MANAGEMENT PLAN

EXECUTIVE SUMMARY

May 10, 2016

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Chapter 1: Introduction

The Urban Water Management Plan (UWMP) provides an analysis of the City's available water supply, during normal and dry-year scenarios, compared to current and future projected water demand. The UWMP is a link between land use planning and water supply planning developed to ensure sufficient water is available to meet the needs of Mountain View's existing and future water customers.

The California Water Code requires that the City's UWMP be updated every five years and submitted to the California Department of Water Resources for review. Mountain View's current UWMP was adopted in June 2011.

In preparation of this UWMP, the City of Mountain View worked collaboratively with its two wholesale water suppliers, the San Francisco Public Utilities Commission (SFPUC) and the Santa Clara Valley Water District (SCVWD), to exchange information needed to develop each agency's respective UWMP. Notice of the UWMP preparation and adoption process was posted in local newspapers and e-mailed to key neighborhood and business liaisons, local water agencies, and Santa Clara County.

Chapter 2: Service Area, Population, and Climate

Mountain View's municipal water system serves 97 percent of businesses and residents within the City limits. The remaining 3 percent are served by the California Water Service Company. The City's service population in 2015 was estimated at 75,430, with an employment base of approximately 80,817.

Population and Employment Projections

Future water demand projections presented in this 2015 UWMP were based on a snapshot of approved development through 2040. This development includes the current 2030 General Plan growth estimates, plus growth affiliated with the approved North Bayshore, El Camino Real, and San Antonio Precise Plans—projected linearly to 2040 to meet the UWMP time horizon. Collective growth is estimated to reach 93,330 residents and 99,655 jobs within the municipal water service area by 2040.

The City is also considering several other projects that have not yet been approved, but which would result in additional population and job growth. These projects, if approved, were estimated to collectively raise the City's water service population and

employment to 135,080 and 111,322, respectively (a 79 percent and 38 percent increase from 2015 numbers).

Local Climate

Mountain View's semiarid climate is temperate year-round. The average temperature is 58°F, with an average low of 47°F and an average high of 69°F. Rainfall in Mountain View averages 15 inches per year with most rainfall occurring between November and April. Over the past four years, California endured the most severe drought in the State's recorded history. Lower-than-average precipitation, coupled with increased temperatures, greatly impacted the State's water supply and prompted historic actions to reduce water demand throughout California.

Chapter 3: Water System Overview

Mountain View's municipal water system serves three pressure zones and consists of three wholesale water connections, four reservoirs, three pumping stations, seven active groundwater supply wells, and buried pipes of varying composition, ages, and sizes.

Mountain View currently serves approximately 17,911 metered service connections. Single-family and multi-family homes account for approximately 83 percent of all connections, with the remaining connections distributed between commercial, institutional, industrial (CII) accounts and landscape customers. Construction meters and recycled water customers account for less than 1 percent each.

Chapter 4: Water Demand

Current and Historical Water Demand

Mountain View's total water demand (potable and recycled) over the past five years is shown in Figure ES-1. Water demand in 2015 was 19 percent lower than in 2010. Efforts to reduce water use, due to the historic drought, resulted in substantial water savings during 2014 and 2015 (versus 2013).

Water use by customer sector is shown in Figure ES-2. As in previous years, the largest water using group during 2015 was residential customers (57 percent of total use), followed by CII customers (21 percent), and landscape irrigation (18 percent). Recycled water irrigation accounted for nearly 5 percent of total use. Construction sites (potable and recycled) were less than 1 percent of total use.

Figure ES-1: Recent Water Demand

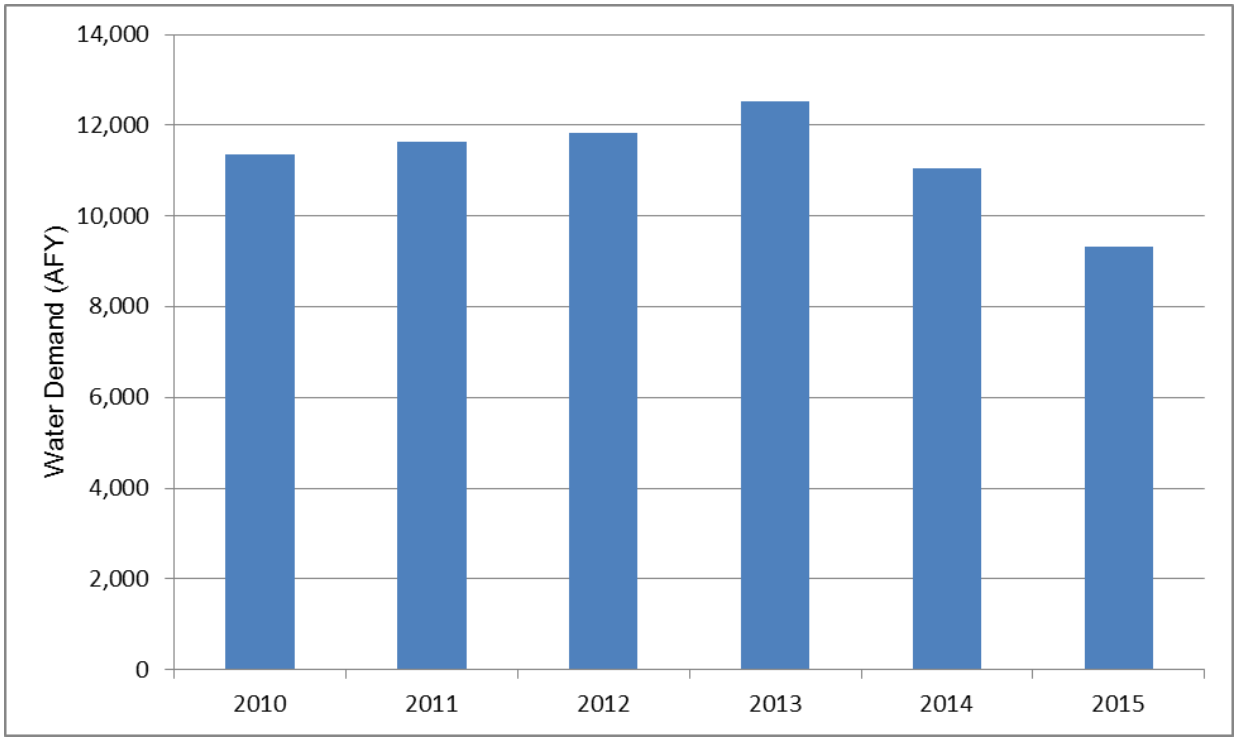
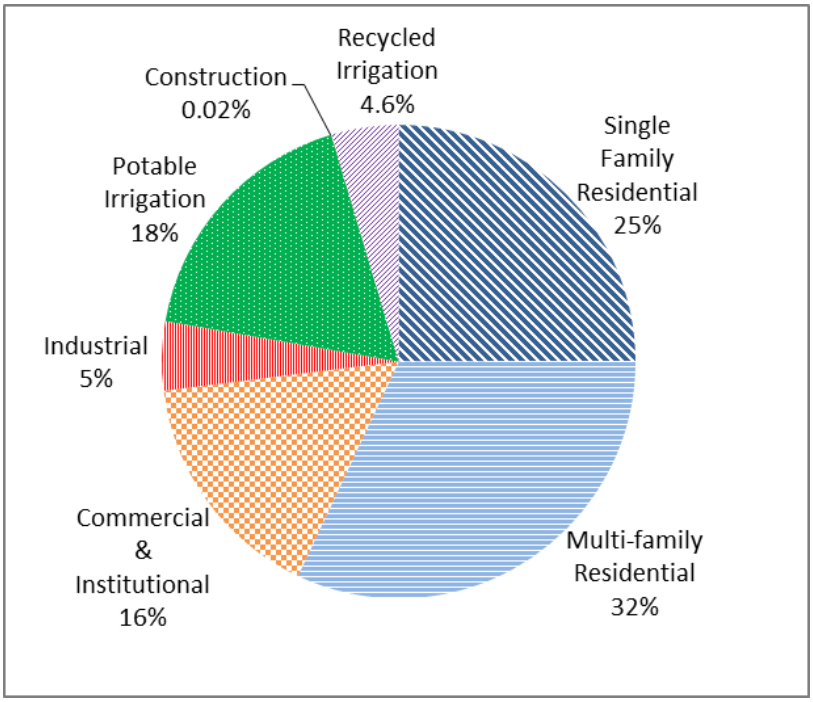


Figure ES-2: Water Use by Customer Sector



Projected Future Water Demand

Mountain View's water demand projections were developed using Maddaus Water Management's Demand Side Management Decision Support System (DSS model). These projections were based on regional water demand and conservation modeling efforts completed over the past several years. Mountain View's DSS model was most recently revised during this UWMP process to account for new plumbing code requirements, updated population and employment projections, and revised conservation measures.

Recent modeling results are shown in Table ES-1, in five-year increments through the year 2040. Results are shown for a base-case scenario, and for scenarios that incorporate water savings due to plumbing code updates and conservation measures.

Table ES-1: Water Model Results

Water Model Scenario (demand reduction method)	Total Water Demand (AFY)				
	2020	2025	2030	2035	2040
Scenario A (Base-Case)	12,578	13,127	13,675	14,223	14,771
Scenario B (Plumbing Codes)	**12,307**	**12,577**	**12,844**	**13,160**	**13,509**
Scenario C (Plumbing Codes & Conservation)	11,276	11,516	11,766	12,060	12,393

Demand projections shown above are based on Council-approved growth consistent with the General Plan. Alternative water demand projections were also generated for additional development projects currently being studied by staff. The projected 2040 water demand for this cumulative higher-growth alternative is listed below:

- Scenario A (Base-Case): 19,284 AFY
- **Scenario B (Plumbing Codes): 17,442 AFY**
- Scenario C (Plumbing Codes & Conservation): 16,117

Projected 2040 water demand for Scenario B (the scenario used to analyze supply sufficiency) is 29 percent greater under the cumulative "higher-growth" alternative than it is for the current approved development level.

2020 Urban Water Use Target

The Water Conservation Act of 2009 (also referred to as SB X7-7) requires each urban water retail supplier in California to develop a water use target for the year 2020 as part of a cooperative effort to reduce California's Statewide per capita water use by 20 percent by the year 2020. Mountain View's 2010 UWMP contains details regarding its 2020 urban water use target, baseline daily water use, "interim" urban water use target (for 2015), and "compliance" daily water use (for 2015).

Mountain View's water use for 2015 was below the 2015 and 2020 water use targets and, according to the DSS model results, no additional actions are necessary to remain below the 2020 water use target. The GPCD results from Mountain View's DSS model are presented in Table ES-2.

Table ES-2: Projected 2020 Compliance Daily Water Use

Water Model Scenario (demand reduction measure)	2020 Per-Capita Water Use (GPCD)
Scenario A (Base-Case)	142
Scenario B (Plumbing Codes)	139
Scenario C (Plumbing Codes & Conservation)	127
Water Use Target	146

Demand projections show that the City expects to meet its 2020 water use target under all three water model scenarios.

Chapter 5: Water Supply Sources

The City of Mountain View purchases the majority of its drinking water from SFPUC, supplemented with SCVWD water and local groundwater. In 2009, Mountain View completed construction of a new recycled water distribution system. During 2015, water supplies used by the City (both potable and recycled) were 86 percent SFPUC water, 7 percent SCVWD treated water, 2 percent groundwater, and 5 percent recycled water.

SFPUC Regional System

The City of Mountain View receives water from the City and County of San Francisco's Hetch Hetchy Regional Water System (Regional System), operated by SFPUC. This

supply originates predominantly from the Sierra Nevada and is delivered through the Hetch Hetchy aqueducts, but also includes treated water produced by SFPUC from its local watersheds and facilities in Alameda, San Mateo, and Santa Clara counties. The adopted Water Supply Agreement allocates to Mountain View a supply guarantee of 13.46 mgd (15,077 afy) from the Regional System.

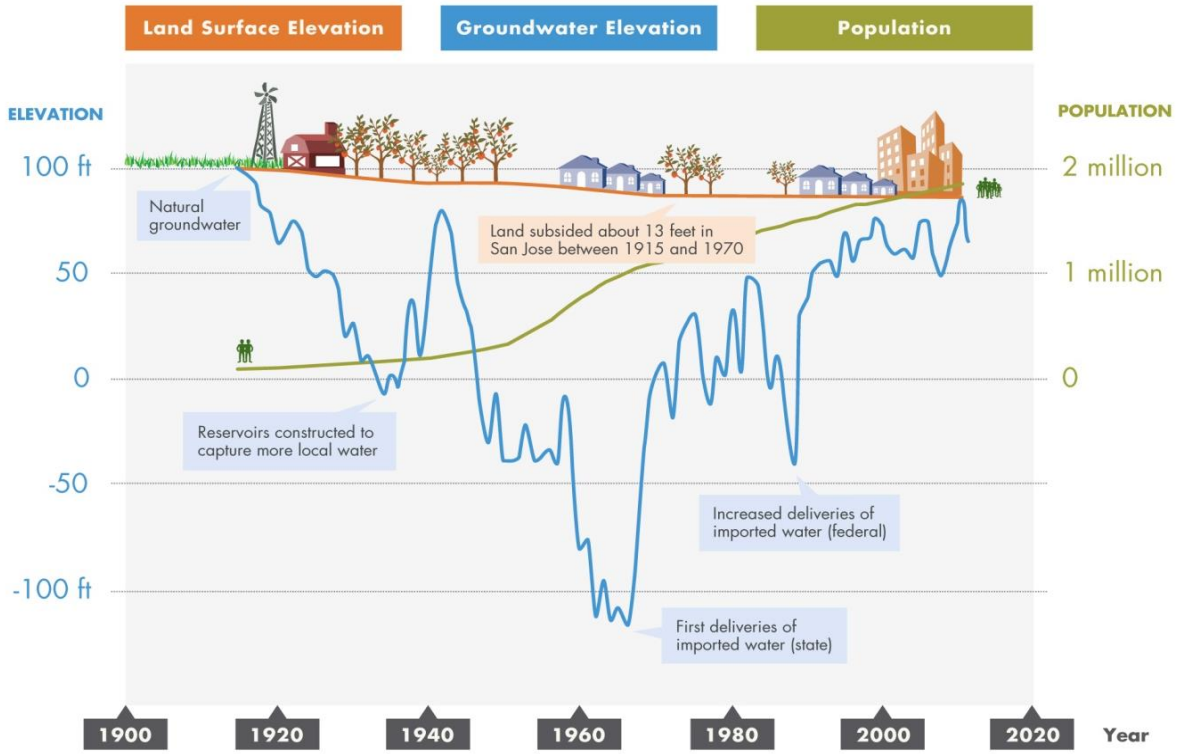
SCVWD

Sources of supply for SCVWD include natural groundwater recharge, local surface water, imported surface water from the State Water Project (SWP) and Central Valley Project (CVP), recycled and purified water, and transfers. SCVWD supplies are used to recharge the local groundwater subbasins, treated at drinking water treatment plants, released to local creeks to meet environmental needs, or sent directly to water users. Potable reuse (groundwater recharge with purified recycled water) is a planned future water supply source for SCVWD. For the purpose of this UWMP, Mountain View's maximum purchase of SCVWD water was estimated to be 1,200 afy based on the most recent seven-year water purchase projections.

Local Groundwater

The City of Mountain View operates seven active potable groundwater wells to supplement imported water supplies. The City also owns an inactive irrigation well at Shoreline at Mountain View park that has not been operated since 2008. City wells pump groundwater from the Santa Clara Basin, which is managed by the SCVWD. Approximately one-half of all groundwater used in Santa Clara County is recharged by SCVWD from local and imported surface water. Figure ES-3 illustrates historical groundwater conditions in the County.

Figure ES-3: Historical Groundwater Conditions



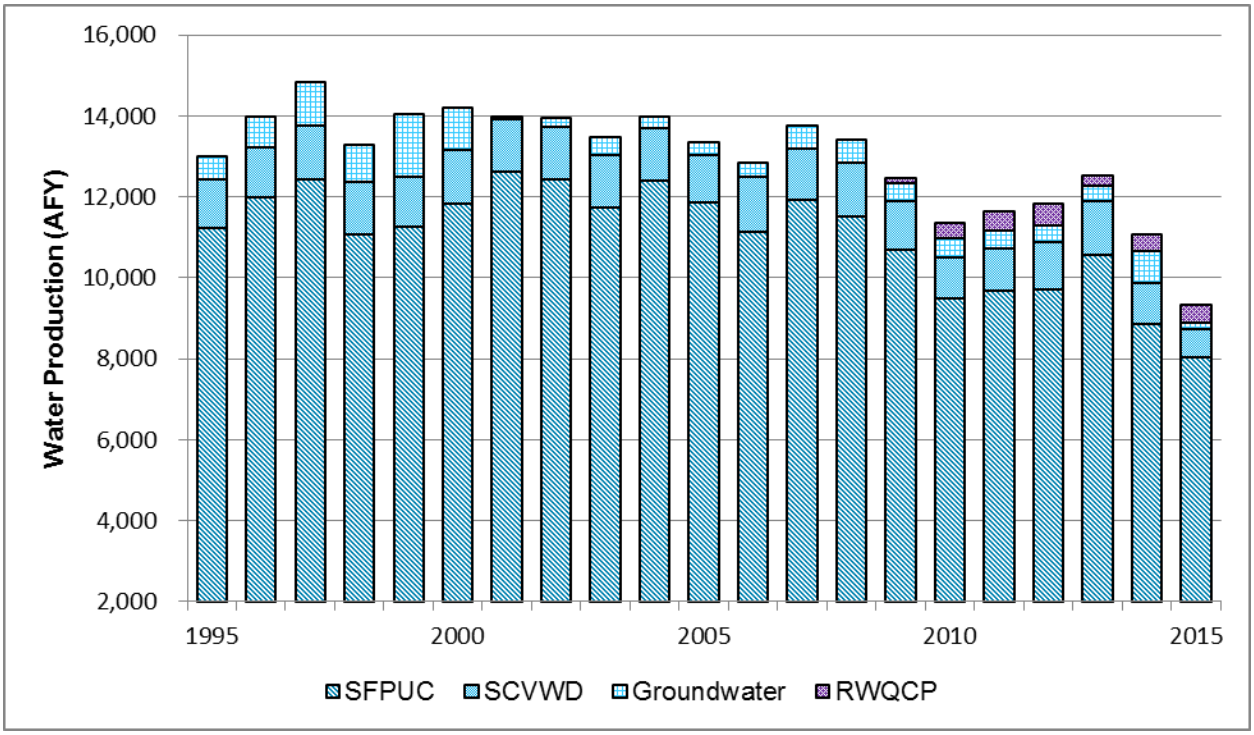
Over the years, the water district's water importation and groundwater management activities have stabilized groundwater levels and prevented land subsidence, or sinking.

Recycled Water

Mountain View uses tertiary treated recycled water from the Regional Water Quality Control Plant (RWQCP) for irrigation in the North Bayshore Area. The City has utilized recycled water since 1980, the early efforts of which are summarized in the previous UWMP and the City's *Recycled Water Feasibility Study* (Carollo, 2014). There are currently 50 customer connections to the City's recycled water distribution system. Future potential uses of recycled water include toilet flushing, cooling, and transfers to other agencies.

Mountain View's historical water supply production is provided in Figure ES-4.

Figure ES-4: Historical Water Supply Production



Projected Water Supply Availability and Production

The availability of each of Mountain View's water supplies is presented below. Use of each supply is affected by several factors, such as development intensity, employment density, source-water quality, and drought. Table ES-3 identifies Mountain View's estimated maximum available water supplies, based on existing contracts with its wholesale suppliers and the RWQCP, and historical groundwater production over a 20-year period.

Table ES-3: Estimated Maximum Available Water Supply

Supply Source	Estimated Maximum Available Supply (AFY)	Basis
SFPUC	15,078	Individual supply guarantee
SCVWD Treated	1,200	7-year projections
Groundwater	1,525	20-year historical maximum
Recycled Water	3,361	Capacity ownership
Total	**21,164**	**--**

In order to meet the City's projected water demand for the General Plan, Mountain View expects to utilize its water supplies in the approximate volumes presented in Table ES-4. Actual use of each supply will change depending on future demand.

Table ES-4: Projected Water Supply Production

Supply Source	Projected Water Supply Production (AFY)				
	2020	**2025**	**2030**	**2035**	**2040**
SFPUC	9,546	9,713	9,966	10,266	10,603
SCVWD Treated	1,200	1,200	1,200	1,200	1,195
Groundwater	566	574	588	604	621
Potable Supply	11,312	11,487	11,754	12,070	12,419
Recycled Supply	955	1,091	1,091	1,091	1,091
Total Supply	**12,307**	**12,578**	**12,845**	**13,161**	**13,510**

Chapter 6: Water Supply Reliability

Mountain View's water system is expected to meet projected water demand during normal and dry-year scenarios using potable and recycled water supplies, conservation, and shortage contingency measures. The City's supply reliability analysis was performed using data provided by wholesale water providers, assuming a repeat of hydrologic conditions previously experienced for the following periods: a single dry year of 1977 and multiple dry years of 1988 to 1992 (for SFPUC) and 2013 to 2015 (for SCVWD). The analysis was also performed for the two development scenarios: the General Plan and a "higher-growth" alternative.

General Plan Growth

During normal years through 2040, Mountain View expects to meet 100 percent of the projected water demand estimated for the General Plan. During dry years, the City anticipates a potable supply shortfall of between 1 percent and 4 percent—to be met through the implementation of temporary demand reduction measures in accordance with the City's Water Shortage Contingency Plan.

Higher-Growth Alternative

Supply reliability under the "higher-growth" alternative results in the following:

- Normal year supply is sufficient to meet full demand.
- Single dry-year shortfalls between 2 percent and 25 percent.
- Multiple dry-year shortfalls between 11 percent and 26 percent.

The City's existing supply portfolio is expected to sufficiently meet future water demands over the next 25 years for the adopted General Plan, with minimal dry-year demand reductions. The City's water supplies are also projected to be sufficient for the "higher-growth" alternative during normal years; however, shortfalls of up to 26 percent (equivalent to 4,100 AFY) are expected during dry-year periods. Although the community has demonstrated the ability to reduce demand by 28 percent as recently as last year (2015), additional implementation of conservation and/or recycled water projects could alleviate the need for such dramatic reductions—if all of the development projects considered in this UWMP's "higher-growth" alternative are approved.

Chapter 7: Water Conservation

Mountain View recognizes the importance of water conservation and is committed to promoting and practicing the sustainable use of water resources. The City demonstrates this commitment by implementing the following measures in partnership with regional agencies:

- Regulations: The City has adopted the following: Water Waste Prevention Ordinance, Landscaping Regulations, and Mountain View Green Building Code.
- Metering: The City has been metering customer water use since at least 1938. Current metering efforts include advanced metering (also known as "smart" metering) and requiring that irrigation be metered separate from other uses.
- Conservation Pricing: Water bills consist of both a fixed component and a volumetric component based on the volume of water used each bill period. Residential accounts are subject to a three-tier rate structure, while nonresidential accounts are billed at a uniform rate (per unit of use).

- Dedicated Staff: Mountain View's Water Conservation Program consists of two permanent full-time positions.

- Water Loss Control: The City tracks system water loss on an annual basis as part of its Water Loss Control and Prevention Program.

- Customer Programs: Several programs are available to help customers use water more efficiently. Examples include: home water reports, Water-Wise House Calls, irrigation budget reports, landscape audits, plumbing fixture replacement (toilets, clothes washers, commercial equipment, and submeters), and landscape upgrades.

- Education and Outreach: Outreach is promoted through several medians, including school assemblies and classroom visits, landscape education classes, website and social media postings, utility bill design and messaging, bill inserts, brochure racks, a dedicated phone hotline, and booths for public events.

Table ES-5 lists key conservation measures implemented between 2010 and 2015.

Table ES-5: Results of Conservation Measures (2010-2015)

Conservation Measure	Actions
School education program	3,761 students
Landscape education classes	1,764 attendees
Water-saving fixture giveaway	4,209 fixtures
Residential water survey	1,111 surveys
High-efficiency toilet/urinal rebate and install	2,055 installs
High-efficiency clothes washer rebate	2,035 rebates
Submeter rebate	143 rebates
Landscape rebate	97 sites
Landscape water budget	277 sites
Landscape water audit	42 audits

Chapter 8: Water Supply Assessment

A Water Supply Assessment (WSA) is a detailed analysis of water use required by State law for large development projects. The purpose of a WSA is to determine if the water

use associated with a proposed project can sufficiently be met by the water supplier serving the project area. In order to maintain consistency between WSAs prepared by different consultants, the 2015 UWMP specifies methodologies to be used in WSAs prepared for projects located within Mountain View's water service area. These methods relate to historical use records, unit duty factors, project water demand, demand from other previously approved projects, and systemwide water demand.

Chapter 9: Water Shortage Contingency Plan

Mountain View's Water Shortage Contingency Plan serves as a flexible framework of planned response measures to mitigate water supply shortages of up to 50 percent. The plan assesses alternative water supply sources, describes demand-reduction strategies, and discusses the impact of restrictions on customers.

Guiding principles used to develop the plan include:

- Shared contribution from all customers.
- Meet basic health and safety needs.
- Prioritize reducing nonessential water uses.
- Minimize economic impacts to businesses.
- Communicate at every stage.

Mountain View will implement each of the plan's four "Stages of Action" when the City's annual water supply is reduced by the specific levels: up to 10 percent, 11 percent to 25 percent, 26 percent to 40 percent, and greater than 40 percent. Each stage includes a set of demand reduction actions and measures that become progressively more stringent as the shortage condition escalates. All of the stages are designed to provide adequate water to protect public health and safety and satisfy the fire protection needs of the City.

Reduced water consumption during a water shortage will cause revenues to decline. If and when revenues become insufficient, City staff will evaluate options for correcting revenue shortfalls. The City may consider several actions, including increasing water rates, adjusting the water rate structure, implementing a one-time water use surcharge, reallocating staff resources, and reassessing capital improvement project expenditures.

Current Drought

During the preparation of this UWMP, California experienced the most severe drought since record keeping began in 1895. Lower-than-average precipitation, coupled with record-high temperatures, greatly impacted the water supplies across the State, resulting in severe cutbacks by many water agencies, and prompted historic action from the State Water Board, which issued mandatory reductions for all urban water suppliers in California.

Upon declaration of a Statewide drought in January 2014, City staff began increasing promotion of current conservation measures and planning possible expansion if additional reductions were necessary. In April 2014, the Mountain View City Council officially adopted the draft shortage plan contained in the City's 2010 UWMP, with minor updates. At this same time, Council also declared a Stage 1 water shortage. Customers were notified of the declared shortage and reminded of the applicable water use restrictions via mail, utility bill inserts, website postings, and social media. The response was significant, and the City experienced a 13 percent decrease in water use between 2013 and 2014, despite a growing economy.

In May 2015, Mountain View increased to a Stage 2 water shortage and limited outdoor watering to two days per week (except for irrigation customers that remained 20 percent below their site-specific budget). Customer response, in the form of conservation, was dramatic, with a 28 percent reduction in water use during 2015 (compared to 2013). Water savings at City facilities (buildings, parks, and the golf course) was approximately 46 percent.

Concluding the 2016 rainy season, water supply conditions have improved significantly; however, the current status of reductions has not been addressed by the State Water Board or the City's wholesale water suppliers.

Chapter 10: Catastrophic Supply Interruption Plan

The City has prepared a Water System Emergency Response Plan to mitigate the effects of natural disasters and man-made threats on Mountain View's water supply. Based on the type and severity of the emergency, the City will implement corrective measures which may include isolating water storage reservoirs, isolating portions of the water system, and deploying emergency generators to operate groundwater wells. In the event of a sudden supply interruption, the City will maintain the ability to provide a minimum amount of water to customers for life safety and sanitary provisions.

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