Montecito Water District

2020 Urban Water Management Plan

Final

June 23, 2021

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Appendices

1 Urban Water Management Planning Introduction and Overview

The Urban Water Management Act (Act) became part of the California Water Code (CWC) with the passage of Assembly Bill 797 during the 1983-1984 regular session of the California Legislature. The CWC requires every urban water supplier providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually (AFY) to adopt and submit an Urban Water Management Plan (UWMP) every five years to the California Department of Water Resources (DWR). The specific planning requirements are in the CWC Division 6, Part 2.6 Urban Water Management Planning.

Subsequent legislation has been passed that updates and provides for additional requirements for the UWMPs and water management. In particular, SB X7- 7 Water Conservation, required the State to achieve a 20 percent reduction in urban per capita water use by December 31, 2020, known as 20x2020. Reporting of 20x2020 compliance is incorporated into the 2020 UWMP requirements. Other inclusions in the UWMP originating from legislative requirements include reporting on energy intensity, an expanded Water Shortage Contingency Plan, and a 5-Year Drought Risk Assessment.

The core requirements for the UWMP include:

- A description of the water service area.
- A description of the existing and planned supply sources.
- Estimates of past, present, and projected water use.
- 20x2020 analysis and target compliance.
- A description of water conservation Demand Management Measures (DMMs) already in place and planned, and other conservation measures.
- Inclusion of a 5-Year Drought Risk Assessment.
- The Water Shortage Contingency Plan.

The 2020 UWMP must submit data in specific tables to DWR. DWR has provided these tables and this UWMP utilizes the provided tables with minor changes to format or organization where applicable. This Montecito Water District (MWD or District) 2020 UWMP presents each required element per DWR's Urban Water Management Plan Guidebook 2020 (Guidebook). A copy of the DWR checklist for compliance is included in Appendix A.

1.1 Plan Summary

Based on the information and analysis presented in this 2020 UWMP, the MWD anticipates a reliable source of supply to meet expected demands under various circumstances for the foreseeable future. Under normal conditions, the MWD projects it will need approximately 5,000 acre-feet (AF) to meet expected demands in 2040. To meet this demand, MWD has developed new reliable supplies, including a desalinated water purchase agreement with the City of Santa Barbara and a contract for long-term water storage at Semitropic Groundwater Bank in the Central Valley. These newly obtained supplies will make MWD less reliant on imported water and rainfall-dependent sources of supply.

This UWMP assesses the near- and long-term reliability of MWD supplies to meet expected demands in various hydrological conditions, including normal and single-dry years, as well as during a drought condition lasting five consecutive years. In normal hydrologic years, MWD has more than sufficient supplies to meet demands without implementing demand management measures through 2040. The District also has sufficient supplies to satisfy demands in all of the single dry year scenarios analyzed, which means the District is well prepared to weather short droughts without needing to reduce customer demands. However, during the later years of severe multi-year droughts, this UWMP anticipates that demand management measures are necessary to address supply shortages of up to 20 percent. MWD has updated its Water Shortage Contingency Plan (WSCP) in conjunction with this UWMP. The WSCP is a tool aimed at addressing supply shortages identified through an annual assessment of available supplies and unconstrained demand. MWD's demand management and supply augmentation tools provide necessary actions to address and mitigate supply shortfalls, if necessary.

1.2 Basis for Preparing a Plan

MWD provides retail potable water service to over 3,000 connections per year, and over 3,000 acre-feet per year (AFY) and is therefore required to complete the UWMP process. Tables 1-1 reports MWD's public water system information as required by DWR. Information in this UWMP is presented on a calendar year basis, and volumes in acre-feet (AF) unless otherwise noted. This 2020 UWMP reports solely on MWD service area and is therefore considered an individual UWMP.

Table 1-1: Public Water System Information

Public Water System Number	Public Water System Name	Number of Municipal Connections 2020	Volume of Water Supplied 2020 (AF)	Reporting Period
CA4210007	Montecito Water District	4,632	4,495	Calendar Years

1.3 Coordination and Outreach

MWD has encouraged community awareness of water issues and participation in water planning. Notices of the public hearing were published in the local press and copies of the Draft Plan were made available at the District office and through the District's website, as included Appendix B.

The City of Santa Barbara, County of Santa Barbara, and the Carpinteria Valley Water District were notified of the District's intention to update the UWMP on January 7, 2021, as included in Appendix B.

1.4 Public Hearing and Adoption

The draft 2020 UWMP was reviewed and discussed with the District's Board of Directors on June 22, 2021; at which time the Board of Directors supported staff's efforts to complete the plan in compliance with State UWMP requirements. A public hearing, with public notice pursuant to California Government Code Section 6066, was held before the Board of Directors as Agenda Item No. 5-A on June 22, 2021; at which time the Board voted to adopt Resolution No. 2212 adopting the UWMP, as included in Appendix C.

1.5 Plan Submittal and Availability

Copies of this Plan were sent to the office of the Clerk of the Board for Santa Barbara County and the California State Library at the time of submittal to DWR.

A copy of this Plan will be posted on the District's website within 30 calendar days of the filing date with a hard copy available for review at the District's office at 583 San Ysidro Road during normal business hours.

2 Water Service and System Description

The Montecito Water District serves a unique community with characteristics rooted in its agricultural estate beginnings. Montecito had grown into an unincorporated community consisting of a number of large estates by the early 1920s. Water was provided by numerous small private water companies that tapped into springs, creeks, and water wells that were at times unreliable due to inadequate seasonal rainfall. To improve water supply reliability, the Montecito County Water District was formed in 1921 by a vote of the local citizens.

The Montecito Water District (MWD, District) was formed as a County Water District in November 1921, in accordance with the California Water Code, with the purpose of furnishing potable water within the District. Following the formation of the District, management and its five member Board of Directors set out to build Juncal Dam, the 2-1/4 mile long Doulton tunnel through the Santa Ynez coastal range, and 50 miles of distribution pipelines within its service boundary. By 1930, the District had a fully functional distribution and reservoir storage system along with reliable and adequate water supplies. In 1949, the District executed the first contract with the Santa Barbara County Water Agency who was the designated local governmental agency and signature to the Cachuma Project with the United States Bureau of Reclamation. The USBR held the federal Santa Ynez River water rights and owned, built and operated Bradbury Dam as a regional water supply, Lake Cachuma, serving the District and four other Santa Barbara County water agencies including the Santa Ynez River Water Conservation District 1, Goleta Water District, City of Santa Barbara and the Carpinteria Valley Water District. The District has 10.3 percent of the reservoir's current annual safe yield.

The Montecito Water District (MWD, District) service area encompasses 15.4 square miles and lies in the eastern portion of the coastal plain south of the Santa Ynez Mountains. The service area includes a very small eastern part of the City of Santa Barbara, the unincorporated communities of Montecito and Summerland, Toro Canyon, and small parts of the western Carpinteria Valley as shown in Figure 2-1. In 1995, the Summerland County Water District, contiguous with the Montecito Water District service boundary and a Cachuma and State Water Project participant, merged with the Montecito Water District.

The District is a not for profit public water agency governed by a publicly elected five-member Board of Directors. The mission of the District is to provide an adequate and reliable supply of high quality water to the residents within the District's service boundary at the most reasonable cost. In carrying out this mission, the District places particular emphasis on providing outstanding customer service, conducting its operations in an environmentally sensitive manner and working cooperatively with other agencies. The District obtains its water supplies from multiple sources including Lake Cachuma, water imported through the State Water Project, supplemental purchases of water from around the State and the District's own Jameson Lake, Doulton Tunnel, and groundwater basin within its service boundary.

The District provides water service to approximately 4,600 residential, commercial, institutional, and agricultural service connections. Approximately 92 percent of the service connections are low-density, single-family housing. Elevations in the District range from sea level up to about 1,820 feet in the coastal foothills in the northern part of the area. Table 2-1 presents the historical and current breakdown of service connections by customer class.

Table 2-1: Customer Water Service Connections

Customer Class	2015	2016	2017	2018	2019	2020
Single Family Residential	4,224	4,227	4,230	4,242	4,249	4,261
Multi-Family Residential	64	64	64	64	65	66
Commercial/Institutional	259	260	265	265	260	263
Non-Potable (golf course)	1	1	1	1	1	1
Agricultural Irrigation	45	44	45	44	44	42
Total:	4,592	4,602	4,604	4,615	4,618	4,632

Total does not include Non-Potable (golf course).

The majority of the District's potable water distribution system was designed and operated as gravity-fed system with a series of pressure regulating stations from the late 1920's to 1949. The primary source of water during this period was from Jameson Lake, located in the upper reaches of the Santa Ynez River and the 2-1/4 mile long Doulton Tunnel through the Santa Ynez coastal range that connected the Jameson Lake supply to the District service boundary. In 1949, the District connected to the USBR Cachuma Project via the South Coast Conduit (SCC), a water transmission pipeline conveying Lake Cachuma water to the south coast. The hydraulic grade line of the SCC was below the operational grade line of District's storage reservoirs which required the construction of pump stations at the SCC turnouts to boost water into the District's distribution system.

Currently, the District's potable water treatment and distribution system is comprised of two surface water treatment plants, nine storage reservoirs, approximately 114 miles of pipeline, seven pumping stations, six potable water production wells and six non-potable production wells. All District potable water is treated to meet all federal and state drinking water standards. The Cachuma water supply and State Water Project water are treated by the City of Santa Barbara regional Cater Water Treatment Plant. This treated supply is then conveyed to the District via the USBR owned SCC transmission pipeline. The Jameson Lake water supply is treated at the District's Bella Vista and Doulton Water Treatment Plants. Groundwater for potable use is treated at each well site.

The District is one of many public water agencies in the County of Santa Barbara. Not all properties within the District's service area are served by the District. Those properties not served by the District are provided water by private groundwater wells operated individually or by private water companies. The use and treatment of water from groundwater wells for potable use by individual private water well operators is under the permit authority of Santa Barbara County.

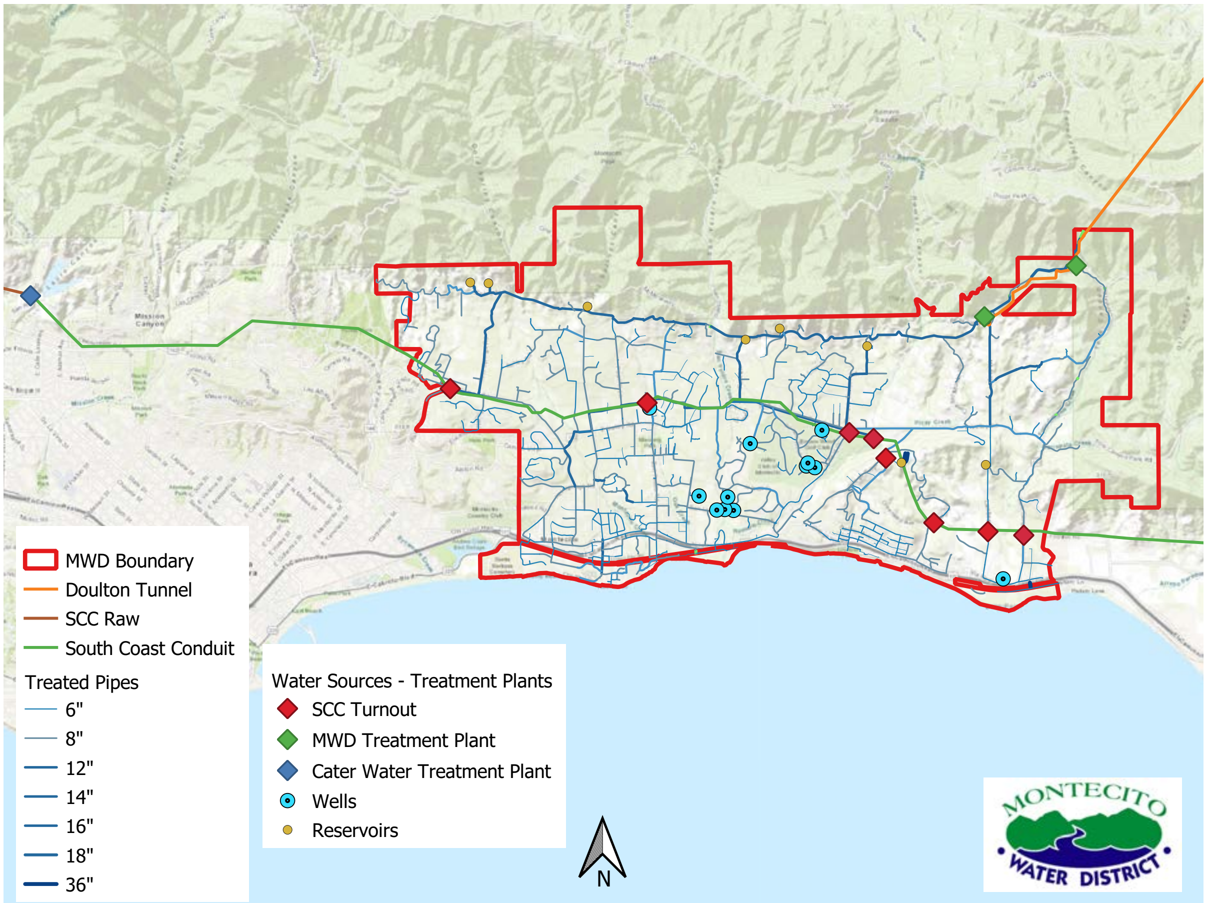


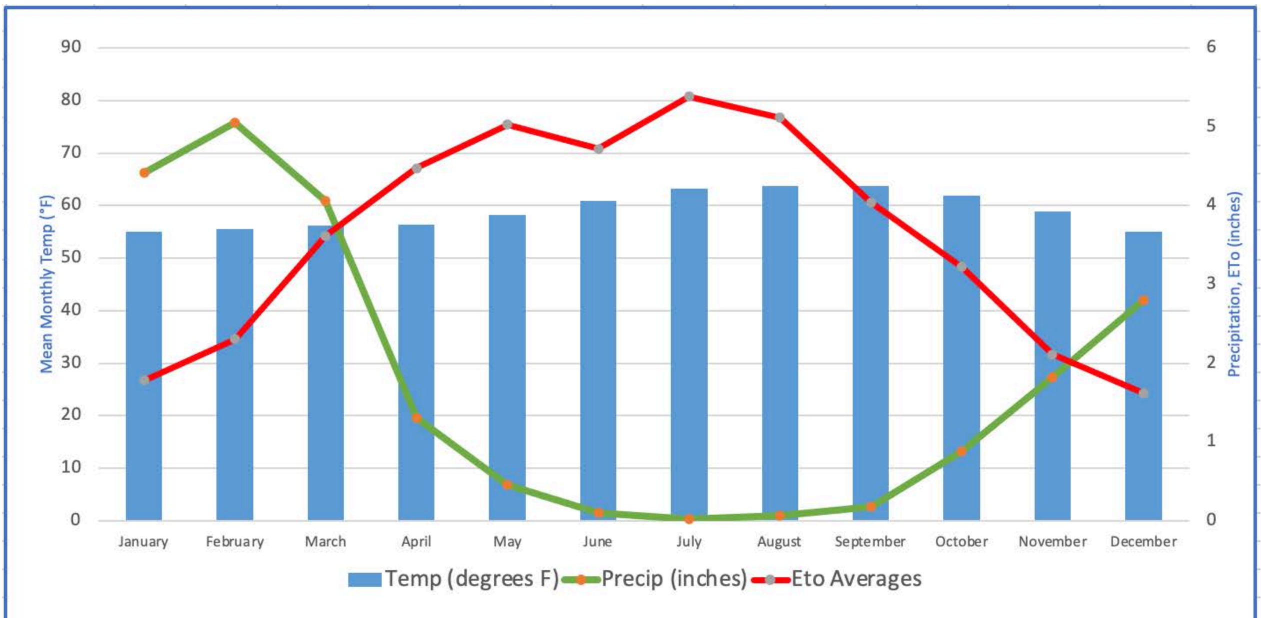
Figure 2-1: MWD Service Area

2.1 Service Area Climate

The coastline of Montecito and Santa Barbara has a Mediterranean climate characteristic of coastal Southern California. The onshore breezes from the Pacific Ocean moderate temperatures significantly which result in warmer winters and cooler summers compared with locations further inland which don't have the temperature stabilizing effect of the ocean. Winters are cooler and wetter, and summers are warm and dry with very little precipitation.

Historical averages show January as the coolest month and February as the wettest month in the service area. July, August, September are the warmest months; and June, July, August are the driest months according to historical averages. The wet season is from October to March with a 30-year annual mean rainfall of 19.93 inches. The annual mean temperature is 59.1 degrees, but the summer months regularly see average highs in the mid-high 70s, and average winter lows down in the mid-40s. Other climate characteristics include ocean fogs which advance down the channel between the mainland and offshore islands. These are most abundant in May and June. This seasonal overcast layer could contribute to the drop in evapotranspiration (ETo) seen in 30-year averages in June. Snow is rare but cold fronts can bring freezing temperatures with trace amounts of snow and ice to the upper elevations of the Santa Ynez Mountains. Autumn starts warm and dry and becomes cooler and wetter later into the season. The area often experiences the hot, dry Santa Ana winds during the late summer and early fall periods, which can create high water demand late into the year. The last rains in spring are generally in late April or early May.

Figure 2-2 illustrates the average monthly temperature, rainfall, and ETo for the service area. Actual annual rainfall totals deviate quite significantly from the 30-year average as illustrated in Figure 2-3; in most years, precipitation totals fall below the mean.



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Temp	55.1	55.6	56.2	56.4	58.2	60.9	63.2	63.8	63.7	61.9	58.9	55.1
Precip	4.42	5.05	4.06	1.30	0.46	0.10	0.02	0.07	0.18	0.88	1.82	2.80
ETo	1.78	2.30	3.62	4.47	5.03	4.72	5.39	5.12	4.04	3.22	2.11	1.62

Figure 2-2: Historic Average Climate Conditions

1981-2019 temperature and rainfall data from the PRISM Climate Group https://prism.oregonstate.edu/ Location: Lat: 34.4196 Lon: -119.6257 Elev: 46ft; ETo data is from CIMIS Santa Barbara Station 107 https://cimis.water.ca.gov/ Jan 2001 - Dec 2020.

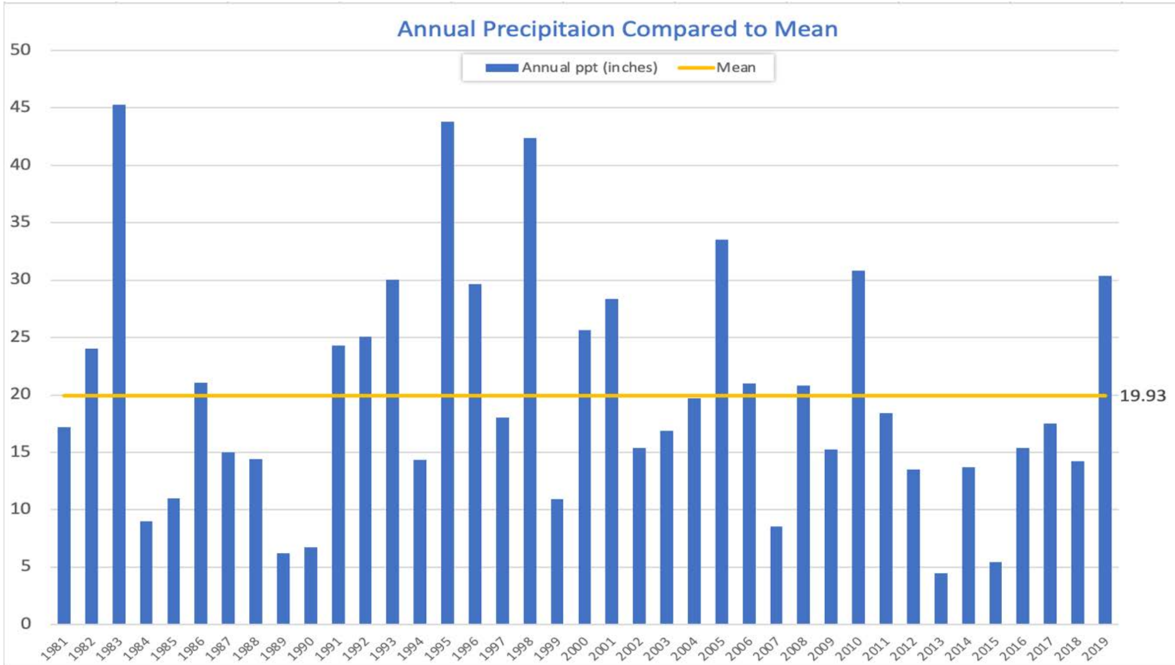


Figure 2-3: Annual Precipitation Variability (1981-2019)

2.2 Climate Change

While the California Water Code does not prescribe specific climate change planning and management measures for water suppliers, it does emphasize that climate change is appropriate to consider when assessing drought risk assessment, water conservation and use efficiency, and demand management and supply—both in a historical and projected context.

The MWD service area climate is highly variable with respect to precipitation and temperature. State-wide, the dry summer months make the state extremely susceptible to drought when a deficiency in precipitation materializes, especially in mountain snowpack. Critical supplemental water supply comes from the State Water Project (SWP) which is dependent on the precipitation falling in the Sierra Nevada mountains as winter rain or snow. It is then stored as snowpack and subsequently captured in reservoirs and appropriated throughout the year. Climate change is generally forecast to bring higher temperatures, more variability in precipitation, and more frequent and prolonged droughts. Rising temperatures equate to decreasing snowpack and earlier snowmelt. The Sierra snowpack is projected to experience a 48 percent to 65 percent loss relative to the historical April 1 average by the end of the century.[1] This will place strain on summer and fall water supply from the State Water Program. Increased evapotranspiration would also accompany the intensification of hotter extreme temperatures. Other likely future changes in the area are likely to include extreme weather events, droughts, flooding, fires, coastal erosion, and sea level rise, which could potentially affect the coastal groundwater aquifers in the MWD service area. Local water

[1] Climate Change Risk Faced By The California Central Valley Water Resource System – California's Fourth Climate Change Assessment – Schwarz, Ray, Wi, Brown, He, Correa – 2018

surface water supply reliability will likely also be affected as rainfall captured in Jameson Lake and Lake Cachuma will be subject to increased variability.

Montecito has experienced a general warming trend over the last 100 years, as shown by the trendlines in Figure 2-4. 2050 projections for California show average temperature increases in the range of 1.82 – 5.4 degrees.[2]

These climate variations may manifest in an increased consumptive demand for landscape irrigation. As discussed in Chapter 4, MWD has experienced a noticeable increase in residential demand since 2016 after dramatic reductions mandated in 2015 reduced consumption by more than half. The recent increase may be a "return" to pre-drought conditions, but also may be a response to climatic conditions driving a greater need for irrigation to meet landscape water needs. MWD will continue to monitor customer demand characteristics.

Development of reliable local water supply is an important part of MWD's approach to climate change and supply vulnerability. The District's existing and planned water supplies are further detailed in Chapter 3.

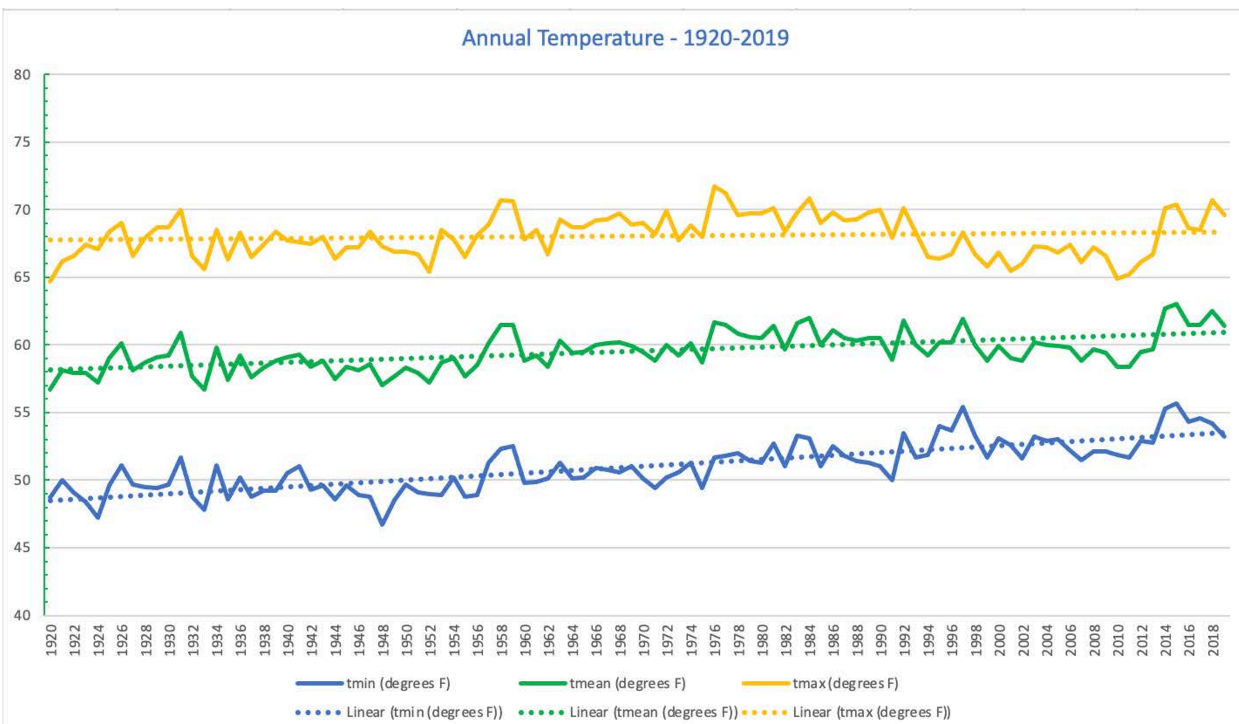


Figure 2-4: Historical Annual Temperature (1920-2019)

PRISM Climate Group https://prism.oregonstate.edu/ Location: Lat: 39.1239 Lon: -121.6174 Elev: 56ft

[2] City of Santa Barbara Climate Action Plan, 2012

2.3 Current and Projected Population, Land Use, Economy, and Demographics

Service area population and land use projections are critical to developing a useful planning framework as population dynamics and growth are a primary influence on water use. These projections directly influence planning measures for system supply, delivery, infrastructure, and demand management. Similarly, understanding the economic, social, and demographic trends give valuable insight to water management and planning. This section of the UWMP addresses these factors to provide a basis for forecasting future water use.

2.3.1 Current Population and Historic Trends

The large majority of the MWD service area connections are in the unincorporated communities of Montecito, Summerland, and Toro Canyon. Very small portions of the cities of Santa Barbara and Carpinteria also lie within the service area. For the purposes of calculating the historical service area population and historical growth rates this UWMP uses data from the DWR population tool, the U.S. Census Bureau's American Community Survey, and Santa Barbara County Association of Governments (SCAG).

Since the formation of the District in 1921 Montecito Water District population has seen slow growth, the largest increase coming with the annexation of the Summerland County Water District in 1995. With high property values and cost of living, Montecito does not generally see the same regional migration as other locations within the County. The last property annexation into the service area was about 7.4 acres in 2010.

The residential population of MWD's service area has not fluctuated significantly over the past 25 years as the unincorporated areas on the South Coast of the County have had limited growth opportunities.

Estimating the 2020 population uses the "number of connections" method, where occupancy rates are multiplied by the number of single family and multiple family connections. For the MWD service area, estimating population is challenging due to several factors unique to MWD's customer base. The presence of institutional service connections such as Westmont College, which averages approximately 1,200 on-campus students each semester, may not be accounted for in California Department of Finance (DoF) occupancy rates. In addition, many MWD customers may not be counted by census data since they are primary residents in another city or state, and their Montecito residence is considered a secondary residence from a census perspective. Additionally, support services for many of the residences, such as caretakers and other staff, may also add to daily water demands but likely reside elsewhere. In all these cases, these users still add demand to the potable water system but may not be accounted for in census data used to develop DoF occupancy estimates.

For purposes of this UWMP, the current number of single family and multiple family service connections provides initial values for the calculation (see Table 2-1). As noted previously, census data, the foundation of the DoF occupancy estimates, are unreliable for the MWD service area. This analysis utilizes the SBCAG 2040 Regional Growth Forecast data for the communities of Montecito and Summerland. The average occupancy rate reported by SBCAG for these communities is 2.23 capital per household. The 66 multiple family connections listed in Table 2-1 reflect connections, but not actual residential units. The District quantified the number of units behind each multiple family meter, with a corresponding average of 15.4 dwelling units per connection. Table 2-2 provides recent population estimates, with each year calculated using the occupancy rate and the residential connection information included in Table 2-1. The fluctuations represent the low or no-growth nature of the service area, as well as the difficulty in estimating the served population.

Table 2-2: Historical Estimated Population

2016	2017	2018	2019	2020
11,624	11,631	11,658	11,708	11,769

2.3.2 Projected Population

To forecast projected service area population as accurately as possible requires consideration of the past growth rate, local economic predictions, and current and projected land uses.

Table 2-3 projects growth by increasing the current number of MWD connections factoring in an estimated 0.4 percent customer connection growth rate. The growth rate assumes the addition of 350 new single-family and 70 new multiple family dwelling units from the estimated 500 buildable lots remaining in the service area. MWD anticipates these lots may be built by 2040. Multiplying the new dwelling unit estimates by the same occupancy rate used to estimate the 2020 population gives projects population through the UWMP planning horizon.

While population growth is anticipated to correlate with construction on these remaining lots, MWD also anticipates the addition of Accessory Dwelling Units (ADUs) on some of the existing parcels. Capturing this population in forecasts is difficult given the arbitrary inclusion of ADUs on existing lots. From a water needs perspective, the inclusion of ADUs is expected to have a net-zero effect on the parcel's water use at this time. This presumption is based upon the likelihood that the additional indoor consumption associated with the ADU occupants would replace landscaping use previously occurring on the same footprint as the ADU (e.g., landscape is removed to construct the ADU). Depending on each specific case, adding an ADU may increase, decrease, or have no impact on parcel water demands. MWD will monitor ADU development to establish planning trends and issues to address.

Table 2-3: Population Forecast

	2020	2025	2030	2035	2040	2045
Population	11,769	12,010	12,250	12,490	12,730	12,730

Population based on projected customer connections detailed in Chapter 4.

2.3.3 Economic Trends & Other Social and Demographic Factors

MWD mostly includes the unincorporated communities of Montecito, Toro Canyon, and Summerland. These three communities are similar in their economic and demographic makeup.

The service area demographic is affluent, and customers include primary residence, second homes, and vacation homes, as well as residential with agricultural water uses. This unique customer base, the university, intermittent residency, plus residential staff and caretakers add complexity to determining actual population served. The community's unique characteristics also create unique water use attributes unlike standard urban water use throughout California.

The coronavirus pandemic has affected the national (and global) economy in 2020 and Santa Barbara County was similarly affected as shown in Figure 2-5. The County's unemployment rate spiked to 14 percent in April 2020. Since then, the County has regained some of the jobs. MWD staff anecdotally understand that some of its customers who only reside in their homes seasonally may have become permanent residents during this time, and may continue to stay. As discussed in Chapter 4, water demands have increased in 2020, and a larger resident population may have contributed to the increase.

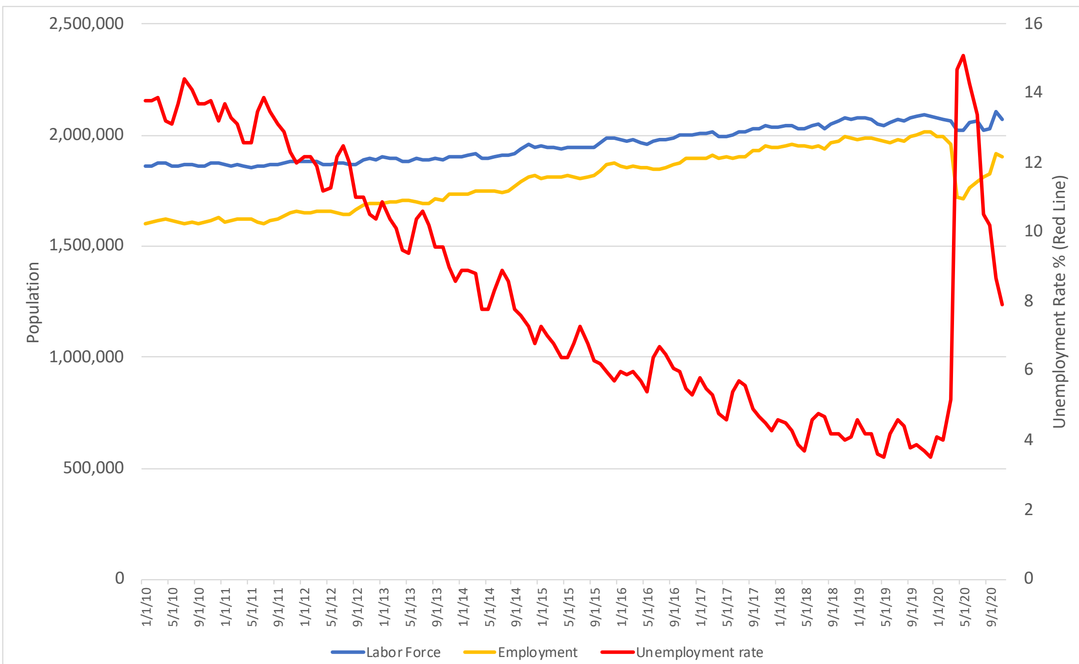


Figure 2-5: Santa Barbara County Employment and Unemployment

2.4 Delivery System Details

This subsection focuses specifically on MWD's potable water delivery system. The water supplies delivered through this system are described in Chapter 3, with water uses described in Chapter 4.

MWD operates a potable water system to provide water service to its customers. The distribution system is complex, especially for the District's size, due to the geographical features of the area and its semi-arid climate. The major features of this system, including the SWP Coastal Branch Pipeline, Tecolote and Doulton tunnels, reservoirs, conduits, treatment plants, groundwater wells, storage tanks, and pipelines are shown above on Figure 2-1.

The water supplies come from several sources, including water imported through the State Water Project which is conveyed from San Luis Reservoir via the California Aqueduct Coastal Branch Pipeline to Lake Cachuma. Lake Cachuma is a reservoir reservoir located on the Santa Ynez River created by the Bradbury Dam and is a primary source of water for the District. The 6.4-mile Tecolote Tunnel brings water from Lake Cachuma through the mountains to the South Coast and into the South Coast Conduit (SCC) pipeline which runs from Goleta to Carpinteria.

Water from this source is treated by the City of Santa Barbara at the Cater Treatment Plant and is conveyed to MWD via the SCC. The MWD-owned Jameson Lake and Juncal Dam are located along the upper reaches of the Santa Ynez River. Water from this primary water source is conveyed in the 2.25-mile long Doulton Tunnel through the mountains and delivered to the District's Doulton and Bella Vista Treatment Plants.

Much of MWD's potable water distribution system dates from the late 1920s to the late 1940s. This original system is gravity fed from Jameson Lake with a series of pressure regulating stations and pipeline that brings the water into the service area. In 1948 the U.S. Bureau of Reclamation started the Cachuma Project to capture Santa Ynez River water and MWD signed on to the project in 1949. As previously described this water is conveyed via the SCC but since it lies below the service area, pump stations are required to boost SCC water into the MWD distribution system. The Summerland County Water District, which was contiguous with the MWD, was annexed to MWD in 1995 resulting in an initial 540 new customers and both Cachuma and SWP water entitlement. MWD groundwater is sourced from the Montecito Groundwater Basin and the Toro Canyon Subbasin most of which lies within the Montecito Groundwater Basin and service area.

In addition to owning and operating Jameson Lake, Juncal Dam, and Doulton Tunnel, MWD operates and maintains two surface water treatment plants, nine pump stations, nine reservoirs and storage tanks, twelve active groundwater wells, and 114 miles of water distribution pipeline. The Bella Vista and Doulton water treatment plants serve MWD exclusively and treat surface water from Jameson Lake, which is delivered through the Doulton Tunnel. The tunnel was completed in 1928 and currently supplies water to the 2.25 million gallons per day (MGD) combined treatment plant capacities. Water treatment for supplies delivered through the SCC from State Water Project is treated at the Cater Water Treatment Plant in a joint operation with the City of Santa Barbra and Carpinteria Valley Water District. This traditional coagulation and flocculation type plant is currently sized for 37 MGD to meet the needs of the multiple south coast agencies. Groundwater is treated at each well site as necessary.

Treated water pipes owned by the district represent a range of materials and ages. Approximately 80 percent of the pipelines in the system are ductile iron or cast iron and approximately 70 percent of all pipes in the system are in the 6-inch and 8-inch sizes. Approximately 82 miles of pipes date from before 1980 with the earlier pipes dating back to the early 1920s.

MWD's distribution system was severely affected during the January 9, 2018 debris flows resulting from heavy rains on recently fire-affected hillsides in the service area. Damage primarily consisted of water distribution pipelines which have since been repaired.

2.5 Energy Intensity

Among the statutory changes enacted with new requirements for 2020 UMWPs, an urban supplier shall provide "Energy Intensity Reporting". Energy Intensity is defined as the total amount of energy expended in kilowatt-hours (kWh) by the urban water supplier on a per acre-foot (AF) basis to take water from the location where the urban water supplier acquires the water to its point of delivery.

Due to the method that water is supplied in MWD's service area, it is not currently possible to separate out extraction, treatment, storage, and distribution energy uses. System supply is conveyed from MWD owned sources (Lake Jameson, Bella Vista and Doulton Treatment Plants, wells) and SWP and Santa Barbara City and County sources (Lake Cachuma, Cater Treatment Plant). Given these complexities, MWD uses the Total Utility Approach. This method sums the annual energy consumed for all water management processes, divided by the total volume of water in acre-feet (AF). These processes include diversion, conveyance, placement into storage, treatment, and distribution. The total energy intensity is reported in Table 2-8.

Table 2-8: Energy Intensity – Total Utility Approach[3]

Sum of All Water Management Processes	
Volume of Water Entering Process	4,254 AF
Energy Consumed	1,665,257 kWh
Energy Intensity	391 kWh/AF

[3] Data is based upon energy and total water production for November 2019 through October 2020.

3 Water Supply Characterization

The District relies on a variety of local, regional, and State water supply sources to meet its customers' needs while continuing to work with neighboring water purveyors on the South Coast to identify, investigate, and implement new sources. The District's current water sources include the following:

- Jameson Lake – surface water from the Santa Ynez River
- Fox Creek Diversion - surface water from a Santa Ynez River Tributary
- Alder Creek Diversion - surface water from a Santa Ynez River Tributary
- Doulton Tunnel Infiltration - local groundwater
- State Water Project (SWP)/ CCWA - State Water Project surface water
- State Water Project Supplemental water purchases
- Cachuma Lake / Cachuma Project - regional surface water
- Groundwater Wells - local groundwater from Montecito Groundwater Basin
- Desalination – a water purchase agreement with the City of Santa Barbara

In addition, the District is considering and evaluating other possible source of supply including recycled water.

The District's water supply portfolio has evolved over the decades based on the needs of the District. The addition of the State Water Project (SWP) in the 1990s accommodated increasing water demands and population growth in the region. However, participation in the State Water Project comes with risks of low allocation years and loss of carryover water when SWP reservoirs spill. Historically, the SWP has supplied on average 59 percent of the full allocation of 3,300 AFY, with annual allocations ranging from 0-100 percent. Allocations to the District from the Santa Ynez watershed supplying Lake Cachuma and Jameson Lake have historically proved reliable with the exception of the 2012-2016 drought when allocations were reduced to at or near zero during the 2015/16 Water Year. Future sustainable management of these reservoirs could reduce annual deliveries from these sources to extend their supply during drought periods.

Given the long-term risks and low reliability associated with the SWP and regional surface reservoir supplies, the District is committed to pursuing local, drought-proof supplies. This was made evident with the District's 2020 execution of a Water Supply Agreement with the City of Santa Barbara in connection with its desalination facility including the District's ongoing evaluation of recycled water opportunities. These efforts also support State requirements to reduce reliance on the Sacramento/San Joaquin Delta, as discussed in Section 3.8.

3.1 Surface Water Supplies

Surface water supplies have historically constituted more than 95 percent of MWD's typical water year supply. Surface water has consisted of local sources as well as imported sources. Surface water rights to Jameson Reservoir and two other small tributaries in the upper Santa Ynez watershed were the District's primary source of water supply from the 1920s until the 1950s when Cachuma Lake Project was completed. While the District's supply portfolio has diversified considerably since then, local surface water rights are still an important source of water in normal years.

3.1.1 Jameson Reservoir & Doulton Tunnel

The District maintains a water supply source from Jameson Reservoir. This source provides the District an average of 1,350 AFY, although the 2010's drought lowered the 15-year average to about 980 AFY. Jameson Reservoir is formed by Juncal Dam, located on the upper reaches of the Santa Ynez River at the confluence with the North Fork stream. It is supplemented by seasonal diversions from Alder Creek. Water from the reservoir is diverted through the Doulton Tunnel under the Santa Ynez Mountains into the District's service area. There is significant infiltration of groundwater into the tunnel, which supplements this source with an additional volume of water. Natural inflow into Doulton Tunnel has a long-term average of about 500 AFY, although the average for the last 15 years has been about 365 AFY.[4] When the District acquired the rights to Jameson Lake from the City of Santa Barbara, the District agreed to transfer 300 AF of water annually to the City in perpetuity.

Operations at Jameson Lake were disrupted by the Thomas Fire in December 2017. The massive wildfire, California's largest ever recorded at the time, burned 100 percent of the watershed above the reservoir and destroyed the dam caretaker residence and other MWD maintenance structures. Jameson Lake's supply was rendered undeliverable due to contamination from the Thomas Fire from December 2017 until May 2019.[5] The District implemented a treatment improvement project at its Bella Vista water treatment facility to respond to the increased presence of ash and other debris that react during the treatment process. Deliveries from Jameson Lake were 983 and 991 AF in 2019 and 2020, respectively.

When Juncal Dam was completed in 1930, the reservoir had a capacity of 7,000 AF. Siltation over time (and especially after the Thomas Fire) has reduced its capacity to 4,847 AF, as measured by a bathymetric survey in 2019. Periodic surveying of the reservoir bottom has shown that siltation has reduced reservoir capacity by an average of about 25 AFY during normal (non-fire) years. The District continues to perform periodic silt surveys and other studies on the reservoir and has developed a conjunctive use operational plan for all District supplies that includes an operational annual yield and rule curve based on Jameson Lake reservoir capacity. In 2020 the rule curve for Jameson Reservoir was revised in the Future Water Demands and Supply Options 2020 Update to reduce diversions and prioritize multiyear storage, which preserves water in storage for use in the later years of a multi-year drought.

Jameson Lake supply availability is directly related to rainfall. Deliveries were severely reduced during the driest years of the 2010's drought, including water year 2015-16 when no water was delivered from Jameson Reservoir. Droughts and catastrophic wildfire events may become more frequent or prolonged in the future, reducing the reliability of this water supply.

3.1.2 Fox and Alder Creek Diversions

The District diverts surface water from two tributaries of the upper Santa Ynez River; Fox Creek, and Alder Creek. Both Creeks join the Santa Ynez River downstream from Juncal Dam. The

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[4] Future-Water-Demand-and-Supply-Options-2020-FINAL.pdf

[5] https://www.montecitowater.com/news/desalination-and-recycled-water-projects-update/

District operates and maintains concrete diversion dams, above-ground flume, and piping at these locations. Diversions from Alder Creek are discharged into Jameson Lake and from Fox Creek are discharged directly into the pipeline from the lake to Montecito. In the 1990s, the District's diversion activities at both locations were revised to address and mitigate potential impacts caused to newly listed species under the Endangered Species Act. The District subsequently modified the diversion collection systems to continuously pass the natural flows of both creeks downstream of the diversion dams. Actual operational yields of these seasonal diversion tributaries have ranged from 0 to 613 AFY (Alder) and 0 to 122 AFY (Fox). In 2017, the District installed state of the art flow monitoring equipment but the equipment was destroyed during the 2017 Thomas Fire and subsequent debris flow at both diversions. Monitoring equipment will be restored as part of the reconstruction of both of these diversions, which is expected to be completed by 2023.

3.1.3 Contracts for Water

The District holds contracts to purchase surface water from multiple sources, including the State Water Project and the Cachuma Project. State Water Project water is imported from the Sacramento/San Joaquin Delta through the State Aqueduct's Coastal Branch. The District also uses this conveyance infrastructure to purchase Supplemental Water from willing sellers when needed, all of whom are State Water Project contractors. These two sources, by virtue of their conveyance through the Delta, meet the definition of a "covered action" under CCR, tit. 23, § 5001 and thus require that the District and Central Coast Water Authority demonstrate its consistency with Delta Plan Policy WR P1, *Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance* (CCR, tit. 23, § 5003) in this 2020 update to its UWMP. The District's and CCWA's compliance with the Reduced Reliance requirement is discussed in more detail in Section 3-8.

Lake Cachuma water, a nearby regional surface water supply, is purchased from the United States Bureau of Reclamation (USBR). Although imported State Water Project water is sometimes also stored in Lake Cachuma, "Lake Cachuma water" as used in this UWMP and its reporting tables refers exclusively to surface water originating within the Santa Ynez River watershed.

The District also maintains a water supply contract with the City of Santa Barbara as discussed separately below.

3.1.4 Water Supply Agreement with the City of Santa Barbara

Since the completion of its 2015 UWMP, the District has secured new water supplies from the City of Santa Barbara's Charles D. Meyer Desalination Facility, which will provide the District with 1,430 AFY of local drought-proof potable water beginning in 2022. Because the facility is operated by another agency and the water purchased under contract by the District may be a blend of many sources, this supply source is discussed here as contract water rather than under Section 3.4 Desalination Opportunities.

Desalinated water opportunities on the south coast of Santa Barbara County began with the construction of the City of Santa Barbara's Charles E. Meyer desalination facility, built between 1990 and 1992 as an emergency drought water supply during the 1987-1992 drought. The facility was put on standby following the end of that drought, but in August 2014, the Santa Barbara City Council approved a contract to reactivate the Charles E. Meyer desalination facility as an emergency water supply. In 2020, based on the recommendations of the *Future Water Demand and Water Supply Options 2020 Update* study by Dr. Steven Bachman, the District determined that a Water Service Agreement with the City of Santa Barbara provided the most reliable water supply at the least long-term cost. In June of 2020, the District's Board of Directors approved the final Water Supply Agreement between the City and District for a term of 50 years.

The WSA secures the District 1,430 AFY of new, local, drought-proof supply that the District is obligated to purchase and receive, regardless of the hydrologic condition of the current year. The water delivered to the District will meet all state and federal primary water quality requirements and can be supplied from any City water supply source or a combination thereof, which offers the City additional operationally flexibility. The WSA greatly reduces the risk of shortages in dry years and reduces the District's reliance on imported supplies from the Delta.

3.1.5 State Water Project / CCWA – State Surface Water

The District purchases State Water Project supplies as a member of the Central Coast Water Authority (CCWA). The CCWA is the Joint Powers Authority administrator formed to construct, manage, operate, and maintain the State Water coastal aqueduct treatment and conveyance facilities serving Santa Barbara County. In 1963, the Santa Barbara County (County) Flood Control and Water Conservation District (FCWCC) contracted with the California Department of Water Resources for the delivery of up to 57,700 AFY of State Water. The contract did not include the cost of constructing the necessary delivery system to bring State Water into Santa Barbara County and, when a bond election failed in 1979, the County FCWCC sought financing through agreements with local water retailers to provide them entitlements for project funding. The contracts with the local water retailers provided the allotment of 45,486 AFY of State Water, of which 3,300 AFY was allocated to the District.

The drought of 1987-91 illustrated the vulnerability of the county water agencies to multi-year below average rainfall years. The dwindling local surface water supplies caused mandatory cutbacks in customer water use and residents voted to connect to the State Water Project. In 1991, voters in a number of county communities with retained allocations, including the District, voted to fund the formation of the Central Coast Water Authority to manage and construct facilities for the import of State Water. Through the sale of water to customers, the CCWA member agencies are reimbursing the CCWA and the State Water Project for all costs, including construction and operation.

Construction of State Water conveyance facilities on the south coast was completed in 1997, which included the 102-mile Coastal Branch of the State Aqueduct and the 42-mile Santa Ynez extension ending at Lake Cachuma where it comingles with other existing surface water. Once State Water reaches Lake Cachuma it is conveyed through the Tecolote Tunnel to the City of Santa Barbara's Cater Water Treatment Plant for treatment before being conveyed via the South Coast Conduit to the District.

The DWR defines the percentage of water available to each State Water contractor each year which is a function of available water supplies within the State Water Project. The percentage allocation of water by DWR determines the contractor's Table A amount available to an agency each year. The District's full annual State Water Table A water allocation is 3,300 AFY for a DWR annual water supply percentage of 100 percent. Since 2012, the annual DWR Table A allocation has averaged 51 percent and ranged from a low of 5 percent to a high of 85 percent.

The District stores the majority of its State water in San Luis Reservoir before it is conveyed to Lake Cachuma. If San Luis Reservoir is at full capacity and is spilling, any remaining District carryover water (water from a previous year) is lost. To mitigate this potential loss, the District, along with the other Santa Barbara County water agencies, considers groundwater banking opportunities through CCWA to place water into various groundwater banking programs around the State. The District currently banks water in the Semitropic Groundwater Bank, as discussed in Section 3.5.6. The water storage banking programs are typically operated as an unbalanced exchange, where more water is stored than can be delivered at a later date. At the end of 2020 the District had 1,800 AF of water stored in the Semitropic Groundwater. In general, State supplies in excess of the District's needs in a given year represent an opportunity to bank water for future use.

The 2012-2016 drought lowered the previously published annual reliability of the State Water Project, with the 2019 State Water Project Delivery Capability Report providing the best estimate of anticipated deliveries over the planning period under various hydrologic conditions.[6] The projections in the 2020 State Water Project Delivery Capability Report have been used by the CCWA to project future deliveries, and the District also relies upon these estimates for future water supply planning. Table 3-1 contains the amount of water projected to be available to the District based on its current allocation of 3,300 AFY under various hydrologic conditions.[7]

Table 3-1. Current and Projected Annual SWP Table A Allocation

Annual Table A Allocation	Year 2020		Year 2040	
	% of Allocation	Acre-feet (AF)	% of Allocation	Acre-feet (AF)
Long Term Average	58.9%	1,943	56.78%	1,874
Single Dry Year 1977	7.0%	231	10.0%	363
Lowest Allocation on Record 2015	5.0%	165	5.0%	165
5-Year Drought 1988	11.0%	363	11.0%	363
5-Year Drought 1989	46.0%	1,518	56.7%	1,870
5-Year Drought 1990	14.0%	462	14.0%	462
5-Year Drought 1991	25.0%	825	21.0%	693
5-Year Drought 1992	17.0%	561	19.7%	649

Source: CCWA & DWR

As Table 3-1 indicates, the District's allocation of State Water supplies can be significantly reduced during droughts. During the most severe year of the most recent drought, 2015, the District was

[6] https://data.cnra.ca.gov/dataset/state-water-project-delivery-capability-report-dcr-2019/resource/119da5c5-1c47-4142-8896-334628ca61cd

[7] https://www.ccwa.com/files/0b13a76e9/BoardPkt092420.pdf

allocated only 5 percent of its full contract amount, which equated to 165 AF. The District considers a 5 percent allocation to represent the "worst-case scenario" for supply planning purposes based on recent experience.

3.1.6 Supplemental Water Purchases

At the height of the 2012-2016 drought, DWR began allowing State Water Project contractors to sell water to one another using DWR's SWP conveyance system. Supplemental water purchase agreements sometimes require an exchange component whereby the District is required to return an amount equal or greater amount of water purchased, typically over a ten-year period. This water return is often referred to as "water debt". The supplemental water purchase agreements include the return conditions of this water debt, which often dictate the return period and other conditions that must be met. Other transfers more closely resemble a one-time purchase and do not require water to be returned at a future date. Avoiding legal injury to other water users is a key determination that DWR and the State Water Resources Control Board (SWRCB) examine when considering whether to allow a transfer, and each transfer requires approval from each agency on a case-by-case basis.

The District was quick to take advantage of the opportunity to purchase supplemental water, ultimately purchasing 17,806 AF of water from a variety of other SWP contractors from 2014 to 2018. The District made no supplemental water purchases in 2019 or 2020. Some transfer agreements the District executed included return requirements. Because of the favorable hydrologic conditions in water years 2017 and 2019, the District was able to fully return owed water and now carries zero water debt as of 2021.

While supplemental water purchases have proven to be crucial in meeting the District's dry-year needs over the last 10 years, the District remains committed to reducing its reliance on this source of water over time in compliance with the Delta Plan. The District's progress towards this goal and demonstration of compliance is included in Section 3.8.

3.1.7 Cachuma Lake / Cachuma Project – Regional Surface Water

The District receives regional surface water from the Santa Ynez River watershed via Lake Cachuma, which can supply up to 58 percent of the District's total supply in wet years or be curtailed to zero in critically dry years. The United States Bureau of Reclamation (USBR) owns the Cachuma Project and contract with the Cachuma Operations and Maintenance Board (COMB) for operations and maintenance. COMB is a joint powers authority whose members include Goleta Water District, City of Santa Barbara, Carpinteria Valley Water District, and Montecito Water District. Each member water agency has individual contracts which define each water agency's proportionate share of the Lake Cachuma water supply. The District's proportionate share of the Cachuma water supply is 10.3 percent.

Water in Lake Cachuma is impounded by the federally owned Bradbury Dam, which was constructed in 1953 on the Santa Ynez River approximately 30 miles northwest of Montecito. The dam is a zoned earth-fill structure that is 206 feet high above the streambed. The dam was seismically retrofitted in 2001 and was fitted with flash board extensions to increase the capacity of the lake in 2004. Lake Cachuma had an original capacity of 205,000 AF at an elevation of 750 feet.[8] Per a bathymetric survey conducted in 2013, Lake Cachuma's capacity has been reduced by approximately 21,000 AF due to siltation, with a current capacity of 184,121 AF. While the dam is equipped with flash boards that have raised the maximum elevation to 753 feet with a corresponding capacity of 193,305 AF, this additional storage is dedicated to storing water for fish habitat for the Cachuma Project to comply with the National Marine Fisheries Service (NMFS) Biological Opinion (BO) and does not increase the available water storage for MWD's water supply purposes.

The Cachuma Project operates under a permit granted by the California State Water Resources Control Board (SWRCB). The current Water Right Order 2019-0148 continued earlier requirements for water releases to protect downstream interests of the City of Lompoc, Santa Ynez River Water Conservation District - Improvement District No. 1, and riparian groundwater pumpers located along the Santa Ynez River. This Order required hearings and its Environmental Impact Report was completed in 2011. The final Water Rights Order was issued in 2019.

The USBR and the Cachuma Project Member Units have developed revisions to the Project operations since 1993 to improve habitat conditions for steelhead trout while still maintaining water supplies. In 2000, the National Marine Fisheries Service (NMFS) issued a Biological Opinion for USBR's operation and maintenance of Bradbury Dam (the Cachuma Project). NMFS is the agency within the Department of Commerce that oversees the protection of Southern California steelhead trout. The 2000 Biological Opinion addresses the effects of Cachuma Project operations on steelhead and its designated critical habitat in accordance with Section 7 of the Endangered Species Act of 1973. In 2014, the NMFS and USBR formally initiated re-consultation of the Biological Opinion which may change the amount of future deliveries allowed from Lake Cachuma allocation to the District. This process is still ongoing.

The District's full entitlement from Lake Cachuma during years of normal rainfall is 2,651 AFY, which is curtailed on a percentage basis in dry years. Lake Cachuma is operated based on an operational yield that was developed through experience during long-term droughts and acceptable delivery reductions during such drought periods. Water is diverted from Lake Cachuma through the Tecolote Tunnel, which extends approximately 6.4 miles through the Santa Ynez Mountains to the head works of the South Coast Conduit. The South Coast Conduit is a gravity-fed concrete pipeline that runs approximately 26.4 miles and includes four regulating reservoirs - Glen Annie Dam and Reservoir (not in service since 2002 due to seismic concerns), Lauro Reservoir, Ortega Reservoir, and Carpinteria Reservoir. Lake Cachuma water supplies delivered to the South Coast Conduit are treated at the City of Santa Barbara Cater Water Treatment Plant.

For the District's Cachuma Project surface water supply (including State Water delivered to Lake Cachuma), the District entered a JPA with the City of Santa Barbara in 1978 for the construction, operation, and maintenance of the Cater Water Treatment Plant, a regional water treatment facility serving the City of Santa Barbara, the Carpinteria Valley Water District, and the Montecito Water District. The Cater Water Treatment Plant has a production capacity of 37 MGD and is owned and operated by the City of Santa Barbara. The District has a 20 percent interest in the Cater facility which provides water deliveries daily to meet customer usage at all demand levels. Treated water

[8] National Geodetic Vertical Datum of 1929

from the Cater facility is delivered to Montecito through the Cachuma Project South Coast Conduit operated by COMB.

The District has metered turnouts supplied by the South Coast Conduit. These metered turnouts include; Barker Pass, Office, East Valley, Lambert, Toro Canyon, Sheffield, Asegra Road, Ortega Pump Station Control, and County Yard.

3.1.8 Wastewater and Recycled Water

There are two independent special districts located within the District's service boundary that provide wastewater collection, treatment, and disposal. The Montecito Sanitary District (MSD) provides wastewater collection, treatment, and disposal services within the areas of Montecito while the Summerland Sanitary District (SSD) serves the community of Summerland. In addition, a very small portion of wastewater generated inside the District's service area along Coast Village Road is served by the City of Santa Barbara with that wastewater conveyed to the City's El Estero Wastewater Treatment Plant. Wastewater Collected in the service area is summarized in Table 3-2 and Table 3-3 summarizes the discharge of each entity.

Table 3-2. Wastewater Collected within Service Area in 2020

Name of Wastewater Collection and Treatment Agency	Metered or Estimated?	Volume of Wastewater Collected from UWMP Service Area 2020 (AF)	Treatment Plant Name	WWTP within UWMP Area?
Montecito Sanitary District (MSD)	Metered	713	Montecito Wastewater Treatment Plant	Yes
Summerland Sanitary District (SSD)	Metered	73	Summerland Wastewater Treatment Plant	Yes
City of Santa Barbara	Estimated	29	El Estero Wastewater Treatment Plant	No
Total:		815	--	--

Note: The "Volume of Wastewater Collected from UWMP service area" for Santa Barbara's EEWTP was estimated based on the proportion of EEWTP's service area population living in MWD's service area, which is only 0.34%. Total volume collected by EEWTP = 8,630 AFY.

Montecito Sanitary District

The Montecito Sanitary District (MSD) is an independent special district voted into existence in 1947 by the residents of Montecito to provide for the collection, treatment, and disposal of wastewater. In 1961, the District constructed a secondary level wastewater treatment plant capable of processing 750,000 gallons per day, including ocean outfall (located 1,500 feet offshore), and trunk sewer system. Twenty years later, voters approved $3.1 million in revenue bonds to incorporate new technology, double the plant's capacity to 1.5 million gallons per day, implement more stringent testing procedures, and provide emergency power. The Montecito Sanitary District provides service to approximately 10,000 people through 3,100 service connections. It maintains approximately 78 miles of sewer pipelines and four pumping stations. The Montecito Sanitary District's collection system is predominantly vitrified clay pipe with some areas of polyvinyl chloride pipe and asbestos cement pipe.[9] In 2020, the MSD treated approximately 714 AF of wastewater which was discharged through their ocean outfall.[10]

Summerland Sanitary District

The Summerland Sanitary District (SSD) is an independent special district that was voted into existence by the citizens of Summerland in 1957. The SSD provides wastewater collection, treatment, and disposal for approximately 10 percent of the District's service area. The Summerland Sanitary District operates and maintains more than eight miles of sewer pipelines and three pumping stations, a 0.3 million gallon per day treatment plant, and a 12-inch diameter ocean outfall extending 740 feet into the Pacific Ocean. The treatment plant was originally designed and constructed as a conventional activated sludge treatment process, however in 1991, the Summerland Sanitary District upgraded to a tertiary treatment facility. In 2020, the SSD treated approximately 73 AF of wastewater which was discharged through ocean outfall.[11]

City of Santa Barbara

The City of Santa Barbara operates a wastewater collection system consisting of 251 miles of sewer pipe and seven lift stations. The City of Santa Barbara owns and operates the El Estero Wastewater Treatment Plant (EEWTP), which has a design capacity of 11 MGD and serves a population of approximately 98,818 as of 2019. EEWTP includes both a secondary treatment facility that discharges to the Pacific Ocean and a 4.3 million gallons per day tertiary treatment facility for recycled water. EEWTP provides wastewater collection and treatment for approximately 3 percent of the District's service area along Coast Village Road.

Construction of El Estero was completed in 1979, providing secondary treated wastewater. In 1987, the City continued upgrading EEWTP with the construction of a tertiary treatment facility to provide recycled water for irrigation. The City's Recycled Water Project was developed in two phases. Phase I was completed in July 1989, and Phase II was completed in May 1991. In October 2015, the City began distributing recycled water from the newly constructed tertiary treatment facility. The tertiary treatment facility uses ultrafiltration technology to supply recycled water to parks, schools, commercial landscapes, golf courses, and public restrooms, thereby freeing up potable water for other uses in the City. EEWTP treated approximately 8,630 AFY in 2020.

[9] Per MSD website http://montsan.org/index.php/history

[10] https://www.montsan.org/files/dfd6a245f/2020+Annual+Summary+Report+Final.pdf

[11] http://summerlandsd.org/monitoring-data-reports/

Table 3-3. Wastewater Treatment and Discharge within Service Area in 2020

Wastewater Treatment Plant Name	Discharge Location	Discharge Location Description	Method of Disposal	Does this plant treat wastewater generated outside of service area?	Treatment Level	Wastewater Treated (AF)	Discharged Treated Wastewater (AF)	Recycled within Service Area (AF)	Recycled outside of service area (AF)
Montecito WWTP	Pacific Ocean	Pacific Ocean	Ocean outfall	No	Secondary	713	713	0	0
Summerland WWTP	Pacific Ocean	Pacific Ocean	Ocean outfall	No	Secondary	73	73	0	0
El Estero WWTP	Pacific Ocean	Pacific Ocean	Ocean outfall	Yes	Tertiary	800	0	0	800
El Estero WWTP	Pacific Ocean	Pacific Ocean	Ocean outfall	Yes	Secondary undisinfected	5,813	5,813	0	0
					Totals:	7,399	6,599	0	800

Sources: Volumes for Montecito WWTP and Summerland WWTP obtained from National Pollutant Discharge Elimination System (NDPES) 2020 annual reports. Volumes for El Estero WWTP based on email correspondence with Todd Heldoorn, El Estero WWTP Wastewater Treatment Superintendent.

3.1.9 Recycled Water

The District does not currently use any recycled water but is pursuing options for recycled water supplies. The District completed a Recycled Water Feasibility Plan[12] in 2018, which was funded in part by the State Water Resources Control Board Water Recycling Funding Program grant. In 2019, the district began discussions with MSD to further explore options.

Possible beneficial uses of non-potable reuse (NPR) recycled water within the District include irrigation of commercial and institutional landscaping such as hotels, cemeteries, parks, or golf courses.

Groundwater recharge or indirect potable reuse (IPR) and surface water augmentation or direct potable reuse (DPR) with recycled water are two other forms of indirect reuse that are under consideration by the District. A 2015 study by Dudek found that there is limited recharge potential in the basin and that it would be difficult or impossible to achieve the state-mandated groundwater residence times because of the high density of water supply wells near recharge sites.[13] The possibility of treatment, recharge, and extraction in Montecito was again studied in a 2019 Groundwater Augmentation Feasibility Study.[14] Results indicated limited potential in the Montecito Groundwater Basin for an Indirect Potable Reuse Project. Because groundwater levels can rise quickly after normal or wet years, there is often not enough storage space in the aquifer to allow recycled water to be recharged without risking high water levels and liquefaction. In addition, recharge rates were determined to be low. The potential exists for the lack of storage capacity to persist for several years in a row during some periods.[15] While the Montecito Basin is not a good candidate for an IPR project, the District is considering a regional IPR project with neighboring agencies.

Under current State regulations, recycled water can only be directly served to customers for irrigation, and not for drinking water. However, modifications to state rules on direct potable reuse of recycled water are expected in 2023. The 2019 Feasibility Study notes that "direct potable reuse could be pursued in the future once regulations are established and the concepts are reconsidered. Table 3-4 (next page) presents the potential recycled water demands in the service area.

At least 920 parcels are served by septic tanks, including 80 percent of residents in the Toro Canyon area.[16] Conversion of septic units to one of the wastewater collection and treatment systems will increase the overall wastewater volume and potential recycled water supplies. Under the new Water Use Objective indoor water use standard of 55 gallons per capita day, and a 2.55 cap/household, this translates to a total potential wastewater volume of approximately 145 AFY.

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[12] https://www.montecitowater.com/doc/5346/

[13] Dudek. 2015. *Montecito Groundwater Basin Recharge Feasibility Study*. Prepared for Heal the Ocean, Montecito Water District, and Montecito Sanitary District. September 2015.

[14] https://www.montecitowater.com/doc/5346/

[15] Groundwater Augmentation Feasibility Analysis for the Montecito Groundwater Basin by GIS Water Solutions

[16] https://montecitogsa.com/doc/6847/

The District is in the process of studying the feasibility of a recycled water supply project in the community. This includes discussions with possible partnering agencies to determine the feasibility of a regional project to benefit multiple south coast communities. The District is also monitoring the evolving regulations around direct potable reuse (DPR) to ensure the selected recycled water project is the best long-term solution for the community. At this time, it is difficult to estimate future recycled water deliveries given the uncertainty of future regulations, possibilities for regional cooperation, and technical limitations such as required brine flow rates. For the purposes of this UWMP, the District assumes 500 AFY of recycled water supply starting in 2030. The 2030 timeline allows for the release of DPR regulations from the state and further study of recycled water project options. The 500 AFY volume represents anticipated flows from the Montecito Sanitary District and Summerland Sanitary District, less losses from treatment, transmission, and/or injection and extraction. Preliminary projected recycled water demands are summarized in Table 3-4.

Table 3-4. Potential Recycled Water Direct Beneficial Uses within Service Area

Beneficial Use Type	Potential Beneficial Uses of Recycled Water	Amount of Potential Uses of Recycled Water (AF)	Level of Treatment	2020 (AF)	2025 (AF)	2030 (AF)	2035 (AF)	2040 (AF)
Other	To be determined by future feasibility studies	To be determined by future feasibility studies, assumed 500	Tertiary	0	0	500	500	500

Note: Potential demands to be determined by future feasibility studies, projected volume is based on assumed available supply volume.

Table 3-5 provides a comparison of recycled water use projected to occur in 2020 in the 2015 UWMP with the actual 2020 recycled water use. As seen in Table 3-5, the projected volume of recycled water utilized by the District was 200 AF while the actual use was 0 AF.

Table 3-5. 2015 UWMP Recycled Water Use Projection Compared to 2020

Beneficial Use Type	2015 Projection for 2020 (AF)	2020 Actual Use (AF)
Landscape Irrigation	200	0

Notes: MWD has continued to pursue Recycled Water opportunities over the 2015-2020 period but has revised the timing and scope of its program since the last UWMP.

3.2 Groundwater Supplies

The District overlies the Montecito Groundwater Basin (MGB) which occupies approximately 9.6 square miles between the Santa Ynez Mountains and the Pacific Ocean.[17] The District owns and maintains six potable water production wells and six non-potable production wells, which together supply an average of 230 AFY during the period 1972 to 2019. Entitlements to groundwater in the Montecito Basin have not been adjudicated and are subject to the rules of prior appropriation. Figure 3-1 illustrates the location of the MGB and the service areas of local water suppliers, including the District.

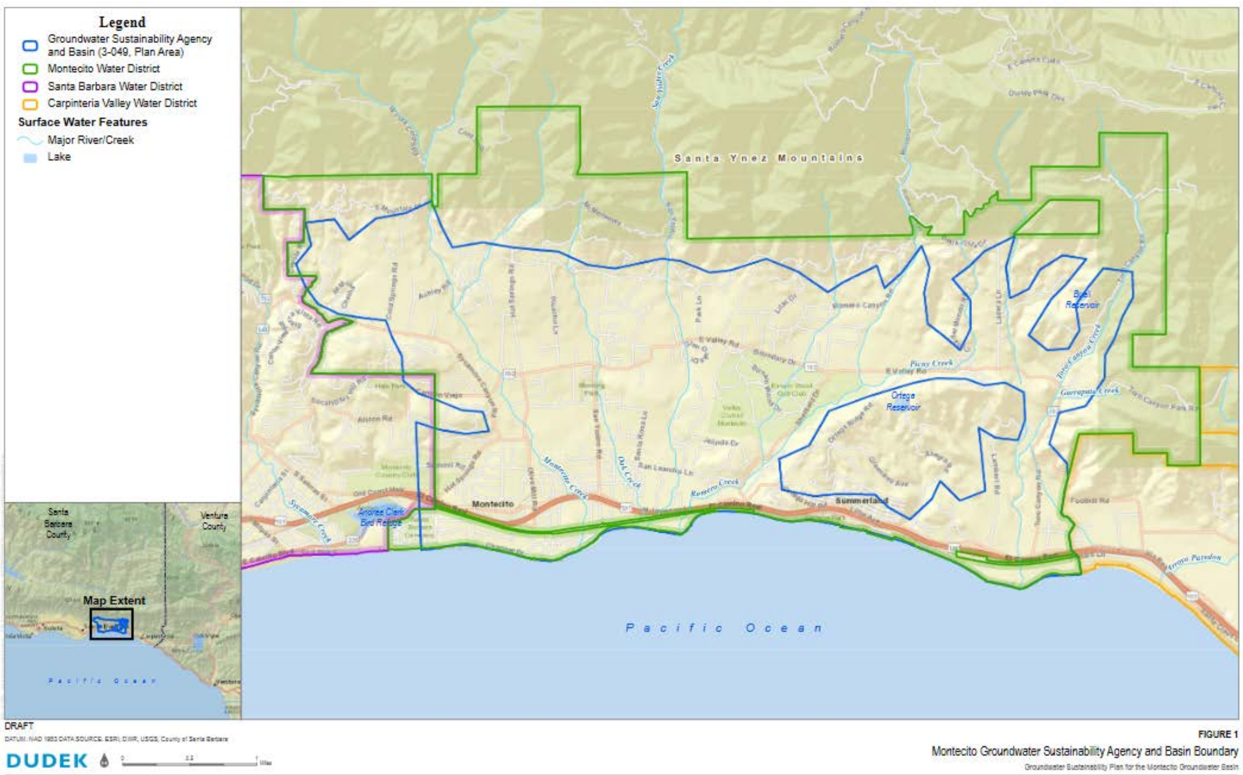

Figure 3-1. Map of the Montecito Groundwater Basin

3.2.1 SGMA and AB 3030 GMP Documents

In 1998, MWD adopted a Groundwater Management Plan (GMP) for the Montecito Groundwater Basin under AB 3030. The GMP aimed to "1. preserve and promote local control of groundwater management; 2. Encourage cooperation among all basin users; 3. develop information and tools for

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[17] https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-Basin-Descriptions/3_049_Montecito.pdf

effective basin management."[18] The Plan drew from existing data to provide a review of groundwater conditions and provided guidance for ongoing monitoring and management efforts in the basin. It estimated total amount of water in storage to be between 7,760 AF and 16,110 AF with an estimated the safe yield of 1,650 AFY.[19] The GMP also estimated that the total extraction by all users (MWD, private well owners and mutual water companies) averaged 940 AFY for the 11-year period 1980-1990 (Slade, 1991).[20]

The Groundwater Management Plan has not been updated since 1998 and will be superseded by the forthcoming Groundwater Sustainability Plan (GSP) after it is approved by DWR. In November of 2018, DWR approved the formation of the MGB Groundwater Sustainability Agency (GSA) with the District as the Local Agency, making it responsible for fulfilling the requirements of a GSA for the Montecito Groundwater Basin.[21] As of 2020, the GSP is currently being drafted with a tentative public review scheduled for 2022. Because the Montecito Groundwater Basin was originally designated as low priority and was redesignated as a medium priority in 2019, the GSP is due in 2024 rather than 2022, which is the deadline for most medium priority basins.

In addition to its role under SGMA, the District is the monitoring entity for the purpose of tracking groundwater elevations under the California Statewide Groundwater Elevation Monitoring (CASGEM) program. The District also helps coordinate SWRCB's Groundwater Ambient Monitoring and Assessment Program (GAMA) to evaluate groundwater quality within the basin.

3.2.2 DWR Bulletin 118 Description

The Montecito Groundwater Basin (No. 3-049) is a medium-priority coastal aquifer located almost entirely within the boundaries of the MWD service area, after some recent adjustments in the basin boundary approved by DWR. The Basin previously included a small area in its southeast corner that overlapped with the Carpinteria Valley Water District service area, as defined by the 2016 update of DWR's Bulletin 118. In 2017, the two water districts signed an MOU documenting their mutual desire to pursue a boundary modification so the basin boundary under Bulletin 118 would match their existing service area boundaries. The MOU also states that MWD will be the "Local Agency that elects to be the [Groundwater Sustainability Agency]" for the Montecito Groundwater Basin. This effort was successful, and the 2018 update to Bulletin 118 reflects this modification.

As currently defined, the Basin's western border is close to but does not fully correspond with the boundary between the City of Santa Barbara and the MWD's service area. Approximately 210 acres of the City of Santa Barbara overlie the basin. The GSA anticipates pursuing a second boundary modification with DWR to adjust the basin boundary to match the jurisdictional boundary, which

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[18] MWD 1998 GMP, found as Appendix J of 2015 UWMP.

[19] MWD (Montecito Water District). 1998. *Groundwater Basin Management Plan for the Montecito Water District*. November 1998.

[20] Slade, R.C. 1991. Original Report and Addendum Hydrogeologic Assessment Determination of Groundwater in Storage within the Montecito Water District for Montecito Water District. October 18, 1991.

[21] https://montecitogsa.com/about/mission-purpose/

would simplify the management of groundwater along the western edge of the basin. This modification will likely be pursued sometime in the next 5 years.

3.2.3 Basin Description

The Montecito Groundwater Basin is bounded on the north by the Santa Ynez Mountains and the Arroyo Parida fault, on the east by consolidated rocks, on the southeast by an administrative boundary with Carpinteria Valley Water District, and on the northeast by a surface drainage divide that separates the Montecito and Carpinteria Groundwater Basins. The offshore Rincon Creek fault and the Pacific Ocean bound the basin on the south. An administrative boundary on the west separates the Montecito Groundwater Basin from the Santa Barbara Groundwater Basin. The area overlying the basin is drained by several small creeks that flow from the Santa Ynez Mountains south to the Pacific Ocean.[22] The Basin is divided into 4 subbasins or "storage units". The first three are divided by east-west trending faults that act as barriers to groundwater movement. The northern unit (Storage Unit 1) is bounded on the south by the Arroyo Parida fault, the central unit (Storage Unit 2) by the Montecito Fault, and the southern unit (Storage Unit 3) by the Rincon Creek Fault. The fourth, the Toro Canyon Storage Unit, is separated from the rest of the MGB by surfacing sedimentary bedrock and a surface water drainage divide. There is scholarly disagreement about the extent to which the offshore Rincon Creek fault is an effective barrier to seawater intrusion into the deeper water-bearing zones.[23]

The primary water-bearing deposits in the Montecito Groundwater Basin are the unconsolidated alluvial deposits, and the Casitas and Santa Barbara Formations (Montecito Water 1998).[24] The specific yield for unconfined materials in the basin is estimated at 11 percent (DWR 1999).

The shallowest alluvium deposits are of Holocene age and consist of lenses of gravel, sand, silt, and clay. These deposits occur along stream channels and range to 80 feet thick (DWR 1999). Deeper alluvium of Pleistocene age is composed of boulders and reddish clay, which, where saturated, yields only modest amounts of water to wells (DWR 1999). Groundwater is generally unconfined within alluvial deposits.

The Pleistocene age Casitas Formation consists of clay, silt, sand, and gravel. Groundwater is extracted mainly from the upper Casitas Formation, as it is the chief water-bearing deposit; the lower Casitas Formation is very fine-grained and displays poor water transmitting characteristics (Montecito Water 1998). Groundwater in this formation is partially confined along the north side of the Arroyo Parida fault in the northern part of the basin and also inland from the southern part of the basin (DWR 1999).

Lastly, the Pliocene to Pleistocene age Santa Barbara Formation consists of marine sand, silt, and clay and has a maximum thickness of 1,200 feet in the southern part of the basin (Hoover 1980). Groundwater within the Santa Barbara Formation is generally confined (Freckleton, 1989). This

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[22] https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-Basin-Descriptions/3_049_Montecito.pdf

[23] https://montecitogsa.com/doc/6847/

[24] MWD (Montecito Water District). 1998. *Groundwater Basin Management Plan for the Montecito Water District*. November 1998.

formation occurs only in a restricted area in the southwest portion of the basin and, thus, is of negligible use as a groundwater source (DWR 1999).

Key physical characteristics for the MGB's geology and hydrogeology have been measured by many studies over the decades, often with different studies using different assumptions and reaching different results. The GSA is currently in the process of developing a Basin Numerical Model (Model) simultaneously with the GSP. The purpose of the Model is to inform the development and implementation of the GSP and subsequent GSP updates to DWR.

The Model incorporates multiple data sources on the MGB including geological, hydrogeological, and climatological. An initial Model is anticipated to be complete by the middle of 2021. Once completed, the initial model will be used to generate a MGB Water Budget and assist with defining the sustainable yield of the MGB and each individual storage unit. Additionally, it will be used to forecast MGB groundwater conditions for the next 50 years and assist with the GSA's goal of obtaining sustainability by 2042.

The Montecito Groundwater Basin is not adjudicated and is therefore governed by the principle of overlying rights.

3.2.4 Available Groundwater Supplies

Natural recharge in the basin is derived from infiltration of precipitation over the basin, seepage from streams, and subsurface inflow from consolidated rocks (DWR 1999).

The District conducts a survey of about 70 water wells (consisting of both District-owned and private wells) within the District's service boundary twice a year. The survey consists of measuring the static water elevations in wells and converting this data to a water storage level with reference to mean sea level. This data has been collected by the District to continue its efforts in monitoring the groundwater basin and to ascertain groundwater storage conditions within the four defined groundwater storage units District-wide. The collection of data twice a year reflects groundwater conditions following the rainfall/groundwater recharge season (spring) and the groundwater extraction season (fall). The District also coordinates with the United States Geological Survey (USGS) who monitors one of the District's wells.

Data from monitoring wells with the most complete records in the Montecito Groundwater Basin date back to the 1940s, with data coverage generally improving over time. After a basin-wide low water level period in the mid-1960s, groundwater levels stabilized and recovered from the late 1960s until the mid-1980s, when increased pumping led to rapidly dropping groundwater levels including elevations below mean sea level near the coast. Groundwater levels reached their lowest levels ever recorded at the time in 1991.[25] "Hydrographs for key indicator wells (wells identified as being representative of groundwater conditions and having the longest and most complete historical records) show that from the late 1980s to the early 1990s groundwater levels declined by about 100

[25] Slade 1991

feet in Storage Unit 1… and 50 feet in Storage Unit 3."[26] In general, it appears that the most extreme fluctuations in groundwater levels occurred in Storage Unit 1.

After the drought conditions of the early 1990s yielded to wetter hydrologic conditions in the late 1990s, groundwater levels in general recovered until the mid-2000s. The arrival of State Water Project imports in the late 1990s probably contributed to this recovery by reducing extraction. Then, starting in 2007, water levels again began to rapidly decline, by a rate of 6.4 feet per year in Storage Unit 1. From 2007-2019, "groundwater levels declined by as much as 77 feet in Storage Unit 1," with declines in the other Storage Units being about half that value.[27] As of 2020, water levels are just now beginning to recover from their recent lows. There are cones of depression apparent around areas with high well densities in Storage Unit 1 and 3, with water levels below mean sea level near parts of the coast. As a coastal aquifer, the Montecito Groundwater Basin carries a risk of seawater intrusion, but intrusion may be blocked to some degree by the offshore Rincon Fault. Studies to date have been inconclusive about the magnitude, extent, and even existence of seawater intrusion in the Montecito Groundwater Basin. Because seawater intrusion is an undesirable result under SGMA, the GSA will continue to gather data and closely monitor groundwater conditions particularly in the southern edge of the basin.

In addition to the wells owned by the District, the MGB also contains private wells, according to the Draft of Chapter 2 of the MGB Groundwater Sustainability Plan (GSP).[28] Both private well owners and the District obtain groundwater from the MGB. While the precise number of active wells is not known, "there are an estimated 426 presumed active wells in the [Basin], 12 of which are MWD supply wells," according to the draft GSP.[29] Most of these private wells are unmetered. Some are used for private domestic water use and some are dedicated to outdoor landscape irrigation. While an estimate of the current extraction rates from private wells is not yet available, a 2017 study by Dudek estimated private extractions totaled approximately 2000 AFY across the MGB from 2011 to 2015.[30] If accurate, that study would indicate that extractions by private wells are significant. The upcoming GSP will more fully describe the sources of error and number of wells in the basin, but that section of the GSP is still being draft and its final conclusions are not yet available. The implementation of SGMA will provide the District with the tools needed to closely monitor groundwater use and thereby more accurately determine basin balance and yield.

The District's last five years of pumping are summarized in Table 3-6.

Table 3-6. Groundwater Volume Pumped

Groundwater Type	Basin Name	Produced Volume (AF)				
		2016	2017	2018	2019	2020
Alluvial Basin	Montecito Groundwater Basin	530	583	448	266	155

[26] GSP ch 2 draft

[27] GSP draft ch 2.2.4.1

[28] https://montecitogsa.com/doc/6847/

[29] https://montecitogsa.com/doc/6847/

[30] Dudek. 2017. *Independent Analysis of the Montecito Groundwater Basin Prioritization.* June 2017.

3.2.5 Contracts for Groundwater Storage

Studies have concluded that the potential for expanded use of local groundwater storage beyond current practices is limited by the relatively small size of the Montecito Groundwater Basin and the lack of suitable locations for enhanced aquifer recharge with recycled water.[31][32] In 2017 the District entered into a long-term groundwater water banking arrangement with the Semitropic Water Storage District ("Semitropic Bank" or "Bank") in Kern County to bank surplus SWP and/or supplemental water. The District's portion of the Semitropic Bank is 4,500 AF, with an annual withdrawal limit of 1,500 AF unless additional capacity is available. Access to this facility provides the District greater supply reliability and protects water in multi-year storage from the risk of spillage or evaporation in surface water reservoirs. Although the Semitropic Bank is located south of the Coastal Branch turnout of the State Water Project, deliveries can occur to the District through the Coastal Branch in dry years, with the same amount of water returned to the State Project downstream from water pumped from the Bank. Water deposited in the Semitropic Bank is subject to a 10 percent loss (for example; 1,000 AF deposited results in 900 AF later recovered). As with the District's other remote supplies, access to the Semitropic Bank could be disrupted by a natural disaster such as an earthquake.

Groundwater stored in the Semitropic Bank is used as part of a conjunctive use program, in which deposits (recharge) are made during normal and wet years and withdrawals (pumping) are made during dry years when other supplies are less available. From the beginning of the District's contract in 2017 to February 2021, the District has banked 2,000 AF of water in the Semitropic Bank and withdrawn 0 AF. After accounting for the 10 percent loss requirement, this leaves the District with 1,800 AF of banked water. While the full 1,500 AF withdrawal limit is available to the District any year, the District will not likely make withdrawals during normal years. Future projections show that banked water is necessary to meet district demands during multi-year droughts, as discussed in Section 5 Drought Reliability Assessment.

3.3 Water Transfers and Exchanges

Water transfers and exchanges have historically been important to meeting the District's water demands, and will continue to play a role in the future.

The District's longest running transfer agreement is with the City of Santa Barbara which originated with the transfer of Jameson Lake water rights from the City to the District in the 1920s. In return, the District agreed to transfer 300 AFY to the City in perpetuity. Subsequent Service Area Agreements implemented between the District and the City allow for annual adjustments to the 300 AF. Customer use in the two service areas is tracked quarterly by both the District and the City. It is agreed that the difference between the two water usages is balanced through a Cachuma Operation and Maintenance Board (COMB) transfer. Additionally, the City's use of the District's Barker Pass Intertie is metered and tracked then reduced from the annual Juncal Dam transfer

[31] Dudek. 2015. *Montecito Groundwater Basin Recharge Feasibility Study*. Prepared for Heal the Ocean, Montecito Water District, and Montecito Sanitary District. September 2015.

[32] https://www.montecitowater.com/doc/5346/

agreement. The annual adjustment is typically only approximately 10 to 20 AF of the overall 300 AF.

Purchases of supplemental water delivered via the SWP are discussed above in Section 3.1.5. While this supply has been important to meeting District demands in the past, it is not projected to be a significant source of district supplies in the future.

3.4 Desalination Opportunities

As discussed in Sections 3.1.4, the District has invested considerable energy in investigating desalination opportunities and has entered into agreement with the City of Santa Barbara for desalinated water. The District will evaluate other future desalinated water supply opportunities as appropriate.

3.5 Climate Change Impacts

According to California's Fourth Climate Change Assessment, the Central Coast Region will face numerous climate impacts including increased maximum and minimum temperatures by midcentury. Multi-year average precipitation is expected to increase slightly, but "normal" years will become less frequent and both dry and wet extremes will become more frequent, heightening the risk of both droughts and floods. Precipitation variability will have detrimental effects on stream flows and aquatic organisms, including sensitive species whose protection drives state and federal regulation of water resources. Year-to-year fluctuations are expected to decrease the reliability of surface water supplies, while rising temperatures will increase evaporation and may harm water quality. Imported water supplies conveyed through the Sacramento-San Joaquin Delta face the additional threat of sea level rise interfering with Delta conveyance systems. The State's Climate Change Assessment predicts that "Water supply shortages, already common during drought, will be exacerbated. Higher temperatures may result in increases in water demand for agriculture and landscaping."[33] Reduced surface water availability may lead to increases in groundwater extractions, which would threaten the sustainability of supplies for groundwater-dependent water suppliers. Rising sea levels will increase the risk of saltwater intrusion into coastal aquifers. Extremely destructive wildfires, like the 2017-2018 Thomas Fire, may become more frequent and heighten the risk of property destruction, public safety power shut offs, and air and water quality impacts. Wildfire impacts will also accelerate sedimentation in water supply reservoirs and smoke will have public health impacts on residents.

At this time, there is still considerable uncertainty about the timing, direction, and magnitude of climate change impacts on various aspects of water resource management. Despite this uncertainty, it is still possible for water suppliers to prepare for future climate change impacts. The District's efforts to obtain additional local, rainfall independent water supplies and expand groundwater banking will help ensure reliable water supplies in the face of climate change. The completion of the Montecito Groundwater Basin Groundwater Sustainability Plan by 2024 will provide an improved framework for responsible management of local groundwater supplies. Additional adaptation strategies less directly related to water resources include preparedness for public safety power shutoffs and land management practices that protect native species and reduce the risk of

[33] Langridge, Ruth. (University of California, Santa Cruz). 2018. Central Coast Summary Report. California's Fourth Climate Change Assessment. Publication number: SUM-CCCA4-2018-006.

catastrophic fire. The District is committed to using the best available scientific information to inform decision-making now and in the future.

3.6 Water Quality

All water served to District customers meets or exceeds Federal and State drinking water standards as defined by the Federal Safe Drinking Water Act and the State of California's Water Resources Control Board requirements. The District's water quality is documented annually in Consumer Confidence Reports (CCR) which are available publicly on the District's website (see Appendix E). Each CCR presents the primary and secondary water quality standards and the measured quality of the Districts supplies from each source. Generally, surface water from the Santa Ynez River watershed is of excellent quality and local groundwater is good to moderately good; all water sources are treated before delivery to customers. In addition to testing water immediately after treatment, the District conducts periodic testing at customer tap to ensure water quality remains reliable throughout the distribution system. Continued close monitoring of water quality carries the additional water conservation benefit by reducing the need for water line flushing.

Despite supplying water of generally excellent quality, the District has encountered water quality challenges in recent years. The 2017-2018 Thomas Fire burned 100% of the watershed above Jameson Lake, and subsequent runoff from the burned area impacted this source of supply, resulting in elevated levels of organics and ultimately elevated levels of disinfection byproducts (DBP). The District's response included suspending deliveries of water from Jameson Lake for approximately a year. Upgrades were made to the Bella Vista water treatment plant to reduce the potential for the development of DBPs in the future. These upgrades will make the District more resilient to future wildfire impacts.

Other potential threats to the quality of the District's water supplies include droughts and heatwaves, which can lead to harmful algae blooms in surface reservoirs, and potentially saltwater intrusion increasing the salinity of groundwater. The District maintains an algae action plan to implement should algae blooms occur. The District will continue to monitor water quality proactively to mitigate future threats.

3.7 Summary of Existing and Planned Sources of Water

The State Water Project supply projections are based on the Central Coast Water Authority's (CCWA) determination of the long-term reliability of the long-term annual average of the District's State Water Project Table A allocation. CCWA projects that the percent allocation will drop from its current average in 2020 of 58.8 percent to 56.8 percent by 2040, 1,943 AF to 1,874, respectively.

The amount of Lake Cachuma water distributed to Cachuma Member Units, such as the District, was modified by the updated Water Rights Order 2019-0148 amending permits 11308 and 11310. This UWMP assumes that the updated Water Rights Order will reduce the water available to the District from this source by 35 percent from its historic average. Siltation over time will reduce the storage capacity of Lake Cachuma, and thus supplies available to the District, by an additional five percent by 2040 (to equal the 40 percent utilized in the water supply reliability study). Accounting for the effects of the modified Water Rights, the annual supply from Lake Cachuma is expected to be 1,591 AFY from 2025 to 2040.

Jameson Lake is operated according to a rule curve that has recently been updated to preserve water supplies from this source for use in the later years of a multi-year drought, which has had the effect of reducing the supply available from this source during normal years. Jameson Lake was also affected by siltation and runoff from the Thomas Fire, which reduced the capacity of this reservoir from 5,144 AF before the fire to 4,848 AF during the most recent bathymetric survey in 2019. Future siltation is expected to continue to reduce the capacity of Jameson Lake at an approximate rate of 25 AFY, which will reduce the reservoir's capacity to 4,348 AF by 2040. Projections for the availability of future supplies from Jameson Lake were prepared using the modified rule curve and assume a constant lake capacity of 4,348 AF. Under these conditions, the average supply yield over the historic dataset is 1,073 AFY. This value is the assumed normal year availability for projecting future supplies.

Fox and Alder Creek Diversions are not currently utilized due to damage sustained during the Thomas Fire. The District expects to repair the diversion structures by 2023, and based on past diversion history, projects an average of 400 AFY combined supply.

Groundwater infiltration into Doulton Tunnel is a reliable local supply that has averaged 278 AFY over the last 10 years. This historical average is assumed to be available in future normal years.

Groundwater wells provide both potable and non-potable water to the District and are an important source of supply during drought conditions. Under a strategy of conjunctive use, the District plans to rely on groundwater less during average or above average hydrologic conditions. The projected production of 250 AFY is based on the District's actual production of groundwater.

Stormwater is not currently a quantifiable source of water supplies to the District, and due to hydrogeologic and other limitations, is not expected to provide a measurable amount of water over the planning horizon.

The District anticipates some form of recycled water supply developed with partnering agencies in the area as the District continues to pursue recycled water opportunities. For this UWMP, the District assumes 500 AFY of recycled water supply starting in 2030. 500 AFY represents the current anticipated volumes from the Montecito Sanitary District and Summerland Sanitary District.

The District does not project any desalination supplies in the future, other than the existing agreement with the City of Santa Barbara, which is listed as Contract Water. The District will evaluate future potential desalinated water opportunities as appropriate.

Supply from storage of banked groundwater is now available to the District through its participation in the Semitropic Groundwater Bank. The District is able to bank excess supplies during normal and wet years and recover those supplies at a later time, subject to a withdrawal limit of 1,500 AFY. Future opportunities to expand the scope of the District's storage and groundwater banking efforts will continue to be studied and may be expanded in the future if found to be economically and technically feasible. Banked supplies will play an important role in helping the District achieve its goals of reliable, drought-proof supplies. While the maximum withdrawal of 1,500 AF is expected to be available to the District during normal hydrological conditions, in practice, the District does not plan to produce water from this source during normal years.

Supplemental water purchases, which have historically been important to meeting District demands during multi-year droughts, are not projected to be a major source of District supplies in the future. The District anticipates 0 AFY of supplemental water purchases in normal years.

The Water Supply Agreement with the City of Santa Barbara represents a local purchased supply of 1,430 AFY that is expected to be reliable in all hydrologic conditions. Deliveries of this supply are expected to begin in January 2022 and then remain constant throughout the UWMP planning horizon.

Per the terms of the Juncal Agreement, the District is obligated to transfer 300 AFY to the City of Santa Barbara, which is shown in Table 3-9 below as a negative value.

The District's existing water supply portfolio and normal year reliability is summarized in Table 3-7.

Table 3-7. Projected Water Supply (AF)

Source of Water Supply	2025	2030	2035	2040
State Water Project / CCWA	1,926	1,908	1,891	1,874
Lake Cachuma (Cachuma Project)	1,591	1,591	1,591	1,591
Jameson Lake	1,073	1,073	1,073	1,073
Fox & Alder Creek Diversions	400	400	400	400
Doulton Tunnel Infiltration	278	278	278	278
Groundwater Wells	250	250	250	250
Stormwater	0	0	0	0
Recycled Water	0	500	500	500
Desalination	0	0	0	0
Supply from Storage (Semitropic Bank)	1,500	1,500	1,500	1,500
Supplemental Water Purchases	0	0	0	0
Santa Barbara WSA	1,430	1,430	1,430	1,430
Santa Barbara Transfer per Juncal Agreement	-300	-300	-300	-300
Total Supplies	**8,147**	**8,630**	**8,613**	**8,595**

3.8 Demonstration of Reduced Delta Reliance

As a recipient of State Water Project supplies and also may conduct future potential water sales, transfers, or exchanges using the Delta, the District is required to demonstrate its UWMP's consistency with Delta Plan Policy WR P1, *Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance* (CCR, tit. 23, § 5003).

The District has implemented supply and conservation projects as described in this UWMP that reduce its reliance on water supply from the Delta. The 2020 UWMP Guidebook Appendix C provides suggested methodologies to demonstrate reduced Delta reliance. The District has completed this analysis, and using 2007 as the base year, projects a 20 percent reduction in Delta reliance by 2040. The analysis is summarized in Table 3-8 and presented in Appendix D.

Table 3-8. Projected Water Supply (AF)

Changes in Delta Supplies	2007	2025	2030	2035	2040
Percent of Supplies from the Delta Watershed	45%	29%	26%	25%	25%
Change in Water Supplies from the Delta Watershed	--	-17%	-19%	-20%	-21%

4 Water Use

Understanding water use characteristics is essential to enable the District to reliably and cost-effectively manage its water supplies to continue to meet customer needs. Characterization of past and current water use, coupled with considerations of anticipated growth, new regulations, changing climate conditions, and trends in customer water use behaviors are all considered in projecting demands. The chapter presents water use analysis and demand projections, as well as other statutory requirements.

Several legislative changes were enacted since the District completed its 2015 UWMP. The new requirements must be addressed in the District's 2020 UWMP in addition to completing requirements from the prior statutory language. While there have been many changes, the critically important items the District must address are highlighted below:

- Provide quantified distribution system losses for each of the five preceding years and whether the State standard was met. [CWC 10631(d)(3)(A) and (C)]
- Include a drought risk assessment (DRA) for a drought period that lasts five consecutive water years, starting from the year following the assessment, which would be 2021 for this round of UWMPs. The DRA requires a comparison of water supplies with total projected water use. Therefore, the District must produce a projected water use for the years 2021 through 2025 as part of the water use projections up to 2045. [CWC 10635(b)]
- Conduct an annual water supply and demand assessment on or before July 1 of each year (following adoption of its 2020 UWMP) where the annual assessment includes current year unconstrained demand. The District will consider "unconstrained demand" as the expected water use in the upcoming year, based on recent water use, before any projected response actions it may trigger under its Water Shortage Contingency Plan (see Chapter 6). [CWC 10632.1]

This section is organized as follows:

- **Current Customer Water Use** – This subsection presents data reflecting the District's residential and non-residential customers for 2016 through 2019 as well as the actual 2020 water use and presents the District's distribution system losses for this same period.
- **Compliance with 2020 Urban Water Use Target** – This subsection documents the derivation of the 2020 GPCD value and comparison to the 2020 GPCD target.
- **Demand Management Measures** – This subsection provides a narrative description of each water demand management measure implemented by the District over the past five years and describes the District's planned measures for the foreseeable future.
- **Forecasting Customer Use** – This subsection presents the derivation and results of future water use forecasts for potable water within the District's service area, including land-use classifications, unit demand factors, and estimation of distribution system losses. This subsection also estimates the variations in customer water use the District should expect during years with low rainfall as well as discusses longer-term climate change considerations.

- **Forecasting Water Use for DRA** – This subsection focuses on the subset of the customer water use forecast that is necessary for completing the 5-year Drought Risk Assessment (DRA) and defining the "unconstrained demand" for purposes of the District's annual water supply and demand assessment.

4.1 Current Customer Water Use

As described in Chapter 2, the District currently supplies potable water to approximately 4,618 customer connections. The current customers, their recent and expected water use trends, and the District's on-going demand management efforts targeting these customers provide a foundational basis for this UWMP's water use forecast to 2045. The actual water use in 2020 is the basis for determining the District's compliance with its 2020 gallons per capita per day (GPCD) target established in its 2015 UWMP. This subsection presents this relevant information.

4.1.1 Customer Water Use: 2016 to 2020

Table 4-1 presents the District's past customer water use by customer classification for 2016 through 2020. Figure 4-1 presents the monthly single family demands over the same period. The District's water service under each customer classification has remained fairly consistent over the period, fluctuating slightly to reflect normal hydrologic and climatic variances. However, the State mandated per-capita water use limits in 2015, and the single family classification demands have generally increased since 2015. This historic data also provides insight into the relative ratio of differing customer classifications to each other as well as seasonal variations. For instance, multi-family residential and commercial use remains fairly constant year to year. In contrast, single-family residential is higher in the summer months compared to the winter, when generally rainfall is sufficient to meet the water needs of landscapes. Instances of single family high demand in winter months, such as December 2020, reflect weather conditions when landscape demands require irrigation (e.g. low precipitation or Santa Ana winds combined with above-normal temperatures).

Table 4-1: Customer Use: 2016 to 2020 (values in AF)

Category	Annual Demands				
	2016	2017	2018	2019	2020
Single Family	2,323	2,577	2,783	2,499	3,181
Multi Family	64	63	58	63	100
Commercial	229	245	201	264	234
Institutional	295	216	281	199	222
Agricultural	255	275	321	259	293
NonPotable (golf course)	100	155	111	127	145
Total:	3,265	3,531	3,755	3,411	4,176

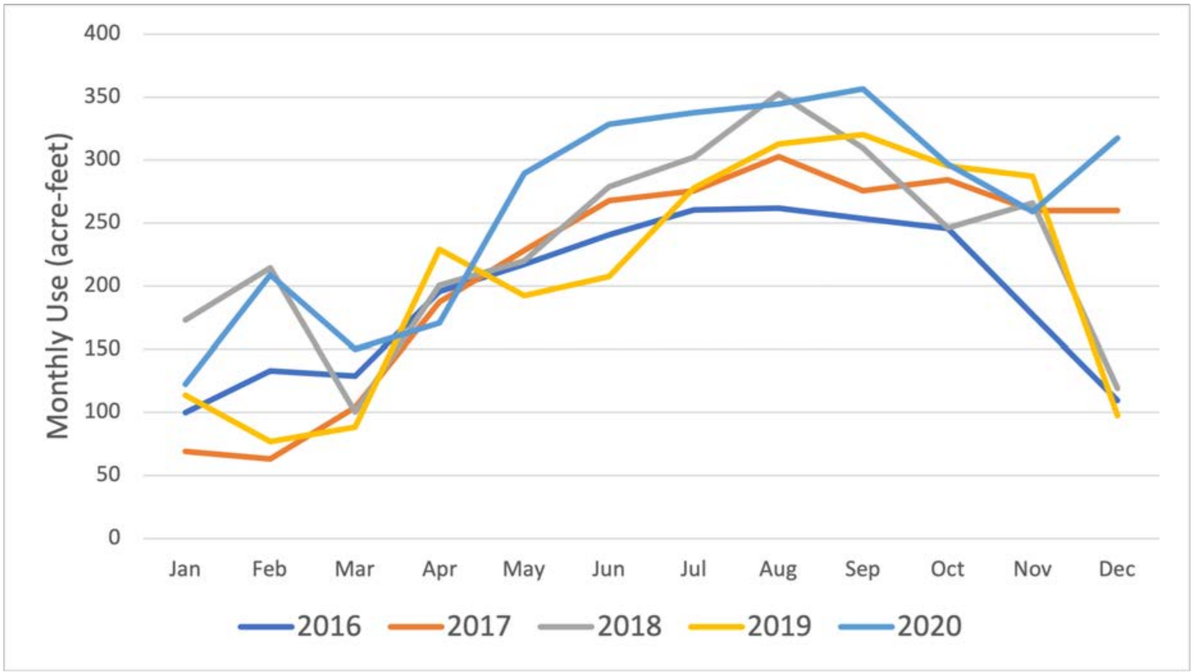

Figure 4-1: Single Family Residential Monthly Use: 2016 to 2020 (values in AF)

The single-family residential classification illustrates three important characteristics of the District's water service: (1) it represents over 70 percent of the annual use in every month, (2) it has summer uses that are over two to three times the monthly volume needed in winter months, and (3) it appears highly dependent on weather conditions in non-summer months (e.g. use can range from under 100 AF to over 300 AF in December).

This understanding supports the District with additional insight necessary for assessing the seasonal reliability of its water supplies, forecasting use into the future, and developing and quantifying successful water shortage contingency response actions.

The 2020 annual customer use reported in Table 4-2 of nearly 4,200 AF is 20 percent greater than the last four years. A major contributor to this increase was single-family use in December of 2020, which was more than twice the recent average December use. Other months in 2020 also saw single-family use above average, such that overall, single-family use was about 30 percent higher than the 2016 to 2019 average. However, while higher overall, many of the months were lower than or only slightly higher than the maximum value for the same month in the prior 2016 to 2019 period. When 2020 total single-family use was compared to the total annual value using the maximum monthly value from the 2016 to 2019 period, 2020 was only three percent higher. This further demonstrates that customer water use in the District can vary dramatically from month to month based on many factors, most predominant being temperature, winds, and rainfall.

Because the 2020 monthly values are within recent maximum values, with the exception of December 2020, the slightly higher-than-average single-family residential use may be a combination of drier weather conditions and pandemic impacts of many people staying at home. The December value was predominantly due to lack of rain and warm winds creating a compound effect of higher plant water needs from the temperatures and those needs being met with District water rather than rainfall.

Table 4-2: Customer 2020 Water Use (values in AF)

Use Category	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Single-family	122	209	150	171	289	329	338	345	356	297	259	317	3,181
Multi-family	5	6	5	6	7	8	10	11	11	11	8	12	100
Commercial	19	22	15	10	17	22	23	22	25	20	19	20	234
Institutional	9	14	10	9	20	23	26	29	26	21	16	18	222
Agricultural	3	18	9	6	29	30	32	36	36	28	28	38	293
Non-Potable (Golf Course)	1	7	5	7	17	22	20	18	19	12	8	9	145
Subtotal:	160	276	195	209	379	433	449	461	473	389	338	414	4,176

4.1.2 Existing Distribution System Losses

Distribution system water losses are the physical water losses from the District's water distribution system up to the point of delivery to the customer's system (e.g. up to the residential water meter). Since 2016, the District has been required to quantify its distribution system losses using the American Water Works Association Method (Title 23 California Code of Regulations Section 638.1 et seq.). The District submits its water loss report annually by October 1 of each year for the prior year's estimated system losses. Table 4-3 presents the percent loss based upon the difference between total customer sales and total production as reported by the District in various annual reports. The 2020 estimate has not been officially submitted to DWR as of the drafting of this UWMP but is estimated to be approximately 320 AF over the year, or about seven percent of the water entering the District's distribution system. The District is also in the midst of installing Advanced Metering Infrastructure (AMI) that will begin to provide additional, nearly real-time, tracking of potential system leaks.

Table 4-3: Distribution System Loss: 2016 through 2020

Year	2016	2017	2018	2019	2020
Distribution System Loss	7.5%	9.5%	8.9%	9.0%	7.1%

Note: Year 2020 estimated

As can be anticipated given the dynamic functions of a pressurized potable water distribution system, the estimated annual distribution system loss as a percentage of water entering the system will vary year-to-year and month to month. While conservatively high given additional savings with the installation of AMI meters, a distribution system loss of 7.5 percent will be used for purposes of water use forecasting.

4.2 Compliance with 2020 Urban Water Use Target

Pursuant to California Water Code Section 10608.24(b)34, the District must demonstrate its 2020 water use met the GPCD target adopted in its 2015 UWMP. As set forth in the 2015 UWMP, the District's 2020 GPCD target was established as 338 GPCD, derived as the "gross water use" divided by the population during a defined baseline period, and reduced pursuant to one of four methods defined under the California Water Code Section 10608.20(b). The District's 2020 actual GPCD must use the same methodology to derive "gross water use" for 2020, then divide by the estimated 2020 population presented in Chapter 2.

As presented in the District's 2015 UWMP, gross water use was calculated as "the total amount of water received, including local and regional surface water, groundwater, imported State Water and seepage into the Doulton Tunnel. Gross water use excludes recycled water, agricultural water deliveries and exchanges or transfers conveyed to other urban water suppliers."[35]

This value corresponds to the total "Produced Water" for 2020 as recorded by the District on its 2020 Water Systems Statistics Report, which was 4,495 AF minus the agricultural deliveries, which were 293 AF (see Table 4-2). The resulting "gross water use" in 2020 was 4,202 AF. This value represents both the customer deliveries shown in Table 4-2 and the distribution system losses recorded in Table 4-3, minus the agricultural deliveries. As shown in Table 2-2, the District's population in 2020 was estimated to be 11,769. This results in a calculated 2020 compliance value of 319 GPCD, which is less than the established target. Thus, the District is in compliance with CWC Section 10608.24(b) and has met its 2020 GPCD Target. The important compliance calculation parameters are summarized in Table 4-4.

Table 4-4: Demonstration of Compliance with 2020 GPCD Target

2020 Volume into Distribution System	4,495 AF
Water Delivered for Agricultural Use	293 AF
2020 Gross Water Use	4,202 AF
2020 Population	11,769
2020 Actual GPCD	319 gpcd
2020 Target GPCD	338 gpcd
Compliance Achieved?	Yes

[34] 10608.24. (b) Each urban retail water supplier shall meet its urban water use target by December 31, 2020.

[35] Montecito Water District 2015 UWMP, adopted May 16, 2017, p. 27

4.3 Demand Management Measures

Pursuant to California Water Code Section 10631(e), Montecito Water District needs to provide a narrative discussion of the water demand management measures it has implemented, is currently implementing, and plans to implement. The historic and on-going measures can help MWD understand the effectiveness of managing existing customer uses to help guide refinements, emphasis, or augmentation that will help best meet its to-be-established water use objective.[36]

In addition to a long history of its own conservation programs, the District is a member of the Santa Barbara County Regional Water Efficiency Program (RWEP), established in 1990 by the Santa Barbara County Water Agency (SBCWA).[37]

The District's demand management measures are highlighted in this subsection. There are six Foundational demand management measures that must be implemented per Water Code.

4.3.1 Water Waste Prevention Ordinances

Wasteful water use has been prohibited in MWD's service area for many decades and is in all of its resolutions and ordinances concerning the use of water since 1973. Ordinance 96, adopted in May 2019, includes specific language prohibiting wasteful use by customers, and further restated fundamental water waste prohibitions codified in MWD's Water Shortage Contingency Plan. These fundamental prohibitions align with state-mandated requirements.

During the statewide drought in the mid-2010s, MWD passed Ordinance Nos. 92, 94, 95, all Declaration of Water Shortage Emergency ordinances, which implemented mandatory water restrictions, and conservation measures. These three ordinances have since been repealed but they led to an almost 50 percent reduction in GPCD between 2014 and 2018 and were foundational to Ordinance 96.

4.3.2 Metering

All connections in the MWD service area are metered. In 2020, the District began implementation of a smart meter program including the installation of new ultrasonic water meters to provide customers with immediate access to real-time water usage, including leak alerts. Full implementation of the smart meter program is anticipated in Fall 2021 and will help reduce water loss. MWD is also installing magnetic flow meters at all production meter locations to improve metering and water loss calculation accuracy.

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[36] Beginning in 2023, all urban water suppliers will be required to begin reporting their use compared to a "Water Use Objective" that is being established pursuant to the recently enacted California Water Code Section 10609.20.

[37] The RWEP is a partnership of 18 local water purveyors and promotes the efficient use of urban and agricultural water supplies throughout the County. Through the RWEP, the SBCWA coordinates cooperative water conservation efforts among purveyors, co-funds projects and programs, acts as a clearinghouse for information on water efficiency, and manages specific projects and programs.

4.3.3 Conservation Pricing

MWD completed a 5-Year Financial Plan and a Cost of Service study[38], and in June 2020 adopted a five-year schedule of necessary rate increases, which includes a tiered price structure based on customer classification and consumption. Single-family and multiple family residential connections have a three-tiered structure which gives conservation incentivized pricing based on water use. Under normal water supply conditions, the conservation rate structure has effectively reduced customer water use.

4.3.4 Public Education and Outreach

MWD engages its customer base with a number of conservation and demand management outreach programs. Promoting water wise activities, watering schedules, and educational programs are part of MWD's regular outreach efforts, which include a conservation web page providing resources to the community for conserving water. MWD is also an active participant in the RWEP coordinated by Santa Barbara County Water Agency. These include effective public outreach programs conducted in many different media markets and outlets in Santa Barbara County. RWEP operates many long-established programs and events that have proven to be effective water conservation education and outreach campaigns for the County. Additionally, the RWEP Be Water Smart website[39] offers a comprehensive set of resources for individuals, educators, and organizations, including the recently completed RWEP Annual Report.[40]

4.3.5 Programs to Assess and Manage Distribution System Real Loss

MWD's water loss assessment and management program includes annual water audits and ongoing leak detection and repair. This includes an ongoing meter calibration and replacement program for all production and distribution meters. MWD takes a proactive approach to reduce unaccounted water, tracking it monthly as part of internal reports. Additional MWD activities include:

- Annual water audit and water balance.
- Well production meter data collection and validation.
- Proactive leak identification and repair in MWD distribution system.
- All pressure regulating stations are visited annually, groundwater wells are visited daily, and reservoirs and pump stations are visited weekly. Any leaks identified during system operational visits are immediately repaired.
- 24/7 on call MWD personnel response to public and private connections leaks and breaks.
- Billed water use analyzed monthly for accuracy. Field check follow-up for verification of proper and accurate meter operation.
- With the AMI smart meter program, customer leaks can be quickly identified and repaired.

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[38] Water Cost of Service and Rate Study Report can be found here: https://www.montecitowater.com/doc/6530/

[39] http://www.waterwisesb.org/

[40] http://www.waterwisesb.org/uploadedFiles/waterwisesb/Content/RWEP%20Annual%20Report%20FY19-20.pdf

4.3.6 Water Conservation Program Coordination and Staffing Support

The District's Water Conservation Specialist position was established in 1973 and is responsible for public education, water audits, landscape studies to affect water conservation, and monitoring conservation efforts. The RWEP also provides programmatic support to all the member agency conservation coordinators. RWEP produces plentiful content for residents, students, teachers and businesses in many different formats, including video, workshops, presentations, field trips and curricula. RWEP compiles regional information on water rates, agency conservation programs and results, and water usage data as well. Member agency conservation coordinators meet monthly through the RWEP to coordinate programs, identify and develop new initiatives, and share information. RWEP also organizes conservation coordinator meetings with neighboring counties to share information, identify issues, and create opportunities for collaboration.

4.3.7 Other Demand Management Measures

MWD implements other demand management measures, both on its own and as a part of the RWEP. These measures include free landscape irrigation efficiency audits to its customers. Due to a high percentage of single-family residential customers with large landscape demands, the program emphasizes on the landscape audits. All aspects of irrigation efficiency, plant types, and zones are evaluated.

4.3.8 Recent DMM Activities

As a federal water contract holder (see details in Chapter 3), MWD is required to prepare and submit annual conservation reporting to the U.S. Bureau of Reclamation (Reclamation) as stipulated by the Reclamation Reform Act of 1982 (RRA). MWD's best management practices annual report to Reclamation for 2018 and 2019, detailed recent DMM activities, are provided in Appendix F.

4.3.9 Planned DMM Activities

In addition to ongoing water conservation commitments, the District will evaluate whether additional programs and actions will be necessary to achieve water use objectives in compliance with California Water Code Section 10609.20. Resources will be dedicated in the District's budget for demand management activities which will help comply with these future water use objectives. Special consideration will be taken regarding changing urban water use patterns in the service area.

4.4 Forecasting Customer Use

Forecasting future water demands begins with an understanding of existing customer demands and trends, recognizing the additional customers expected through growth, and considering the factors that will influence the water use of both existing and new customers well into the future – especially factors that directly affect the efficiency of water use.

Pursuant to California Water Code 10610.4(c), an urban water supplier "shall be required to develop water management plans to actively pursue the efficient use of available supplies." One challenge from this directive is reflecting how the pursuit of efficient use is best represented in the forecast water uses that are the cornerstone of good planning. As required by the Act, the future water uses of both existing customers and those added over the 20-year planning horizon should reflect the "efficient use" of water.

4.4.1 Current Customer Water Use

Monthly customer water use from 2016 through 2020 is evaluated to estimate the representative "current" water use by existing customers. Knowing that actual use by existing customers varies slightly year-to-year based on a variety of factors, the recent data provides a basis for estimating current water use. While 2020 was higher than the average of the 2016 through 2019 metered volumes by classification, 2020 values are used as a conservative proxy for "current" water use for each customer classification, which allows a baseline from which to estimate the future use of these existing customers.

2020 Demands are used as the basis for projecting existing customer demands forward. The monthly 2020 values shown in Table 4-2 were rounded to the nearest 10 AF (or 5 AF if the value was less than 5), and the 2020 single-family December value was averaged with the 2016 to 2019 values to create a proxy December current value, as the December 2020 actual value was exceptionally high. Table 4-5 provides the representative monthly and annual current water use, including distribution system losses, that form the basis for the demand forecast.

Table 4-5: Representative Current Water Use (AF)

Use Category	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Single-family	120	210	150	170	290	330	340	340	360	300	260	180	3,050
Multi-family	5	5	10	10	10	10	10	10	10	10	5	5	100
Commercial	20	20	20	10	20	20	20	20	20	20	20	20	230
Institutional	10	10	10	10	20	20	30	30	30	20	20	20	230
Agricultural	5	10	10	10	30	30	30	40	40	30	30	40	305
Non-Potable (Golf Course)	5	5	5	10	20	20	20	20	20	10	10	10	155
Subtotal:	165	260	205	220	390	430	450	460	480	390	345	275	4,070
Distribution System Loss	13	21	17	18	32	35	36	37	39	32	28	22	330
Total Gross Water Use:	178	281	222	238	422	465	486	497	519	422	373	297	4,400

4.4.2 Existing Customer Future Use

To be conservative and assure the analysis of water system reliability is adequate (see Chapter 5), the District is maintaining the annual "current" customer demand as shown in Table 4-5, a total annual customer demand of just over 4,000 AF, with a production need of about 4,400 AF when considering system losses.

While these existing customers may undertake a variety of conservation measures – actively through decisions to modify behavior or water use, or passively through the purchase of appliances and fixtures that simply use less water – they may also expand their future use. Holding the current use as a constant for all existing customers into the future will provide a conservative number that can be re-evaluated over time and in compliance with forthcoming water use objectives.[41]

4.4.3 New Customer Future Use

As detailed in Chapter 2, the District anticipates only a small amount of growth with an associated increased demand placed upon its water supplies. Forecasting the needs of these future customers is dependent upon the type and number of customers and the unit water demand factors associated with each customer type.

Several factors generally affect the forecast of future customer use, ranging from State and local landscape regulations, building code requirements, and other water-use mandates, to changes in the types of housing products being offered. However, as described in Chapter 2, the District's service area is unique in that it is a small, affluent residential community that has limited growth potential because it is nearly built out. Thus, many of the standard factors affecting future water use are not applicable to forecasting the future water needs for the District's customers.

As discussed in Chapter 2, MWD anticipates the growth of ADUs, a type of housing product that is also non-traditional. While plumbing codes and the availability of fixtures and appliances will conform to state. This variability is anticipated to use water consistent with long-term average expectations on a unit-by-unit basis. Furthermore, the construction of ADUs will often displace current landscape and thus displace the outdoor landscaping demand – replacing it with a likely lower indoor use for the same footprint. Until further data can be collected from parcels that add ADUs, it is assumed there is no net change in parcel demands. Thus, the addition of ADUs is not reflected within the future growth of new customers and rather subsumed within the on-going demands of existing customers.

For this UWMP, two distinct new customer classifications are anticipated: (1) residential, and (2) non-residential. Residential customers will include both single-family dwelling units built under a variety of densities and multi-family residential dwelling units. Non-residential uses are expected to include mostly new commercial establishments. To be conservative with the future water use forecast, the District also anticipates a slight increase in irrigated agricultural acres which are served with potable water supplies. This expansion reflects trends for locally grown agricultural products. As new Agricultural customers are currently not allowed, growth in water demand of existing customers is projected through increased acreage. Table 4-6 summarizes the District's anticipated new customer growth to occur by 2040 (see Chapter 2).

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[41] Per California Water Code Section 10609.20, urban water suppliers shall calculate a water use objective composed of, among other factors, aggregated efficient indoor water use based upon standards of no more than 55 gpcd, decreasing to 50 gpcd by 2030?

Table 4-6: Anticipated Growth by Customer Classification

Category	Forecast New Connections			
	2025	2030	2035	2040
Single-Family Units Added	80	170	260	350
Multi-family Units Added	16	34	52	70
Agricultural Acres Added	5	10	10	15
Commercial Connections Added	5	9	9	14

As detailed in Chapter 2, the District anticipates limited growth over the next 20 years with up to 350 new single-family and 70 multiple family dwelling units constructed on the approximately 500 available lots within the District's service area. For purposes of this 2020 UWMP, demand factors were developed for two categories of residential use: single family and multiple-family.

- Single-family – Because the lot sizes vary and the type of home and landscaping design are yet to be determined (but must conform to District standards), the District assumes the limits detailed in its Ordinance No. 89 (adopted in 2007). Ordinance 89 limits use to one AF of water per one acre of land for all new developments. Every subdivision of land within the District, and every change in the use of land within the District that requires a permit or approval from the County of Santa Barbara or the City of Santa Barbara, requires a Certificate of Water Availability issued by the District. Every property subject to this Ordinance measuring one acre or more shall receive a maximum of one AF of water per year. If a property measures less than one acre, the District will make available a pro-rata portion of one AF of water, based on the portion of one acre included in the property. For future use, all new single-family connections are anticipated to need the maximum allowed use of 1 AF per year.
- Multiple-family – this classification generally includes multiple dwelling units served through a single meter, such as townhouses. The existing data for this classification is not useful for estimating per-connection future use. As a conservative assumption, the District assumes a use of 0.40 acre-feet per year.

The District anticipates these new residential elements will be built in accordance with all applicable building codes and relevant District policies and ordinances.

For purposes of this 2020 UWMP, demand factors were developed for two categories of non-residential use: Commercial and Agricultural. These values are used to forecast the anticipated water needs as each classification grows over the planning horizon.

- Commercial Unit Water Demand – this customer classification includes a wide array of different services with varying water demands, from restaurants to boutique stores. An average value consistent with this existing customer classification of 0.90 AF per connection is used.[42]

- Agricultural Unit Water Demand – this customer classification assumes each additional acre of agricultural uses will require 3.65 AF per year. This is based upon the Department of Water Resources Crop Evapotranspiration (ET) data for the California Irrigation and Management Information System (CIMIS) for Station 107: Santa Barbara, which has an estimated annual ET of 43.87 inches.[43]

4.4.4 Summary of Forecast Water Use

Based upon the estimated water use of the existing and new customers, the District anticipates a minor increase in use over the planning horizon. Table 4-7 presents the forecast customer water use. Although the forecast is presented on an annual basis in 5-year increments through 2040, the monthly pattern is expected to mimic the current monthly pattern detailed in prior tables. This characterization is important when evaluating the District's water service reliability as detailed in Chapter 5. As noted previously, distribution losses are presumed to further decrease with the District's AMI technology into the future, but are held to a conservative 7.5 percent for this forecast.

Pursuant to CWC Section 10631.1, retail suppliers are required to include the projected water use for lower income households in 2020 UWMPs. Per California Health and Safety Code Section 50079.5, a lower income household has an income below 80 percent of area median income, adjusted for family size. The annual median income from the 2019 U.S. Census Bureau is approximately $160,000 for the District's service area.[44] 80 percent of this is approximately $128,000 per year. According to the Census data, approximately 47 percent of the households are below this 80-percentile income. All demands are included in the demand projections presented in Table 4-7.

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[42] The current annual use for the 260 commercial accounts is approximately 235 AF, resulting in an average per-connection use of about 0.90 AFY.

[43] https://cimis.water.ca.gov/

[44] This data is from the Household Income in the Past 12 Months (In 2019 Inflation-adjusted Dollars) American Community Survey 1-year estimates. https://censusreporter.org/profiles/16000US0648844-montecito-ca/

Table 4-7: Forecast Future Water Use (values in AFY)

Classification		2025	2030	2035	2040
Existing	Single-family Residential	3,187	3,187	3,187	3,187
	Multi-family Residential	99	99	99	99
	Commercial	234	234	234	234
	Institutional	222	222	222	222
	Agricultural	297	297	297	297
New	Single-family Residential	80	170	260	350
	Multi-family Residential	6	14	21	28
	Commercial	5	9	9	14
	Agricultural	18	37	37	55
	Potable Customer Water Use Subtotal:	4,148	4,268	4,365	4,485
Distribution System Water Loss		336	346	354	364
	Total Potable Water Use:	4,485	4,614	4,719	4,849
Non-Potable (Golf Course)		150	150	150	150
	Total Production:	4,635	4,764	4,869	4,999

4.5 Adjusting Water Use Forecasts for Single-Dry and Multiple Dry Conditions

The demand forecasts presented above represent expected water needs under normal hydrologic conditions. To credibly forecast potential maximum future water use, the forecasted normal-year water uses must be modified to reflect anticipated increases in demand during drier conditions. In the case of the District, this can also include the high-wind, dry conditions that can occur in fall or early winter months coupled with limited rainfall which can dramatically increase single-month demands.

Conservative modifications to the forecasted normal year water use to more likely reflect use conditions during drier years are warranted to help adequately address water service reliability in Chapter 5. For purposes of this UWMP, the following adjustments are made:

- Single dry year: Landscape irrigation needs would increase to reflect the generalized earlier start of the landscape irrigation season due to limited rainfall in the single driest year or to reflect continued demands when rainfall is still absent in November or December. Since this increase only applies to the outdoor portion of a customer's use, a simple adjustment factor of 10 percent is applied to the total normal-year forecasts to conservatively reflect the expected increase in demand for water for landscaping. This increase would represent the "unconstrained demand" expected prior to any MWD-imposed conservation measures (e.g., as stated in the Water Shortage Contingency Plan).

- Multiple dry years: During multiple dry years, demands are also expected to increase similar to the single dry year. For multiple dry year conditions, the single dry year increase of 10 percent is held in each of the subsequent years. This is representative of an "unconstrained demand" that would be expected prior to any Water Shortage Contingency Plan actions MWD may find are warranted to reduce customer demands.[45]

These values are reflected in tables provided for the Drought Risk Assessment presented in later subsections.

4.6 Climate Change Considerations

Including climate change into a water use analysis aids in understanding the potential effects on long-term reliability, which in turn, allows the District to proactively begin planning appropriate responses. For example, hotter and drier weather may lead to increased demand in landscape irrigation and agricultural irrigation especially during spring and fall months, increasing the pressure on water supplies that may have availability restrictions during these periods.

This potential is reflected in the consideration of the single dry year increase of 5 percent that is used for the water service reliability analysis, as discussed previously. Whether the elevated single dry year water forecast becomes more akin to the "normal" demand will become more apparent as the District continues to assess monthly water use trends throughout its service area.[46]

4.7 Forecasting Water Use for the DRA and Annual Assessment

The California Legislature created two new UWMP requirements to help suppliers assess and prepare for drought conditions: the Drought Risk Assessment[47] and the Annual Water Supply and Demand Assessment.[48] These new planning requirements were established in part because of the significant duration of recent California droughts and the predictions about hydrological variability attributable to climate change.

The Drought Risk Assessment (DRA) requires assessing water supply reliability over a five years from 2021 to 2025 that examines water supplies, water uses, and the resulting water supply reliability under a reasonable prediction for five consecutive dry years.

As a slight variant, the Annual Water Supply and Demand Assessment (Annual Assessment) undertakes a similar analytical exercise as the DRA but uses actual, and not hypothetical, conditions

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[45] California Water Code Section 10632(a)(2) states water suppliers should use "unconstrained demand" when performing their annual water supply and demand assessment.

[46] A closer assessment of the correlation of monthly water use by customer type to rainfall and temperature will help MWD improve water use forecasts to assure the effects of climate change are adequately being reflected in water service reliability analyses.

[47] California Water Code Section 10635(b)

[48] California Water Code Section 10632.1

anticipated for the particular upcoming water year. The Annual Assessment is further detailed in Chapter 6, the Water Shortage Contingency Plan.

4.7.1 Projecting Water Use for 5-year Drought Risk Assessment

A critical component of new statutory language for the 2020 UWMP cycle is the requirement to prepare a five-year DRA using a supplier-defined hypothetical drought conditions expected to occur from 2021 through 2025. This drought condition is meant to allow suppliers to test the resiliency of their water supply portfolio and their Water Shortage Contingency Plan actions to meet severe conditions.

DWR recommends that suppliers first estimate expected water use for the next five years without drought conditions (also known as unconstrained demand). These estimates would then be adjusted to estimate the five-years' cumulative drought effects. If normal water use includes water conservation programs, either currently implemented or planned for implementation, estimated water use values would incorporate the effect of those conservation programs when reporting projected water use.

Total water use for 2021, for example, is developed by modifying the water use representation for "current" conditions (see Table 4-5) taking into consideration the anticipated factors affecting water use, with each subsequent year further adjusted, as appropriate. Adjustments year-to-year reflect several factors the District anticipates may occur, including increases from growth. To make these adjustments, the difference in annual water use between the "current" condition and the forecast use in 2025 is prorated equally across each of the years 2021 through 2025, so that the same 2025 forecast water use is matched.

With an initial annual estimate, each year is further adjusted to reflect anticipated increases in the "unconstrained demand" during a single dry year. As noted previously, this is reflected by applying a 10 percent increase to the total estimated demand.

Table 4-8: Forecast DRA Water Use for 2021 through 2025 (AF)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2021	196	309	244	262	464	511	535	547	571	464	410	327	4,840
2022	198	312	246	264	469	517	541	553	577	469	415	331	4,892
2023	200	316	249	267	474	522	547	559	583	474	419	334	4,943
2024	202	319	252	270	479	528	552	565	589	479	423	337	4,995
2025	205	322	254	273	484	533	558	570	595	484	428	341	5,046

5 Water Service Reliability Assessment

This section describes MWD's water service reliability to meet demands under various conditions, including Normal Year, Single Dry Year, and Five-Consecutive-Year Drought scenarios. MWD's assessment of water service reliability is used to direct management actions, provide insight on funding allocations, and allows for project prioritization aimed at increasing service reliability under all scenarios. UWMP guidelines now also require a Drought Risk Assessment, which evaluates the reliability of the system assuming the next 5 years are dry. Because of the District's diversified water supply sources and recently improved access to local drought-proof supplies, combined with effective demand management as necessary, the District's services are found to be reliable through all scenarios examined in this Plan.

During one or more dry years, the total water available to the District is constrained. Important examples of supply constraints include reduced inflow to surface reservoirs such as Jameson Lake and Lake Cachuma, legal limitations due to water rights and contracts limiting the quantity of water available to the District, reduced groundwater infiltration into Doulton Tunnel, and reduced deliveries from the State Water Project/CCWA. In addition to an overall reduction in surface water supplies during multiple dry-year conditions, the water quality of the region's open-air reservoirs can also be adversely affected during these extended periods of drought. Each of these sources, to varying degrees, is also vulnerable to natural disasters like earthquakes and wildfires. To compensate, the District will typically pump more local groundwater and withdraw water from long-term storage (groundwater banks and carryover) during dry years.

District demands are also expected to be affected by single- and multi-year drought conditions, as discussed in Section 4.5. This analysis assumes that unconstrained demands increase by 5 percent from normal conditions during dry years. As necessary, the District can reduce demands by implementing the demand management measures as outlined in the Water Shortage Contingency Plan presented in Section 6.

5.1 5-Year Drought Risk Assessment (DRA)

This subsection provides the detailed approach for conducting MWD's Drought Risk Assessment (DRA), including the data and methods used.

5.1.1 Data, Methods, and Basis for Water Shortage Condition

District demands included in the DRA include anticipated deliveries for treated water to customers and system losses. The projected demands considered climate characteristics, current land uses, and population and growth trends within the service area. Data comes directly from Section 3 Water Supply Characterization and Section 4 Water Use, with future projections supported by MWD's *Future Water Demand and Water Supply Options Report* (Bachman, 2019).

All reductions in demand in response to drought are cited from Section 6 Water Shortage Contingency Plan. If results of administering shortage response actions for the initial Stage Declaration indicate adequate supplies to meet expected demands, the Stage Declaration is proclaimed. Conversely, if results of administering shortage response actions for the initial Stage Declaration indicate inadequate supplies to meet expected demands, the Stage Declaration is increased, and the resulting shortage response actions are analyzed. This process is repeated until an appropriate Stage Declaration (and subsequent shortage response actions) results in expected supplies able to meet expected demands.

Two historical periods could be used as the driest five continuous years on record. The first period, which occurred between water years 1988 and 1992, occurred before the Coastal Branch of the State Aqueduct was completed and began deliveries to the District in 1998. The hydrology of this 5-year period was used in the projections of SWP supply availability prepared by CCWA. To be consistent with the methodology of CCWA, the District has selected 1988-1992 as the basis for its projections of SWP supplies for its DRA and long-term supply reliability.

The second historical period used was the recent drought of 2012-2016, which is the driest 5-year period to occur since the District obtained its current supply portfolio, and this more recent 5-year drought had severe impacts on local and regional supplies such as Jameson Lake and Lake Cachuma. Because the 2012-2016 drought had more severe impacts on local surface water, it was used as the basis for projecting future availability for all District supplies besides SWP/ CCWA.

Since the 1988-1992 and 2012-2016 droughts, the District's supplies have changed. The most important of these changes is the addition of the Santa Barbara WSA. Other changes include the modified Water Rights Order for Lake Cachuma, post-Thomas Fire siltation and a modified rule curve at Jameson Lake, the addition of Semitropic Bank storage, and the District's decision to stop relying upon supplemental water purchases during dry years. The historic periods 1988-1992 and 2012-2016 were used as the basis for projecting the supply from individual sources of supply, but could not be used when evaluating the newer or changed supplies that were not present during either time period. For supplies that were modified or new, the District has chosen to use more conservative assumptions (assuming less supply available) than the District has historically experienced. This approach ensures the accuracy of the DRA and allows the District to be confident of the reliability of its supplies under a variety of future conditions.

5.1.2 DRA Water Source Reliability

Each water source among the District's portfolio of current and planned future sources was evaluated in the DRA. These sources, to the extent possible, were checked against the historic record of performance during droughts, especially the most recent drought (2012-2016). It is assumed that supplies during the DRA simulated drought will reflect the District's supply reliability during the historic 2012-2016 drought. Where appropriate, the District engages in additional reliability evaluations such as periodic siltation surveys of surface reservoirs and participation in local groundwater monitoring through the MGB GSA. The reliability of each source during a severe multi-year drought beginning in 2021 is briefly discussed below.

State Water Project/CCWA

In keeping with the methodology used by CCWA to project SWP supplies, the District's water supply projections for this source are based on the CCWA's projected allocations under 1988-1992 drought conditions. The District's full allocation of State Water is 3,300 AFY. During a simulated drought based on 1988-1992 hydrology, CCWA projects allocations available to the District would range from a high of 46 percent to a low of 11 percent. The average allocation under these conditions would be a 22.6 percent allocation, which equates to 746 AFY.

Lake Cachuma (Cachuma Project)

The District's available supply from Lake Cachuma during years of normal rainfall is 2,651 AFY. However, over the last 10 years, the allocation has averaged only 73 percent of total, and dropped as low as 0 percent in 2016. Furthermore, the District anticipates the modification of its Water Rights Order for the Cachuma Project will have the regulatory effect of further reducing allocations from this source by approximately 40 percent from previous levels, which would result in a normal year allocation of 1,591 AF. Due to the regional dependence on this source, it is estimated that allocations during a multiple dry year scenario would be reduced when recharge conditions of the lake are at a minimum. The projections for this Drought Reliability Assessment are representative of the actual amount of water allocated from 2012 to 2016 minus 40 percent due to the modified Water Rights Order.

Jameson Lake

The District relies upon the operational rule curve published in the Water Supply Options 2020 Update to determine the annual diversion from Jameson Lake. During the 2012-2016 drought, the previous rule curve was found to drain Jameson too quickly in the early years of a multi-year drought, which resulted in insufficient water in storage for subsequent dry years. The Jameson Rule Curve was updated in May 2020 as part of the Future Water Demand and Water Supply Options 2020 Update, so that it now provides a 7-year water supply. The rule curve has also been updated to reflect ongoing siltation at the reservoir, including major sediment inputs which resulted from the Thomas Fire. Total reservoir storage in Jameson Lake is estimated to have dropped to 4,847 AF due to rapid siltation in the aftermath of the Thomas Fire. Continued siltation at a rate of 25 AFY is expected. During the multiple dry year condition modeled in the DRA, diversions are projected to be reduced from historic amounts, due to siltation and the new rule curve to reserve this water supply when recharge is at a minimum.

Fox Creek Diversion & Alder Creek Diversion

These supplies are assumed to become available again to the District in 2023 when the diversion structures are repaired. It is assumed that during a drought period, the first-year combined supply is 250 AF, and then decreases by 50 AF each year thereafter. Therefore, the 2023 supply is projected at 150 AF.

Doulton Tunnel Infiltration

For these projections, it is estimated that this rainfall-dependent source will see a reduction in supply equal to the volumes of water produced from 2012 to 2016.

Groundwater Wells

The District reduces production from groundwater basin during normal and wet hydrologic periods to allow the basin to recharge, which then allows for increased production during times of drought when other District sources are diminished. Although the long-term average (1972 to 2019) of MWD well production was approximately 230 AFY, groundwater wells play an important role in supplementing District supplies during dry periods. For example, District well production reached an all-time high of 637 AF in 2015. This strategy is expected to continue, even as SGMA is implemented in the Montecito Groundwater Basin. The actual historic use of groundwater from 2012-2016 was used in this DRA.

Stormwater

Supply from this source is not projected to provide a quantifiable supply to the District over the planning period, especially during multiple dry-year conditions.

Recycled Water

The projected supply is currently 500 AFY, but not available until 2030. Therefore, the next five-year DRA projected supply is 0 AF.

City of Santa Barbara Water Supply Agreement (WSA)

The completion and adoption of the Water Supply Agreement (WSA) with the City of Santa Barbara in 2020 for 1,430 AFY of desalinated water from the City's Charles E. Meyer desalination facility secures a reliable purchased supply for the District in all year types, independent of rainfall. Beginning in 2022, this DRA assumes a constant supply of 1,430 AFY in all years throughout the planning period.

Supply from Semitropic Groundwater Bank

In 2017, the District entered into a long-term groundwater water banking arrangement with the Semitropic Water Storage District ("Semitropic Bank") in Kern County to bank surplus SWP and/or supplemental water. The District's portion of the Semitropic Bank is 4,500 AF, with an annual withdrawal limit of 1,500 AF. In 2020, the District's banked supply available for delivery is 1,800 AF. This source of reliable water will be a primary water supply for the District as the multiple dry-year period progresses. Under multiple dry-year conditions, the District will rely on regional reservoirs, SWP, and the City of Santa Barbara WSA water until those supplies are diminished and then, as needed, introduce local, reliable, rain-independent supplies from wet/normal year banked storage to meet demands. The DRA assumes that the District will make only the withdrawals necessary to meet demands. The total projected withdrawal of 1,800 AF over the next five years would completely empty the District's current account balance of 1,800 AF.

Supplemental Water Purchases

Supplemental supplies are not part of the District's plan to develop local, reliable supplies going forward. Supplemental water purchases are limited by the delivery infrastructure of the SWP and potential losses/spills associated with San Luis and Lake Cachuma. Additionally, supplemental water purchase agreements include the return conditions of this water debt which often dictate the return period and other conditions that must be met. While the District has used supplemental water purchases in the past to cover shortages, it is expected that the development of new, local, reliable supplies as discussed in Chapter 3 will reduce the need for supplemental supplies in the future. However, supplemental water may be purchased during wet/normal years and banked in local groundwater aquifers, if this option is economically beneficial, and extracted or exchanged during extended dry periods. For the purposes of this DRA, supplemental water purchases are assumed to be zero.

5.1.3 Total Water Supply and Use Comparison

Table 5-1, below, shows the District's supplies and demands over the next 5 years assuming the next 5 years are as dry as the 2012-2016 drought. In the later years of the drought, the supply available from the State Water Project, Lake Cachuma, and Jameson Lakes all decline significantly. The District instead relies on increased groundwater production, the Santa Barbara WSA deliveries beginning in 2022, and withdrawals from Semitropic Groundwater Bank. The District anticipates only withdrawing modest amounts from Semitropic Bank in the early years of drought in order to preserve banked supplies for use in later drought years. By the end of the drought, the District's banked supplies in Semitropic would be fully exhausted.

The results presented in Table 5-1 indicate that the District does not have sufficient supplies to meet unconstrained demands without implementing WSCP actions during four out of five years of the simulated drought. A Stage 1 Water Shortage Condition, as described in the District's Water Shortage Contingency Plan in the following chapter, is necessary for the first year and third years of the drought, and the more serious Stage 2 Water Shortage Condition would be invoked in the last two years of drought. The most severe shortage experienced in the final year of the drought represents a slightly less than 20 percent shortage. The District's new sources of water supply developed since 2015 (including the Santa Barbara WSA, and Semitropic Groundwater Bank) are key factors contributing to the District's supply reliability, but the declaration of Stage 1 and 2 Water Shortage Conditions are still necessary during the simulated drought.

Table 5-1: Drought Reliability Assessment (AF)

Source of Supply	2021	2022	2023	2024	2025
State Water/ CCWA	363	1,518	462	825	561
Lake Cachuma	1,591	1,591	1,591	715	0
Jameson	1,800	675	525	465	370
Fox & Alder Creeks	0	0	150	100	50
Doulton Tunnel Infiltration	226	186	176	161	132
Groundwater Wells	279	460	604	637	530
Stormwater	0	0	0	0	0
Recycled Water	0	0	0	0	0
Desalination	0	0	0	0	0
Semitropic Bank	400	0	0	100	1,300
Supplemental Water Purchases	0	0	0	0	0
Santa Barbara WSA	0	1,430	1,430	1,430	1,430
Santa Barbara Transfer (Juncal Agreement)	-300	-300	-300	-300	-300
Total Supplies	**4,358**	**5,560**	**4,638**	**4,133**	**4,073**
Projected Unconstrained Demand (Table 4-8)	**4,840**	**4,892**	**4,943**	**4,995**	**5,046**
Supply Satisfies Demand	NO	YES	NO	NO	NO
WSCP Stage Needed	1	NONE	1	2	2

Note: Fox and Alder diversions expected to be reconstructed in 2023.

5.2 Long-term Service Reliability

In addition to evaluating the District's preparedness for a severe drought in the near future through the DRA, the District is also required to assess three scenarios when considering the reliability of a supply source, including Normal Year, Single Dry Year, and Five-Year-Consecutive Drought scenarios. These assessments must be completed at 5-year intervals over the 20-year planning period.

The assumptions used to analyze long-term service reliability from each supply source were the same as described above in the Drought Reliability Assessment Section 5.1, except as specifically noted here.

Long-term projections for the supplies available from the State Water Project were based on the Central Coast Water Authority's (CCWA) determination of the available delivery of the District's State Water Project Table A allocation for single and multiple dry years. The District's full allocation of State Water is 3,300 AFY. As reported by the CCWA in their 2020 UWMP, the allocation projection for a single dry year was based on the hydrology of 1977 and the allocation projection for multiple dry years was based on the hydrology of 1988-1992. Based on these projections, the

District allocation is expected to decrease from a normal year average allocation of 58.8 percent in 2020 to 56.9 percent in 2040, from 1,943 AFY to 1,874 AFY. During a single critically dry year, CCWA projects that the District's allocation of 7 percent in 2020 will modestly increase to an 11 percent allocation by 2040, from 221 AFY to 363 AFY. During multi-year droughts based on 1988-992 hydrologic conditions, the District's allocation of 22.6 percent in 2020 is expected to modestly increase to 24.5 percent, from an average of 745 AFY to 807 AFY as projected by CCWA and presented in Tables 3-2.

Lake Cachuma allocations are projected to be 40 percent less than the historically available allocation due to the implementation of the modified Water Rights Order. For the single dry year simulation, the 2015 delivery was reduced to account for this change. For the multiple dry year simulation, the 2012-2016 delivery was reduced to account for the Water Rights Order modification.

Jameson Lake is also subject to ongoing siltation that will decrease its capacity from 4,848 AF in 2020 to 4,348 AF in 2040, which is approximately 10 percent decrease in capacity. The reduction in reservoir capacity is assumed to translate to a proportional reduction in production from this source. All long-term production from Jameson Lake has been adjusted to account for its reduced capacity due to siltation in 2040 and the effect of the modified rule curve.

Recycled water deliveries of 500 AFY are expected to begin in 2030 as described previously. This supply is projected to remain constant until the opportunity is further refined and new numbers can be presented. Recycled water is expected to be reliable in all future dry years once it is developed.

Semitropic Groundwater Bank withdrawals are necessary to meet demands during most drought years modeled in this Water Supply Reliability Assessment. As in the Drought Reliability Assessment above, it is assumed that the District can withdraw any amount under the annual withdrawal limit of 1,500 AFY as needed to meet demands. The District's current balance of 1,800 AF of banked water was assumed to be the amount of water available at the beginning of each future drought, although is contractually able to bank up to 4,500 AF in Semitropic.

Sections 5.2.1, Section 5.2.2, and Section 5.2.3 present the District's projected available supplies under future normal conditions, a single dry year, and multiple dry years respectively.

5.2.1 Normal Year

Table 5-2 shows normal year anticipated supply and demand totals in five-year increments through 2040. The supply and demand totals contained in Table 5-2 are taken from 3.7 and 4.4.4 respectively. The District has supplies that are more than sufficient to meet demands during normal years.

Table 5-2: Projected Normal Year Reliability (AF)

Source of Supply (from Table 3-9)	2025	2030	2035	2040
State Water/ CCWA	1,926	1,908	1,891	1,874
Lake Cachuma	1,591	1,591	1,591	1,591
Jameson	1,073	1,073	1,073	1,073
Fox & Alder Creeks	400	400	400	400
Doulton Tunnel Infiltration	278	278	278	278
Groundwater Wells	250	250	250	250
Stormwater	0	0	0	0
Recycled Water	0	500	500	500
Desalination	0	0	0	0
Semitropic Bank	1,500	1,500	1,500	1,500
Supplemental Water Purchases	0	0	0	0
Santa Barbara WSA	1,430	1,430	1,430	1,430
Santa Barbara Transfer (Juncal Agreement)	-300	-300	-300	-300
Total Supplies	8,147	8,630	8,613	8,595
Projected Unconstrained Demand (from Table 4-7)	4,635	4,764	4,869	4,999
Supply Satisfies Demand	YES	YES	YES	YES

5.2.2 Single-Dry Year

Table 5-3 presents the anticipated supply and demand totals in five-year increments through 2040 for a single critically dry year. For all the years simulated, the District has adequate supplies to meet unconstrained demands without implementing its WSCP. Newly developed sources of supply, especially the Santa Barbara WSA and Semitropic Banked storage, are critical to providing the District with reliable supplies during critically dry years. Based on the analysis presented below, the District is well prepared for a severe drought lasting one year.

Table 5-3: Projected Single Critically Dry Year Reliability (AF)

Source of Supply (from Table 3-9)	2025	2030	2035	2040
State Water/ CCWA	264	297	330	363
Lake Cachuma	716	716	716	716
Jameson	465	465	465	465
Fox & Alder Creeks	250	250	250	250
Doulton Tunnel Infiltration	161	161	161	161
Groundwater Wells	637	637	637	637
Stormwater	0	0	0	0
Recycled Water	0	500	500	500
Desalination	0	0	0	0
Semitropic Bank	1,500	1,500	1,500	1,500
Supplemental Water Purchases	0	0	0	0
Santa Barbara WSA	1,430	1,430	1,430	1,430
Santa Barbara Transfer (Juncal Agreement)	-300	-300	-300	-300
Total Supplies	5,123	5,656	5,689	5,722
Projected Unconstrained Demand (Table 4-7 + 10%)	5,098	5,241	5,356	5,499
Supply Satisfies Unconstrained Demand	YES	YES	YES	YES
Demand Reduction Needed	0%	0%	0%	0%
WSCP Stage	None	None	None	None

5.2.3 Multiple Dry Years

Table 5-4 presents the multiple dry year supply and demand totals in five-year increments through 2040. Even with the flexibility provided by Semitropic Groundwater Bank withdrawals, supplies are not always sufficient to meet unconstrained demands during multi-year droughts. The most severe shortage of 19.5 percent is projected to occur in the final year of the drought simulated to begin in 2025, which is before recycled water supplies become available. In the simulated droughts beginning in 2030 and later, the addition of recycled water supplies helps limit projected shortages to no more than 14 percent. Shortages would be addressed by invoking Stage 1 or Stage 2 of the WSCP, as needed. The new supply sources the District has developed since the last UWMP are very important to improving demand reliability, especially during the later years of each simulated drought. Even with new supplies, however, demand management measures are projected to be necessary during the later years of severe multi-year droughts.

Table 5-4: Projected Multiple Dry Year Reliability (AF)

Source of Supply (from Table 3-9)	**2025**					**2030**				
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
State Water/ CCWA	363	1,606	462	792	583	363	1,694	462	759	605
Lake Cachuma	1,591	1,591	1,591	715	0	1,591	1,591	1,591	715	0
Jameson	1,800	675	525	465	370	1,800	675	525	465	370
Fox & Alder Creeks	250	200	150	100	50	250	200	150	100	50
Doulton Tunnel Infiltration	226	186	176	161	132	226	186	176	161	132
Groundwater Wells	279	460	604	637	530	279	460	604	637	530
Stormwater	0	0	0	0	0	0	0	0	0	0
Recycled Water	0	0	0	0	0	500	500	500	500	500
Desalination	0	0	0	0	0	0	0	0	0	0
Semitropic Bank	0	0	100	300	1,400	0	0	0	300	1,500
Supplemental Water Purchases	0	0	0	0	0	0	0	0	0	0
Santa Barbara WSA	1,430	1,430	1,430	1,430	1,430	1,430	1,430	1,430	1,430	1,430
Santa Barbara Transfer (Juncal Agreement)	-300	-300	-300	-300	-300	-300	-300	-300	-300	-300
Total Supplies	**5,638**	**5,848**	**4,738**	**4,299**	**4,195**	**6,138**	**6,436**	**5,138**	**4,766**	**4,817**
Projected Unconstrained Demand	**5,098**	**5,126**	**5,155**	**5,184**	**5,212**	**5,241**	**5,264**	**5,287**	**5,310**	**5,333**
Supply Satisfies Unconstrained Demand	YES	YES	NO	NO	NO	YES	YES	NO	NO	NO
Demand Reduction Needed	0%	0%	8%	17%	20%	0%	0%	3%	10%	10%
WSCP Stage	None	None	1	2	2	None	None	1	1	1

Table 5-4 (continued): Projected Multiple Dry Year Reliability (AF)

Source of Supply (from Table 3-9)	2035					2040				
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 1	Year 2	Year 3	Year 4	Year 5
State Water/ CCWA	363	1,782	462	762	627	363	1,870	462	693	649
Lake Cachuma	1,591	1,591	1,591	715	0	1,591	1,591	1,591	715	0
Jameson	1,800	675	525	465	370	1,800	675	525	465	370
Fox & Alder Creeks	250	200	150	100	50	250	200	150	100	50
Doulton Tunnel Infiltration	226	186	176	161	132	226	186	176	161	132
Groundwater Wells	279	460	604	637	530	279	460	604	637	530
Stormwater	0	0	0	0	0	0	0	0	0	0
Recycled Water	500	500	500	500	500	500	500	500	500	500
Desalination	0	0	0	0	0	0	0	0	0	0
Semitropic Bank	0	0	0	300	1500	0	0	0	400	1400
Supplemental Water Purchases	0	0	0	0	0	0	0	0	0	0
Santa Barbara WSA	1,430	1,430	1,430	1,430	1,430	1,430	1,430	1,430	1,430	1,430
Santa Barbara Transfer (Juncal Agreement)	-300	-300	-300	-300	-300	-300	-300	-300	-300	-300
Total Supplies	6,138	6,524	5,138	4,733	4,839	6,138	6,612	5,138	4,800	4,761
Projected Unconstrained Demand	5,356	5,385	5,413	5,442	5,470	5,499	5,527	5,556	5,584	5,613
Supply Satisfies Unconstrained Demand	YES	YES	NO	NO	NO	YES	YES	NO	NO	NO
Demand Reduction Needed	0%	0%	5%	13%	12%	0%	0%	8%	14%	15%
WSCP Stage	None	None	1	2	2	None	None	1	2	2

5.3 Summary

The projections presented in the Water Service Reliability Assessment of this UWMP demonstrate that the District will have supplies that are reliable in all scenarios examined, although the actions outlined in Stages 1 and 2 of the District's Water Shortage Contingency Plan are necessary during the later years of the most severe multi-year droughts. The District's reliability has been greatly improved by the development of new supply sources since the completion of the 2015 UWMP, including the Santa Barbara WSA, and additional water storage in Semitropic Groundwater Bank. The surplus supply available to the District during normal hydrologic conditions improves the likelihood that the District will be able to recharge water storage during normal years for later use during dry years, which would further improve the reliability of District supplies beyond the levels shown in this Water Service Reliability Assessment.

6 Water Shortage Contingency Plan

The District has had extensive experience in drought water supply management that began with its inception in 1921. As a community without reliable water supplies in the 1920s, the District embarked upon establishing a reliable water supply for its customers that resulted in the construction and operation of Jameson Lake, Juncal Dam, Doulton Tunnel, and a District-wide water transmission, distribution, and storage system. Subsequent droughts have impacted water supply planning in the region, with new supplies and infrastructure added over time such as; Cachuma Project, State Water Project, desal supplies, temporary supplemental supplies, and banked groundwater. The District has also enacted demand-side measures during drought times through ordinances such as drought rate structures, allocations and penalties, new connection moratorium, and conservation program and outreach efforts. However, recent supply strategies have created a more reliable and resilient supply portfolio in an effort to minimize future demand reduction actions. This Water Shortage Contingency Plan presents the District's strategies and actions to monitor water shortage conditions and provide a suite of tools and actions to address the projected or current shortage conditions. It should be noted the specific actions during a shortage will be selected from these options, and not all actions may be necessary.

6.1 Water Supply Reliability Summary

The supply reliability projections presented in Chapter 5 of this UWMP demonstrate that the District will have sufficient supplies during normal hydrologic years. In a worst-case single year drought, the supplies will also be sufficient once the City of Santa Barbara WSA supply is available in 2022. In multiple-year droughts, the District's supplies become decreasingly unreliable. Foreseeing this issue, the District has invested in groundwater banking in the Semitropic Groundwater Bank. The District will actively manage this banked water in order to avoid, or at a minimum reduce, customer demand restrictions during multi-year droughts. Similarly, the District will also manage carryover storage in reservoirs to improve supply availability during extended drought periods.

The surplus supply available to the District during normal hydrologic conditions improves the likelihood that the District will be able to recharge water storage during normal years for later use during dry years, which would further improve the reliability of District supplies beyond the levels shown in the water service reliability assessment.

6.2 Annual Water Supply and Demand Assessment Procedures

MWD conducts an annual analysis of supply and demand projections to help inform water resources management decisions for the coming year. The analysis incorporates numerous data sources used as evaluation criteria to project probable demands and supply availability for the coming year. Sources to consider include:

- Projected weather conditions
    - NOAA 3-month projections
    - US Drought Monitor current status
    - Precipitation versus historical on monthly basis for state and local forecasts.

- Projected Unconstrained Demand
    - Production versus historic on monthly basis
    - New customer growth
    - Identify artificially supplied water features separate from swimming pools and parks (required per California Water Code (CWC) 10632(b)
    - GPCD and AF/acre monthly tracking

- Projected Supply Availability
    - Lake Cachuma
    - Jameson Lake
    - Doulton Tunnel
    - Desal
    - Groundwater
    - State Water Project
    - Supplemental supplies
    - GW Banked in Semitropic

The general procedure is listed below. MWD may modify this process based on available data, significant events, process restrictions, or other external factors that may impact the process.

1. Dry Year Projection

Compile existing weather data to characterize past 12 months' conditions. Considering recent conditions and available forecasts, select a projected dry year scenario from the historical record of allocations for each source. Dry year scenario assumes the following:

- No additional inflow to Jameson or Cachuma
- No additional recharge of groundwater basin
- Low rainfall year across Northern California

2. Demand Projection

Project unconstrained monthly demand for the next 12 months factoring in existing demands, water use budgets, weather projections, and growth projections.

3. Project Supply Availability

Summarize the current supply availability over the next 12 months for each supply source assuming no supply restrictions. Project next year supply availability over the next 12 months assuming the next year is a dry year as selected in Step 1. For each supply source, utilize the existing conditions coupled with historic availability and other known conditions to project probable monthly availability.

4. Supply Infrastructure Restraints

Identify and describe any projected infrastructure restrictions to delivering supply in the next 12 months.

5. Project Next Year supply deliverability

Using results from Steps 3 and 4, identify the current conditions and dry year projected supply delivery for the next 12 months.

6. Projected Dry Year Supply to Demand Comparison

Compare the projected next year unconstrained demand to the next year dry-year projected supply deliverability. Identify any projected monthly shortfall in supply to meet the unconstrained demand, cross-referencing the condition to one of the six water shortage levels identified in this WSCP.

7. Water Resource Strategies

Develop and propose water resource management strategies to address the projected demand to supply comparison, including reference to one of the water shortage stages identified in this WSCP.

8. Schedule

The annual water supply demand assessment is presented to the Board of Directors for discussion and questions. Staff will modify/update the assessment per direction from the Board. The Board will approve the assessment and its findings, and can also provide direction to implement specific management strategies at that time. The general proposed timeline is as follows:

- Begin assessment by staff – March/April
- Present assessment to Board – May
- Submit to State per CWC Section 10632.1 – by July 1

6.3 Water Shortage Stages and Responses

MWD maintains this WSCP to identify and respond to potential and actual water shortage conditions. Six water shortage levels are presented per CWC Section 10632(a)(3) and summarized in Table 6-1. Proposed alternative response actions for each stage are identified with each respective projected impact on demand reduction or supply augmentation listed. MWD will evaluate each specific shortage condition and select the appropriate response action(s) for implementation. It should be noted the specific actions during a shortage will be selected from these options, and not all actions may be necessary.

Table 6-1. Shortage Stages

Stage	Supply Shortage	Water Shortage Condition
Normal	None	Normal conditions
1	Up to 10 percent	Supply reduction of up to 10 percent from normal annual supply availability, or over any two consecutive months.
2	Up to 20 percent	Supply reduction of up to 20 percent from normal annual supply availability, or over any two consecutive months.
3	Up to 30 percent	Supply reduction of up to 30 percent from normal annual supply availability, or over one month.
4	Up to 40 percent	Supply reduction of up to 40 percent from normal annual supply availability, or over any 2-day time period. This is considered the threshold stage for catastrophic interruption to District supplies.
5	Up to 50 percent	Supply reduction of up to 50 percent from normal annual supply availability, or over any 1-day time period. This condition unlikely with current supply portfolio but could occur due to natural disaster.
6	Greater than 50 percent	Supply reduction of greater than 50 percent from normal annual supply availability, or over any discrete time period. This condition unlikely with current supply portfolio but could occur due to natural disaster.

The District maintains a water conservation program that is on-going, even during periods of normal water supply. This water conservation program includes measures such as:

- a full-time Water Conservation Specialist
- free water use audits
- reduction of distribution system line flushing through close water quality monitoring
- District issuance of Certificates of Water Service Availability which condition new and proposed re-development to install state-of-the-art water saving technologies and to use no more water than is authorized under the Certificate.
- Santa Barbara County Regional Water Efficiency Program partnership that promotes water efficiency through various outreach, education, and rebate programs.
- Public outreach through the District's website, bill inserts, and press releases
- Use of automated metering infrastructure to help identify unintended water use (i.e. leaks)

The District has found these methods to be effective in reducing overall water consumption and managing demands during periods of normal water supply and water shortage conditions. The District will rely on its regular conservation program as well as additional measures to respond to the range of water supply shortages that may arise. Specific demand reduction measures per stage are listed in Table 6-2, and specific supply augmentations and other measures are listed in Table 6-3.

Table 6-2 – Demand Reduction Measures

Stage	Demand Reduction Action	Potential Demand Reduction
Normal	All Stage 1 Demand Reductions are “recommended".	N/A
Normal	Maintain Conservation Program.	N/A
Normal	Offer On-Site Water Use Audits.	N/A
Normal	Waste of Water Prohibition.	N/A
Normal	Conservation Messaging to Customers.	N/A
Normal	Implementation of Ordinance 89 water use limitations for new development and redevelopment.	N/A
Normal	Water for private swimming pools, spas, and hot tubs is considered a non-essential use. Property owners with new and existing private swimming pools, spas and hot tubs are permitted to maintain water levels, and to drain and/or fill only once every five years upon application and written authorization from the District.	N/A
Normal	Water for ponds is considered a non-essential use. Property owners are permitted to maintain water levels for currently existing lined ponds only. Water for new ponds, or for maintaining water levels on unlined ponds, must be supplied by an alternative water source.	N/A
1+	Expand conservation messaging campaign.	0-10%
1+	Require automatic shut off hoses.	0-1 %
1+	The washing of hard surfaces such as driveways, sidewalks, patios and parking lots is prohibited except where necessary to protect health and safety. Pressure washing for maintenance or repair is permitted.	0-2 %
1+	Applying water to landscaping during and within 48 hours after measurable rainfall of at least one-quarter of one inch of rain is prohibited.	0-5%
1+	Applying water to outdoor landscaping in a manner that causes runoff such that water flows onto an adjacent property, non-irrigated areas, private and public walkways, parking lots, or structure is prohibited.	0-5%
1+	Irrigating turf on public street medians or publicly owned or maintained landscaped areas between the street and sidewalk, except where the turf serves a community or neighborhood function or is watered incidentally w/ trees or is irrigated w/ recycled water is prohibited.	0-5%
1+	Breaks or leaks in any customer’s plumbing must be immediately repaired upon discovery. If repairs cannot be immediately completed, water service to the property shall be temporarily turned off by the customer or customer’s agent at the customer’s shutoff valve, or by the District at the customer’s water meter serving the property, to prevent water loss until such time as the repair has been completed.	0-3%
1+	Increase system water loss reduction efforts.	0-1%
1+	Hotels, Motels, etc. shall offer an option of not laundering towels and linens daily and shall display notice of this option.	0-1%
1+	All restaurants and other eating establishments that provide table service shall refrain from serving water except upon specific request by a customer.	minor

Stage	Demand Reduction Action	Potential Demand Reduction
1+	Exterior irrigation, including but not limited to irrigation of turf, plants, lawns, shrubbery and ground cover, shall be permitted if irrigated between the hours of 6 p.m. and 10 a.m. This provision is applicable to all customer classifications excluding agriculture.	0-15%
1+	Vehicles shall be washed only at commercial car washing facilities or by the use of a bucket or hose equipped with a hand-operated shut off nozzle.	0-1%
1+	Using potable water in an ornamental fountain or other decorative water feature is prohibited except where part of a recirculating system.	0-2%
1+	Implement or Modify Drought Rate Structure or Surcharge.	5-20%
2+	Targeted conservation communication to highest water users.	0-5%
2+	Increase Water Waste Patrols.	0-5%
2+	Pool, spa, and pond refills prohibited.	0-1%
2+	Outdoor irrigation limited to every other day of the week.	5-15%
2+	Pools and Spas – Require covers for pools and spas.	0-2%
3+	Moratorium on new water meters.	0-5%
3+	Outdoor irrigation limited to 2 days per week.	15-30%
4+	Establish Water Use Allocations and Penalties.	0-15%
4+	Outdoor irrigation limited to 1 day per week.	30-50%
5+	Prohibit all outdoor irrigation.	40-60%
5+	Human health and safety only water usage.	50+%
6	Event-specific measures to be identified.	As needed

Note: demand reduction estimates are not directly additive, but the District will combine numerous actions to achieve the desired demand reduction.

Table 6-3 – Supply Augmentation and Other Actions

Stage	Augmentation or Other Action	Additional Supply Provided
1+	Obtain additional supplies through District's ongoing water supply portfolio	As needed to meet shortfall
1+	Increased monitoring of high-water users	Depends on specific customers
2+	Moratorium or Net Zero Demand Increase on New Connections	Depends on projected new connection demands

6.4 Communications

MWD maintains an established and effective communications program to inform its customers, neighbors, and other stakeholders of issues, updates, and policies. Implementation of the WSCP will utilize the existing communication program structure to inform customers and others of the declared shortage stage and respective actions and restrictions in place.

The Board meetings addressing the Annual Water Supply and Demand Assessment and/or a potential water shortage declaration will be noticed per normal Board meeting public notification procedures. The meeting will also be announced through regular press release protocols.

Once a shortage stage has been declared by the Board of Directors, MWD will notify its customers and others through a range of efforts. The stage and restrictions will be identified in a press release, as well as customer billing statements. The District's website will be updated to feature the shortage declaration, restrictions, and resources available to customers from the District and other entities to help meet the restrictions. Subsequent Board of Directors meetings will include a review of the shortage condition, customer response results, and discussion and recommendations for potential modifications.

6.5 Compliance and Enforcement

Montecito Water District ("MWD") is organized under the County Water District Law [Water Code §§30000-33901] and is authorized to do any act necessary to furnish sufficient water in the district for any present or future beneficial use [Water Code §31020]. This authorization is consistent with California Constitution Article X, Section 2, which declares and requires that water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use of water be prevented.

MWD's authority to enact and enforce water shortage contingency plans is found in Water Code §31026, which authorizes MWD to restrict the use of water during any threatened or existing water shortage and to prohibit wastage of water during such periods. MWD is authorized to prescribe and define by ordinance such restrictions, prohibitions and exclusions as MWD determines to be necessary [Water Code §31027]. MWD's findings as related to its adopted restrictions, prohibitions and exclusions continue unchanged unless and until a contrary finding is made by the Board by resolution or ordinance [Water Code §31028].

The aforementioned powers derived from MWD's organizing statutes are in addition to general powers granted to water distributors in Water Code §§350-359. Water Code §350 authorizes the governing body of a distributor of a public water supply to declare a water shortage emergency whenever it finds and determines that the ordinary demands and requirements of water consumers cannot be satisfied without depleting the water supply of the distributor to the extent there would be insufficient water for human consumption, sanitation, and fire protection. Upon a finding of such an emergency condition, the distributor can adopt such regulations and restrictions on the delivery and consumption of water as will conserve the water supply for the greatest public benefit, with particular regard to domestic use, sanitation, and fire protection [Water Code §353]. The regulations and restrictions remain in force and effect until the supply of water available for distribution within such area has been replenished or augmented, and restrictions may include the right to deny new service connections and discontinue service for willful violations. [Water Code §355 and §356]

MWD also coordinates with any city or county within which it provides water supply services for the possible proclamation of a local emergency" under California Government Code, California Emergency Services Act (Article 2, Section 8558).

MWD will declare a water shortage emergency within its service area boundaries when it determines through its best judgement that normal demands and requirements of its customers cannot be met with the projected supplies. MWD will coordinate with the County when issuing a water shortage declaration. Once a water shortage stage has been declared, MWD will enforce compliance through a multitude of measures commensurate with each reduction goal. The District will either implement measures per this Water Shortage Contingency Plan or will provide further discrete requirements through ordinances.

Measures will be enforced through the following procedures, in addition to any enforcement measures identified in ordinances. MWD will modify and adjust the compliance strategy as necessary for each respective situation.

- A written warning will be issued for a first violation.
- A District imposed fine of $250 for a second violation, and any subsequent violation, and doubling with each subsequent violation up to a maximum of $1,000 for any single violation.
- Upon a fourth violation, or upon an earlier violation the General Manager determines to create a significant threat to the goals of the ordinance, the General Manager may order the installation of a flow restrictor on service lines in question.
- Similar penalties, fines and charges may be implemented by the District as needed to enforce the restrictions on specific prohibition water uses.

6.6 Financial Considerations for WSCP

Implementing any stage of the WSCP is expected to impact the District's financial status. As experienced during previous droughts, it is expected that revenues will decrease with decreasing usage, and expenses will increase with additional monitoring and enforcement responsibilities, as well as additional costs for replacement supplies if needed.

The District maintains a rate structure that includes a fixed meter charge plus increasing volumetric block rates for all its customer categories. Volumetric revenue is approximately 75 percent of total revenue (MWD Water Cost of Service and Rate Study, May 2020). Assuming all other revenue sources are unchanged, overall revenue will decrease by approximately 8-38 percent respectively for a 10-50 percent reduction in usage, assuming equal reduction across all customer types. Actual impacts will vary depending on customer response.

Enforcement, enhanced outreach, and increase of customer data tracking can add to the District's costs around a water shortage condition. Often times, these additional efforts are prioritized for current staff, and other normal work efforts are delayed or reassigned. If conditions warrant, the District will seek assistance through additional staffing or third-party service providers. These costs depend on the level of support and will be evaluated on a case-by-case basis. An increase in cost can also be associated with additional equipment obtained to support the District's outreach, enforcement, tracking, and management efforts.

Depending on the situation, the District may also be able to obtain supplemental water supplies to mitigate the water shortage condition. These supplies are expected to be more costly than regular supplies and will be evaluated for each specific opportunity.

The District maintains a strong financial management position. However, it is reasonable to expect financial impacts or changes in cash flow during a prolonged water shortage condition. The District will enact a range of management and financial resources depending on the specific situation that includes:

- Utilizing financial reserves
- Capital project deferment
- Operational and maintenance expense deferment
- Increased revenue from penalties
- And others as identified

The District has enacted a drought rate surcharge in the past to address revenue reductions. Since that time, the District has developed an enhanced rate structure based on assumed future lower demands. The District intends to mitigate financial impacts from water shortage conditions through the elements identified above without implementing a surcharge structure. However, depending on specific situations, the District may revisit the need for a surcharge structure in the future.

6.7 Monitoring, Reporting, and Refinement

The WSCP aims to ensure demands are reduced and/or supply is augmented to balance supply and demand. The District will enact various actions commiserate with each respective stage. The District will then monitor results to maintain the supply/demand balance. Similar to the supply and demand projections used to establish a shortage condition, the District will monitor the same data to determine effectiveness and efficacy. District staff will report to the Board of Directors at least quarterly on status and results. Data reporting will include:

- Actual demands to projected demands per customer class and on total
- Actual supply availability and utilized to projected availability per each supply source
- Projected supply availability for next 12 months per supply source
- Any specific requirements identified by the State in the future

Data will also be submitted to the State per any future reporting requirements.

Progress and efficacy will be summarized from the results data. The District will evaluate the need for any changes or modifications to the declared water shortage stage or actions based on the results. The District may determine to enact additional measures, develop ordinances, or update the WSCP as a whole. Any WSCP update or modification will be conducted through the Board of Directors meeting process unless specific conditions require otherwise.

6.8 Seismic Risk, Catastrophic Outage, and Emergency Response Plan

The District completed a comprehensive Hazard Mitigation Plan in 2018, Emergency Response Plan in 2019, and 2015 Structural and Seismic Evaluation for District Storage Reservoirs (Tetra Tech 2015). Combined, the plans provide the District with an analysis of potential emergencies or events with a coordinated response and recovery strategy. Each plan will be updated periodically with the most recent version available on the District's website. The Hazard Mitigation Plan and the Emergency Response Plan are attached to this 2020 UWMP in Appendix G, and H, respectively.

The County of Santa Barbara also maintains the Multi-Jurisdictional Hazard Mitigation Plan which serves as an umbrella document for the Montecito Water District service area.

In addition to the District's Hazard Mitigation Plan and Emergency Response Plan, the District also implements the following procedures to contend with a catastrophic water supply interruption:

- Available water supply is diverse consisting of major supply provided by a local and regional surface water reservoir and local desalination that have separate and independent storage and conveyance facilities.
- Emergency back-up generators have been installed at both District water treatment facilities as well as at all critical District pump stations.
- District's office is supplied by an emergency back-up generator to ensure operations can continue during power outage or other emergency.
- District has a Supervisory Control and Data Acquisition (SCADA) system that allows for remote monitoring and control of the District's water facilities, which have battery back-up provisions and radio telemetry not dependent on public utilities.
- District maintains an up-to-date Atlas Map and Valve tie book which clearly illustrates all District water facilities to allow for proper isolation of pipes, reservoirs, etc. in the event of an emergency.
- District has staff members from two separate departments (Treatment and Distribution) are "on-call" 24-7 to monitor and control District water facility operations at all times.
- District has a full-time dam caretaker that resides at the Juncal Dam/Jameson Lake facility to monitor dam performance.
- District's staff is cross-trained and can perform emergency repairs to the water system including immediate response and repair to water main breaks.
- District maintains heavy equipment including back-hoes and dump trucks which trained staff utilize to make emergency repairs to the water system. The District also maintains additional equipment needed to make water system repairs including but not limited to; sump pumps, jackhammers, compaction equipment, trench shoring, and saws.
- District maintains an inventory of materials at its District Yard including pipe, valves, fittings, repair couplings, etc. to ensure repairs can be made at all hours.
- District coordinates with local contractors as needed to ensure they are familiar with District standards in the event outside contracting assistance is required to make emergency repairs.
- District maintains an FCC-0licensed radio system with vehicle mounted radio communication equipment as well as radio equipment stationed at the District office and Bella Vista Treatment Plant to allow for communication in the event cellular communication is unavailable.
- District participates in Montecito Emergency Response & Recovery Action Group (MERRAG), a local County agency to allow for direct communication with the community and other special districts and to quickly relay information about the District's water supply and conveyance systems.

- District participates in California Water/Wastewater Agency Response Network (CalWARN), a statewide agency that makes equipment, supplies, and staffing available from outside participating agencies available when called upon during an emergency.
- The District's staff conducts both tabletop exercises and mock field emergency exercises to ensure familiarity with the District's Emergency Response Plan and practice emergency response procedures.

Catastrophic supply interruptions differ from the six drought response stages. Catastrophic interruptions are considered to be sudden interruptions in supply that can immediately reduce the District's available water supply. While it is not possible to identify every potential catastrophic water supply interruption scenario, the District's Hazard Mitigation Plan has compiled a range of plausible scenarios that could impact the availability of its existing water supply sources under normal hydrologic conditions. The seismic risk scenario is summarized below, with many other scenarios presented in the Hazard Mitigation Plan.

Earthquake vulnerability for the region is described in the Santa Barbara County's Multi-jurisdictional Hazard Mitigation Plan and the 2015 Structural and Seismic Evaluation for District Storage Reservoirs. According to maps developed by the County of Santa Barbara Office of Emergency Management, the Montecito area has minor fault lines running through the District's service area, with some areas being subject to moderate severity liquefaction. While District pipelines and reservoirs are not seismically designed to current codes, District facilities have aged well, with no resulting damage from historical earthquakes such as the Long Beach Earthquake (1931), the Sylmar Earthquake (1971), the Goleta Earthquake (1978), the Loma Prieta Earthquake (1989) and the Northridge Earthquake (1994). District pipelines and reservoirs are vulnerable to the impacts of an earthquake. To date, an earthquake has not been the cause of pipe breakage or reservoir damage, but the District is cognizant of the possible damage during a significant seismic event. Mitigation efforts are developed and presented in the Hazard Mitigation Plan and include seismic upgrade projects for existing facilities, including seismic response considerations in new designs, establishing emergency water distribution logistics, routine updates of the Emergency Plan, and training in Incident Command System Emergency Management.

In addition to the specific seismic event mitigation efforts, the District's efforts to diversify its supply sources also greatly increase its resiliency to seismic as well as other hazard events. The District's robust supply portfolio offers multiple alternative supply sources should one source become unavailable.

6.9 WSCP Summary

The WSCP is summarized in Table 6-4.

Table 6-4. WSCP Summary

Stage	Demand Reduction Action	Communication Protocols and Procedures	Compliance and Enforcement Measures
Normal Stage	Implement sound water management policies to promote water use efficiency: • All Stage 1 Demand Reductions are “recommended" • Maintain Conservation Program • Offer On-Site Water Use Audits • Waste of Water Prohibition • Conservation Messaging to Customers • Implementation of Ordinance 89 water use limitations for new development and redevelopment • Water for private swimming pools, spas, and hot tubs is considered a non-essential use. Property owners with new and existing private swimming pools, spas, and hot tubs are permitted to maintain water levels, and to drain and/or fill only once every five years upon application and written authorization from the District. • Water for ponds is considered a non-essential use. Property owners are permitted to maintain water levels for currently existing lined ponds only. Water for new ponds, or for maintaining water levels on unlined ponds, must be supplied by an alternative water source.	Provide home page link to conservation program and rules and regulations. Advertise specific programs as available through multi-media efforts.	Implement enforcement steps: • First offense warning • Second offense fine • Third offense increased fine • Subsequent offenses subject to service restriction

Stage	Demand Reduction Action	Communication Protocols and Procedures	Compliance and Enforcement Measures
Stage 1 10% Shortage	Reduce demands up to 10% with the following efforts: • All Normal stage efforts • Expand public information campaign • Expand conservation messaging campaign • Require automatic shut off hoses • The washing of hard surfaces such as driveways, sidewalks, patios, and parking lots is prohibited except where necessary to protect health and safety. Pressure washing for maintenance or repair is permitted. • Applying water to landscaping during and within 48 hours after measurable rainfall of at least one-quarter of one inch of rain is prohibited. • Applying water to outdoor landscaping in a manner that causes runoff such that water flows onto an adjacent property, non-irrigated areas, private and public walkways, parking lot or structure is prohibited • Irrigating turf on public street medians or publicly owned or maintained landscaped areas between the street and sidewalk, except where the turf serves a community or neighborhood function or is watered incidentally w/ trees or is irrigated w/ recycled water is prohibited.	Notify customers of stage requirements through: • Bill inserts • Website announcements • Press releases Provide home page link to conservation tips, reminders, and recommendations	Implement enforcement steps: • First offense warning • Second offense fine • Third offense increased fine • Subsequent offenses subject to service restriction

Stage	Demand Reduction Action	Communication Protocols and Procedures	Compliance and Enforcement Measures
Stage 1 10% Shortage	• Breaks or leaks in any customer's plumbing must be immediately repaired upon discovery. If repairs cannot be immediately completed, water service to the property shall be temporarily turned off by the customer or customer's agent at the customer's shutoff valve, or by the District at the customer's water meter serving the property, to prevent water loss until such time as the repair has been completed. • Increase system water loss reduction efforts • Hotels, Motels, etc. shall offer an option of not laundering towels and linens daily and shall display notice of this option • Exterior irrigation, including but not limited to irrigation of turf, plants, lawns, shrubbery and ground cover, shall be permitted if irrigated between the hours of 6 p.m. and 10 a.m. This provision is applicable to all customer classifications excluding agriculture. • Vehicles shall be washed only at commercial car washing facilities or by the use of a bucket or hose equipped with a hand-operated shut off nozzle. • Using potable water in an ornamental fountain or other decorative water feature is prohibited except where part of a recirculating system. • Implement or Modify Drought Rate Structure or Surcharge. • Other measures as identified. • Increase supply through supplemental sources or increase use of existing supplies.		

Stage	Demand Reduction Action	Communication Protocols and Procedures	Compliance and Enforcement Measures
Stage 2 20% Shortage	Reduce demands up to 20% with the following efforts: • All Stage 1 efforts • Targeted conservation communication to highest water users • Outdoor irrigation limited to every other day of the week • Increase Water Waste Patrols • Pool, spa, and pond refills prohibited • Other measures as identified Increase supply through supplemental sources or increase use of existing supplies.	Notify customers of stage requirements through: • Bill inserts • Website announcements • Press releases Provide home page link to conservation tips, reminders, and recommendations.	Implement enforcement steps: • First offense warning • Second offense fine • Third offense increased fine Subsequent offenses subject to service restriction
Stage 3 30% Shortage	Reduce demands up to 30% with the following efforts: • All Stage 2 efforts. • Outdoor irrigation limited to 2 days per week. • Require covers for pools and spas • Other measures as identified Increase supply through supplemental sources or increase use of existing supplies.	Notify customers of stage requirements through: • Bill inserts • Website announcements • Press releases Provide home page link to conservation tips, reminders, and recommendations.	Implement enforcement steps: • First offense warning • Second offense fine • Third offense increased fine Subsequent offenses subject to service restriction

Stage	Demand Reduction Action	Communication Protocols and Procedures	Compliance and Enforcement Measures
Stage 4 40% Shortage	Reduce demands up to 40% with the following efforts: • All Stage 3 efforts • Establish Water Use Allocations and Penalties. • Outdoor irrigation limited to 1 day per week. • Other measures as identified Increase supply through supplemental sources or increase use of existing supplies.	Notify customers of stage requirements through: • Bill inserts • Website announcements • Press releases Provide home page link to conservation tips, reminders, and recommendations.	Implement enforcement steps: • First offense warning Subsequent offenses subject to service restriction.
Stage 5 50% Shortage	Reduce demands up to 50% with the following efforts: • All Stage 4 efforts • Prohibit all outdoor irrigation. • Human health and safety only water usage. • Other measures as identified Increase supply through supplemental sources or increase use of existing supplies.	Notify customers of stage requirements through: • Bill inserts • Website announcements • Press releases Provide home page link to conservation tips, reminders, and recommendations.	Implement enforcement steps: • First offense warning • Subsequent offenses subject to service restriction.
Stage 6 50+% Shortage	Reduce demands over 50% with the following efforts: • All Stage 5 efforts • Water use for human health and safety only • Issue-specific measures developed as needed Increase supply through supplemental sources or increase use of existing supplies.	Notify customers of stage requirements through: • Bill inserts • Website announcements • Press releases Provide home page link to conservation tips, reminders, and recommendations.	Implement enforcement steps: • First offense warning Subsequent offenses subject to service restriction or service cancellation.