Water Supply Management Plan 2024 Update

April 2024

Prepared for:

Goleta Water District

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Mission

To provide a reliable supply of quality water at the most reasonable cost to the present and future customers within the Goleta Water District.

GOLETA WATER DISTRICT

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Glossary of Key Terms

Cachuma Project Entitlement: The maximum amount of Cachuma Project Water the U.S. Bureau of Reclamation is committed to supply the Goleta Water District (GWD) on an annual basis. GWD's annual entitlement amount is 9,322 acre-feet per year.

Cachuma Trigger: Cachuma Project allocation as a percentage of full Cachuma Project Entitlement. Allocations less than the "Cachuma Trigger" will "trigger" early use of groundwater supplies in an effort to extend Cachuma supplies to ensure availability during peak demand later in the year.

Carryover Water: Any water not used the year in which it was allocated which has been carried forward for use in the following year(s).

Cachuma Conservation Release Board: A joint powers agency formed in 1973 by Santa Barbara County South Coast Water Agencies to represent its members in protecting their Cachuma Project water rights and other related interests. Current members include Goleta Water District, City of Santa Barbara and the Montecito Water District.

Central Coast Water Authority (CCWA): A joint powers agency formed in 1991 by the cities and special districts responsible for the maintenance of water resources in the North County, Santa Ynez Valley and South Coast areas of Santa Barbara County. CCWA treats and delivers imported water to State Water Project participants in San Luis Obispo and Santa Barbara Counties.

Central Coast Water Authority (CCWA) Storage Allowance: CCWA storage allowance in San Luis Reservoir that holds unused carryover water for CCWA members when conditions allow.

Cachuma Operation and Maintenance Board (COMB): A joint powers agency formed in 1956 with the U.S. Bureau of Reclamation that transferred to the Cachuma Member Units the responsibility to operate, repair and maintain Cachuma Project facilities. Cachuma Member Units include Goleta Water District, City of Santa Barbara, Montecito Water District, Carpinteria Valley Water District and Santa Ynez River Water Conservation District-Improvement District No. 1.

Delivery Capability Report 2021 (DCR): A report issued by California Department of Water Resources that provides estimates on current and future (2040) State Water Project delivery capability by accounting for regulatory requirements, potential climate change and sea level rise impacts, as well as other factors.

Demand Hardening: Occurs as a result of longer-term water use efficiency and conservation measures (education, outdoor use restrictions, incentive programs and price structure changes) that make it increasingly difficult for utilities to induce further reductions in water use during drought or other water shortage emergencies.

Demand Reductions: The act of reducing water consumption through the use of demand management and conservation measures, water use restrictions, or other actions, which typically become necessary because of an actual or projected shortage in water supplies.

Drought Buffer: Water intended for use during drought conditions that maximizes reliability of that supply source.

California Department of Water Resources (DWR): Responsible for managing and protecting California's water resources making annual allocations of water from the State Water Project to State Water Project Contractors (including the Goleta Water District).

Exchange Agreement: A written agreement between GWD and Santa Ynez River Water Conservation District-Improvement District No. 1 (ID#1) under which GWD State Water Project water is delivered directly to ID#1 and GWD receives an equal amount of ID#1's Cachuma Project Entitlement water in exchange. The purpose of this agreement is to minimize water treatment and delivery costs for the respective agencies.

Future Water Demand: Projected demand in the year 2040. The time frame was chosen to be consistent with the Urban Water Management Plan (UWMP), which requires water providers to demonstrate water supply planning over a 20-year period, in five-year increments. The methodology used to project future Goleta Water District water demand through 2040 begins with establishing normal baseline use relative to population, then applying different projection methods for each water use sector to determine future demand by sector, consistent with the UWMP Guidebook.

Hybrid Priority: Water supply management strategy that seeks to minimize the Goleta Water District's (GWD's) use of more expensive State Water Project water by using groundwater earlier in the year to preserve Cachuma Project Water for use later in the year when the system demand "peaks" above the full production capacity of GWD wells.

Imported Water: Water from other areas of the state that is delivered through Central Coast Water Authority infrastructure to Goleta Water District; includes water from the State Water Project and supplemental water acquired from other entities outside Santa Barbara County.

Indirect Potable Reuse (IPR): The injection of advanced treated recycled water into the groundwater basin.

Mandatory Conservation: Conservation that is in addition to normal GWD conservation activities and that is mandated by the GWD pursuant to a triggered stage of water shortage emergency under the GWD's Drought Preparedness and Water Shortage Contingency Plan.

Optimal Water Supply Management Strategy: Water resource management strategy that uses the optimum combination of water sources throughout the year that maximize delivery reliability while minimizing costs. The primary purpose of the Water Supply Management Plan analysis is to identify the Optimal Water Supply Management Strategy.

RiverWare Model: Uses historical hydrologic data for the Santa Ynez watershed dating back to 1942, and superimposes the various water resource facilities and policies on this hydrology.

SAFE Water Supplies Ordinance (SAFE Ordinance): A local ordinance approved by GWD voters in 1991 and amended in 1994, which authorized the importation of State Water Project water and set forth specific requirements for the GWD management of the Goleta Groundwater Basin.

San Luis Reservoir: A reservoir along the California Aqueduct that is used by both the state and federal governments to hold water for urban and agricultural uses, including Goleta Water District's stored state and/or imported water.

Scenarios: Water Supply Management Plan model runs that test the reliability of Goleta Water District's water supplies based on the use of different combinations of water sources throughout the year.

South Coast Water Agencies: Goleta Water District, City of Santa Barbara, Montecito Water District and Carpinteria Valley Water District.

Spill Water: Surface water, such as Cachuma Project Water stored in Cachuma Reservoir and State Water Project water stored in San Luis Reservoir, that is presumed lost if not immediately used in scenarios when reservoirs fill and "spill."

Supplemental Purchased Water: Additional purchased water that is not a part of GWD water entitlements. Most supplemental purchased water is imported water from other areas of the state.

Supply Optimization: Finding the appropriate balance of supply reliability and cost by varying the usage priorities of Cachuma, groundwater and State Water Project supplies.

State Water Project (SWP): State Water Project, a state water management project under the supervision of the California Department of Water Resources (DWR), which has 29 SWP Contractors (participants), including Goleta Water District, that receive State Water supplies originating in Northern California.

Supplemental Water Purchase Program (SWPP): Supplemental Water Purchase Program, whereby the Central Coast Water Authority is authorized to represent a State Water Contractor, such as the Goleta Water District, in the identification, structuring and negotiation of transactions for the acquisition of supplemental imported water.

Table A: Maximum entitlement amount of State Water Project water for water contracting agencies, such as GWD. The GWD Table A amount is 7,000 acre-feet per year. The GWD additionally has 450 acre-feet per year of "drought buffer" to maximize reliability of its State Water Project supplies.

Water Conservation: Reduction in the amount of water used, such as taking shorter showers, turning water off while brushing your teeth and running the dishwasher only when it is full. Conservation measures can be mandatory (during a drought or water shortage) or voluntary.

Water Use Efficiency: Minimization of the amount of water used to accomplish a function, task, or result, such as using efficient water fixtures (low flow shower heads, low flow toilets, high efficiency washing machines, etc.), replacing high water use plants with drought tolerant varieties and fixing leaky taps. Efficiency differs from water conservation in that it focuses on reducing waste to preserve water over the long-term, not restricting use.

Wright Judgment: Lawsuit filed in 1973 by private landowners for the adjudication of water rights in the North-Central Groundwater Basin (Wright v. Goleta Water District). Finalized in 1989, the Wright Judgment resulted in numerous groundwater management parameters and requirements that must be followed and reported on by the Goleta Water District.

Water Supply Management Plan (WSMP) Model: A spreadsheet model designed to simulate Goleta Water District's current and potential future water supplies. The model attempts to satisfy user-specified water demand by calculating the use of individual supplies in priority order, subject to operational capacity and regulatory constraints. The spreadsheet model was originally developed and used in the 2011 WSMP (GWD, 2011) and was updated with new information and features for this WSMP Update.

Abbreviations and Acronyms

AF	acre-feet
AFY	acre-feet per year
BiOp	Biological Opinion
CCWA	Central Coast Water Authority
COMB	Cachuma Operation and Maintenance Board
DCR	Delivery Capability Report 2021
District	Goleta Water District
DWR	California Department of Water Resources
ft	feet or foot
GWD	Goleta Water District
ID#1	Santa Ynez River Water Conservation District-Improvement District No. 1
IPR	Indirect Potable Reuse
msl	mean sea level
NMFS	National Marine Fisheries Service
SAFE Ordinance	SAFE Water Supplies Ordinance
SWP	State Water Project
SWPP	Supplemental Water Purchase Program
SWRCB	State Water Resources Control Board
USBR	U.S. Bureau of Reclamation
UWMP	Urban Water Management Plan
WSMP Update	Water Supply Management Plan, 2024
WSMP	Water Supply Management Plan

Executive Summary

Purpose

This update to the Water Supply Management Plan (WSMP Update) formulates a water supply strategy for Goleta Water District (GWD) by prioritizing the use of GWD's various sources of supply, evaluating the reliability GWD's water supplies, as well as evaluating scenarios for current and future demand, which is defined as 16 years from the present (2040). The time frame was chosen to be consistent with the Urban Water Management Plan (UWMP), which requires water providers to demonstrate water supply planning over a 20–year period, in annual increments. While the primary purpose of this WSMP Update is to identify the optimum water supply management strategy, demand management is equally important as part of the supply/demand equation. GWD has a long-standing commitment to long-term water efficiency as part of its strategy to preserve available water resources. Accordingly, ongoing policy related to improving water efficiency throughout the GWD now and into the future is a key ongoing part of the GWD water supply management strategy.

Current Supply/Demand

Recent analysis determined that GWD's current supplies exceed current demand under average conditions, with demand reduction required just once in the 82 years of the WSMP Model. Supplemental water purchases are indicated only during drought periods. Current supplies combined with relatively minor supplemental water purchases are predicted to be capable of meeting current demand 99 percent of the time without requiring mandatory demand reductions. The maximum demand reduction requirement indicated by the model for all current supply/demand strategies considered is approximately 20 percent. Supplemental purchases are indicated only during the driest periods, with a maximum of 7 acre-feet per year (AFY) averaged over the 82-year simulation period. Results for the optimal current water supply strategy are summarized in Table ES-1. The average cost of water for the optimal current water supply strategy is $1,782 per AF in 2024 dollars.

Table ES-1. Current Supply/Demand Summary under Optimal Water Supply Strategy

Current Conditions	Average Year Supply (AFY)	Single Dry Year (AFY)	Multiple Dry Years (AFY)
Required Production	**11,033**	**11,879**	**11,879**
Supply Sources			
Cachuma Potable and GWC	9,062	3,542	3,542
State Water	416	442	442
Groundwater	781	7,028	7,028
Recycled Water	774	867	867
Supplemental SWP Allocation Purchases	0	0	0
Total Supply	**11,033**	**11,879**	**11,879**
Total Surplus (Deficit)	***0***	***0***	***0***

Notes

Supplies are based on the optimal water supply strategy model run. Average year supply is the mean of all "average" years determined from historical Goleta rainfall. The single dry year was 2014 and the multiple dry years were 2014–2016. These results are from the WSMP Model, and are not identical to the actual data from those years because Cachuma and SWP supplies from those and preceding years come from the RiverWare and SWP Delivery Capability Report 2021 modeling results.

AFY = acre-feet per year GWC = Goleta West Conduit

SWP = State Water Project WSMP = Water Supply Management Plan

Future Supply/Demand

At projected 2040 demand, GWD's full supply portfolio (Cachuma Project Entitlement, State Water Project [SWP] Table A entitlement, groundwater right and recycled water) is sufficient to supply all but 2 future years out of the 82 years of the WSMP Model, or a little over 2 percent of future years, with water to meet demand. WSMP modeling suggests that required conservation in those shortfall years does not exceed 35 percent of total demand. Supplemental water was included in the model as a necessary supply in some years. The 4,500 AFY GWD share of the Coastal Aqueduct's capacity is commonly a limiting factor in how much supplemental water can be imported in any year. Average year supplies from the future modeling are approximately 12,771 AFY with current infrastructure and entitlements, compared to future average-year demand of approximately 12,771 AFY. Of the average supply of 12,771 acre-feet (AF), 456 AFY would be from supplemental water and supply augmentation projects.

During the worst drought years for supplies within the 82-year modeling period, supplies totaled just over 13,750 AFY, compared to dry-year future demand of 13,750 AFY. In particular, during the single worst drought year for supplies within the 82-year modeling period, supplies totaled just over 8,900 AFY. Compared to dry-year future demand of 13,750 AFY, the single worst drought year results in a shortfall of approximately 35 percent of demand during that year. This compares to the peak conservation by GWD customers of 55 percent during 1991.

Table ES-2 summarizes the results for the optimal future water supply strategy. The average cost of water for the optimal future water supply strategy through 2040 is $1,617 per AF in 2024 dollars. It is noted that the future cost is lower than the cost reported for the optimal current water supply strategy. This variance occurs because there is more water being sold, so the fixed costs of existing water supplies are being spread across a larger base.

Table ES-2. Future Supply/Demand Summary under Optimal Water Supply Strategy

2040 Conditions	Average Year Supply (AFY)	Single Dry Year (AFY)	Multiple Dry Years (AFY)
2040 Required Production	**12,771**	**13,750**	**13,750**
Supply Sources			
Cachuma Potable and GWC	9,456	3,542	3,542
State Water	1,765	2,149	2,262
Groundwater	322	7,016	7,016
Recycled Water	772	865	865
Supplemental SWP Allocation and Future Supply Augmentation Projects	456	178	65
Total Supply	**12,771**	**13,750**	**13,750**
Total Surplus (Deficit)	***0***	***0***	***0***

Notes

Future average water supply and supply during a single dry year (at the beginning of a drought period) and multiple dry years. Supplies are based on the optimal water supply strategy model run. The single dry year hydrology was 2014 and the multiple dry year hydrology was 2014–2016. While the GWD's annual entitlement to Cachuma Project Water is 9,322 AFY, the long-term average reflected above includes unused carryover supplies from previous years and excess water that becomes available when Cachuma Reservoir spills (on average, every 3 years); and is therefore higher than the entitlement amount.

AFY = acre-feet per year GWC = Goleta West Conduit SWP = State Water Project

Any potential future reductions in Cachuma entitlement would reduce supplies and result in tighter availability. For comparison, if the entitlement was reduced from 9,322 to 7,631 AFY, the worst shortfall of supplies would increase to 17 percent of the 82 years in the WSMP model. The purchase of supplemental water/augmentation projects across the 82 years of the WSMP Model would increase from 376 to 809 AFY. If potential future Cachuma entitlement was 6,832 AFY, the purchase of additional supplemental water/augmentation projects would increase to more than 1,000 AFY.

An increase in pumping capacity/treatment surprisingly does not provide a benefit at future demand levels, even if Cachuma entitlement is reduced. The increased pumping capacity draws down groundwater elevations rapidly during dry periods, reaching the observed historical low. Increasing injection capacity could be beneficial if new sources of injection water become available, such as indirect potable reuse of recycled water.

The need for additional water sources in the future depends upon GWD's tolerance for temporary increased conservation by customers. With no future reduction in Cachuma entitlement, that conservation is required in 1 percent of years, with approximately 35 percent conservation required in that year. If Cachuma entitlement was reduced in the future, then conservation of 40 to 42 percent would be required 1 to 2 percent of the time. Purchases of supplemental imported water were already included in the WSMP modeling, although the quantity is limited by pipeline capacity. Additional local water sources would help reduce the periodic required conservation. These additional supplies might include injection using alternative sources of supply such as Indirect Potable Reuse (IPR) and future supply augmentation projects during non-drought periods. These conclusions are based on the sustained reduction in customer demand over the past decade. If demand were to increase beyond current projections, additional periodic conservation would be required.

Methodology

A combination of the RiverWare model for the Santa Ynez River for Cachuma Project deliveries, the California Department of Water Resources (DWR) SWP Delivery Capability Report 2021 (DCR) predictions for SWP deliveries and the Goleta Basin Groundwater Model were used in developing the WSMP Update. The existing models use historical hydrologic data for the Santa Ynez watershed and SWP system and superimpose the various water resource facilities and policies on this hydrology.

The WSMP Model uses monthly time steps from 1942 through 2023. The model period includes several severe drought periods. The 82-year period of analysis allows the interaction of differing climate trends in northern and southern California, where drought and wet periods do not always coincide. The model has two major modes of operation: (1) current supply/demand and (2) future (2040) supply/demand. The WSMP spreadsheet model takes into account both the Wright Judgment and the SAFE Water Supplies Ordinance (SAFE Ordinance) in its calculations. Because the SAFE Ordinance requirements are based in part on groundwater elevations in the Goleta Groundwater Basin, this WSMP update uses the results of the Goleta Basin Groundwater Model to predict groundwater elevations each year depending upon climatic conditions and the amount of pumping/injection that has occurred in the basin.

Operating Plan

This WSMP Update outlines recommendations that are consistent with the 2017 WSMP (GWD, 2017) related to an operating plan for prioritizing the use of GWD's current water supplies. The optimal water supply strategy for meeting current demand involves:

1. Using Cachuma Project water first to meet potable/raw water demand except during droughts;
2. Injection of SWP into the Goleta Groundwater Basin when possible (consistent with the SAFE Ordinance); and
3. Optimization of groundwater and SWP supplies when Cachuma Project allocations are less than 50 percent such that groundwater is used earlier in the water year to ensure that Cachuma Project water is available to meet peak demand later in the year.

The above-described strategy provides very high reliability at the lowest cost and effectively maintains groundwater levels compared to most other strategies. The maximum demand reduction requirement for the recommended water supply strategy is 20 percent and any demand reduction is required only 1 percent of the time.

Key Conclusions and Recommendations

This work has led to the following principal conclusions and recommendations:

1. The Central Coast Water Authority (CCWA) Storage Allowance of unused State Water stored in San Luis Reservoir is an important component in GWD's water supply reliability. The scenarios assume consistent storage of up to 2,000 AF of SWP water in San Luis Reservoir. Without this storage, predicted supply shortfalls would be notably larger. Banking water in San Luis Reservoir should be strongly supported by GWD. Alternative banks must be examined individually—some of the existing groundwater banks are relatively expensive and have storage/delivery restrictions.
2. Injection of SWP water into the Goleta Groundwater Basin is important for the maintenance of groundwater levels and to decrease the risk of land subsidence. Factors to consider with respect to injection include increases in operations and maintenance costs, specifically for treatment of the water before injection as well as costs associated with extraction of the water in the future; potential increase

in the frequency of well rehabilitation due to clogging of pore spaces; and an increase in the probability of groundwater quality degradation due to levels of sulfate, boron, THMs and organic matter in treated surface water.

3. CCWA pipeline capacity was identified as a key constraint in maximizing the effectiveness of supplemental imported water purchases to address potential shortfalls in future supplies. It is recommended that GWD investigate opportunities to maximize pipeline capacity, such as using under-utilized capacity from other CCWA participants when available. The cost of additional CCWA pipeline capacity, if and when available, should be compared against other water supply augmentation options.
4. Increasing groundwater pumping capacity raises fixed costs, but is necessary to meet minimum community health and safety demand during emergencies. Projects to recover groundwater pumping capacity are a high priority, following the loss of the District's largest well (Airport Well) to per- and polyfluoroalkyl substances – known as PFAS – contamination originating at the City of Santa Barbara's Airport property. While increased pumping capacity draws down groundwater elevations more rapidly during dry periods, it is critical during drought periods and increasing production capacity also increases injection capacity.
5. The need for additional water sources in the future depends upon GWD's tolerance for temporary increased conservation by customers. With no future reduction in Cachuma entitlement, that conservation is required in 2 of the 82 years of the WSMP Model, or about 2 percent of future years, with up to 35 percent conservation required in those years. If Cachuma entitlement was reduced in the future, then conservation of 7 to 42 percent would be required about 17 percent of the time, 14 of the 82 future years of the WSMP Model. Purchases of supplemental imported water were already included in the WSMP modeling, although the quantity is limited by pipeline capacity. Additional local water sources would help reduce the periodic required conservation. These additional supplies might include injection using IPR and future supply augmentation projects during non-drought periods at additional cost. These conclusions are based on the reduced customer demand experienced by GWD over the past decade or so. If demand were to increase beyond current projections, additional periodic conservation would be required.

1 Introduction

This document presents an update to the Water Supply Management Plan (WSMP Update), which was originally developed and adopted in 2011 (GWD, 2011). The WSMP serves as a supply management tool and operating plan to guide the relative priority of use of Goleta Water District (GWD or District) water supplies to maximize supply reliability at the lowest cost for the upcoming 5 years and forecasting over a 20-year planning horizon. The original WSMP recommended updating the WSMP every 5 years to integrate new data from the Santa Ynez River Model and State Water Project (SWP) water availability calculations, evaluate the adequacy of groundwater pumping capacity for drought protection and reevaluate the role of drought in forecasting supply shortfalls. This WSMP Update fulfills this recommendation and incorporates new water supply extremes witnessed during the recent drought.

GWD has multiple sources of water supply for delivery to customers. These sources include Cachuma Reservoir, groundwater, SWP water, recycled water and supplemental water purchases (Figure 1-1). Each source has its own pattern of availability during wet and dry climatic cycles. The combination of the water sources provides more delivery reliability than each source alone. To optimize GWD's overall water delivery reliability at the least cost to customers, the interplay of these water sources must be understood over a range of climatic conditions.

A key requirement of the WSMP Update is to maintain consistency between this document and the District's other water supply planning and management documents, models and reports, including the District's Annual Budget, Infrastructure Improvement Plan, Groundwater Management Plan Update, Urban Water Management Plan (UWMP), Sustainability Plan, Drought Preparedness and Water Shortage Contingency Plan, Five-Year Financial Plan and the District's Code. As the first step in determining the optimum use of GWD's sources of water supply in the original WSMP, the Groundwater Management Plan was formulated and adopted by the Board of Directors in 2010 (GWD, 2010). This WSMP Update is similarly informed by the latest 2022 Groundwater Management Plan Update (GWD, 2023). The Groundwater Management Plan provides guidance on how to operate the basin while meeting the requirements of the Wright Judgment and the SAFE Water Supplies Ordinance (SAFE Ordinance).

Both the original WSMP and this WSMP Update build on the Groundwater Management Plan by adding the other sources of supply in GWD's water portfolio to the overall supply mix. This WSMP Update adds the results of modeling of Cachuma Project supplies and SWP reliability over multiple wet and dry cycles to determine the optimum use of the differing sources of supply and the supply reliability resulting from this optimization.

1.1 Background

During the drought of the late 1980s and early 1990s, water supplies for the south coast of Santa Barbara County reached a critically low level. An emergency regional seawater desalination plant was constructed just prior to the end of the drought, and voters subsequently passed a bond issue to build the Coastal Aqueduct of the SWP to bring additional supplies into the area. These new supplies were aimed at drought-proofing the area into the future.

GWD customers reduced their water consumption significantly during this drought. Water conservation reached a peak level of 55 percent in 1991, concurrent with a lawn-watering ban. Groundwater played an important supply role for GWD during the drought, with increased groundwater pumping resulting in groundwater elevations reaching historically low levels. The Groundwater Management Plan utilized the conservative assumption that groundwater elevations should not be allowed to decline below historical lows (having observed that no undesirable effects occurred at this level). This lowering of groundwater elevations

was exacerbated by the fact that pumping prior to the drought had already lowered the elevations substantially. Because of the low groundwater elevations, and consistent with GWD Water Plan at the time, the GWD customers voted to restrict GWD use of groundwater reserves to drought periods or periods when groundwater elevations were high in the basin (see GWD, 2023, for further discussion of the SAFE Ordinance).

As this WSMP Update is being prepared, GWD and the region have emerged, at least for the time being, from a multi-year drought period of historic proportions. The recent drought presented many new water supply management challenges that must be addressed today and in the future. In the past decade, several unforeseen water supply conditions have become a reality—historically low SWP Table A allocations and the first ever zero percent Cachuma Project allocations, for at least two consecutive years. This WSMP Update incorporates these new realities into the analysis of the District's water supply portfolio.

1.2 Purpose and Goals of the Water Supply Management Plan

The purpose of the WSMP Update is to update the analysis of the most effective use of GWD's various sources of water supply, both in terms of reliability and cost. An additional purpose is to determine the best use of the water sources to satisfy potential increases in demand in the future and maintain groundwater levels.

The goals for the original WSMP were to:

1. Optimize GWD's use of its various sources of supply to balance cost and reliability;
2. Determine the critical components of GWD's supply system;
3. Develop a plan to have sufficient supplies during drought periods as severe as any in the past 100 years;
4. Determine the reliability of GWD's water supply under current water supply demand and potential future increases in demand.

The goals for this WSMP Update are essentially the same except that the new water supply extremes witnessed during the past drought help to define what it means to plan for a drought more severe than the drought of 1986 to 1991.

The WSMP is meant to be used by GWD to:

1. Have a "road map" for the priority of using its various sources of water supply under different climatic and groundwater conditions.
2. Determine if additional facilities need to be constructed to optimize the use of its sources of water, and what current or future conditions would trigger the need for these facilities.
3. Assist in determining the amount of future demand that can be accommodated by the existing water sources.
4. Determine the reliability of its water sources in a drought and the extent of demand reductions that may be needed to avoid drought-related shortfalls in supply.
5. Provide input to other planning tools such as the UWMP.

1.3 Integration with Other Goleta Water District Planning Documents and Water Supply Planning Efforts

This WSMP Update is meant to interact with the other significant planning tools GWD uses for operations, to determine necessary operating and capital expenditures, and set appropriate water rates. These interactions are discussed for each of the respective planning and budgeting tools.

- **Groundwater Management Plan.** The Groundwater Management Plan, originally prepared in 2010 (GWD, 2010) and updated in 2016 (GWD, 2016), as well as in 2022 (GWD, 2023), explains the general rules by which the groundwater basin can be operated. This includes how to calculate the 1972 groundwater elevation that is critical for determining when groundwater can be pumped in the WSMP, the calculations for determining the amount of Annual Storage Commitment required, as well as tracking the storage in the basin.
- **UWMP, Drought Preparedness and Water Shortage Contingency Plan.** The state requires that UWMPs be revised every 5 years. The 2020 UWMP was completed in 2021 by GWD. Closely related to the UWMP is the Drought Preparedness and Water Shortage Contingency Plan, which describes the conditions that constitute a water shortage emergency, defines and discusses the various stages of action, and provides guidance and procedures to undertake during a declared water shortage. The WSMP modeling of water reliability and drought scenarios can be used directly in the analyses of water supply required by the UWMP and can inform the Drought Preparedness and Water Shortage Contingency Plan. Prior to the preparation of each UWMP and updating the Drought Preparedness and Water Shortage Contingency Plan, it may be prudent to update the WSMP modeling.
- **Water Supply Assessments.** These assessments may be required for future development projects within GWD. Water supply assessments, under SB 610, determine water supply sufficiency for a 20-year projection in addition to the demand of existing and other planned future uses, including, but not limited to, agricultural and manufacturing uses. They are required for any project that is subject to the California Environmental Quality Act and proposes commercial development of more than 250,000 square feet of floor space, a retail center with more than 500,000 square feet of floor space, or more than 500 dwelling units. The results of WSMP modeling of the water availability with increased demand will likely be one of the key analyses used in such assessments.
- **Rate Analyses.** When rates are routinely analyzed and reset, the key calculations are usually how much water supplies cost, how they will increase, how these costs should be apportioned, and how rate structures should be used to encourage conservation. The WSMP calculates supply costs in 2024 dollars, what the source of supply would be with increased demand, how supply shortages may occur in the future, and the extent of such supply shortages. If projected increases in demand occur, the WSMP modeling should be updated regularly to provide feedback for periodic rate analyses.
- **Annual Budget, Five-Year Financial Plan and Infrastructure Improvement Plan.** The WSMP identifies capital and operating costs for both current water demand and incremental future demand. In particular, the WSMP links increased demand to increased capital facilities such as new wells needed to replace aging groundwater production wells. These analyses can be used by GWD to plan for future capital costs associated with changing water demand.

Figure 1-1. Goleta Service Area Overview

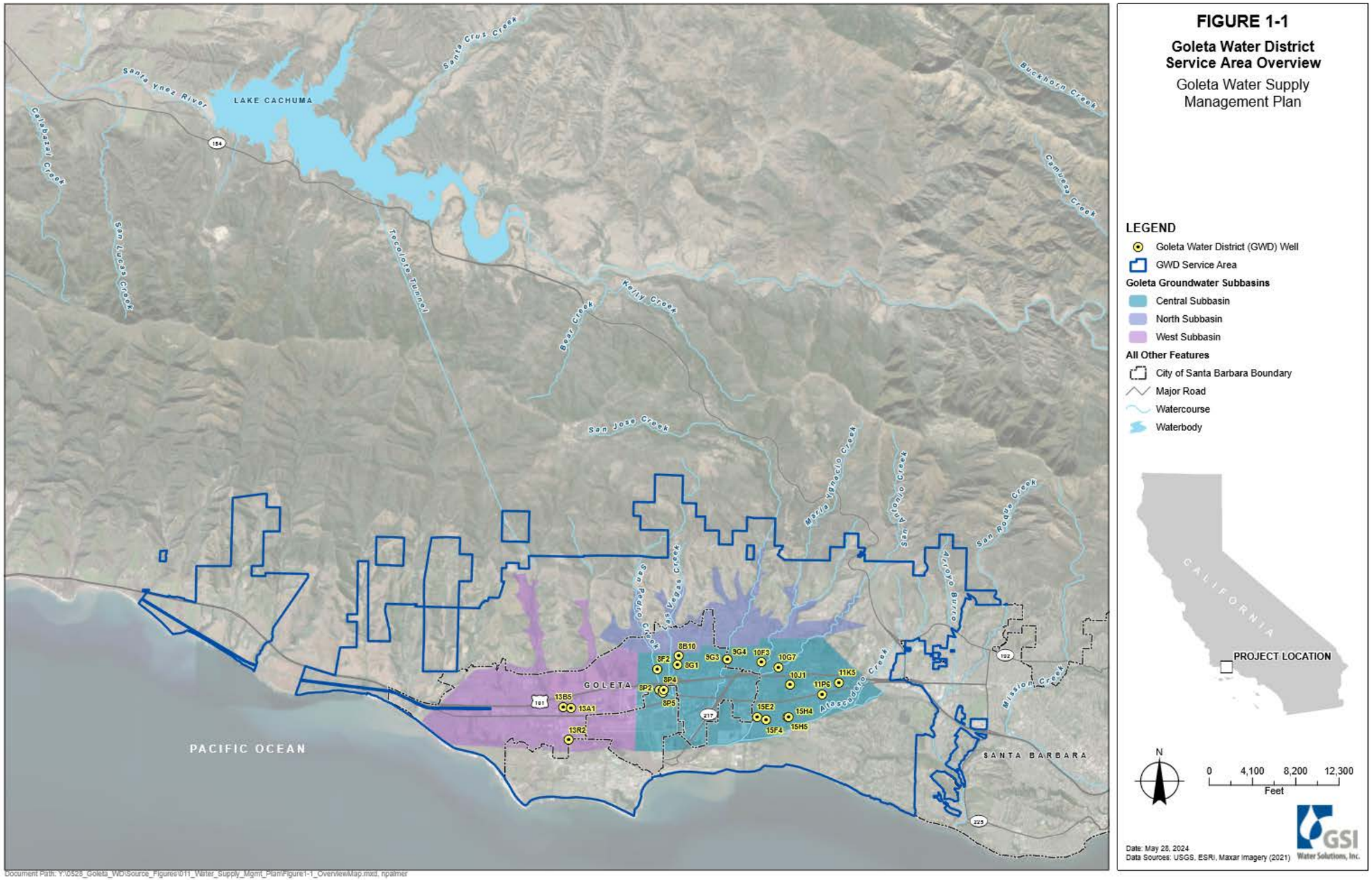

FIGURE 1-1

Goleta Water District Service Area Overview

Goleta Water Supply Management Plan

LEGEND

- Goleta Water District (GWD) Well
- GWD Service Area

Goleta Groundwater Subbasins

- Central Subbasin
- North Subbasin
- West Subbasin

All Other Features

- City of Santa Barbara Boundary
- Major Road
- Watercourse
- Waterbody

N

0 4,100 8,200 12,300

Feet

Date: May 28, 2024

Data Sources: USGS, ESRI, Maxar Imagery (2021)

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Document Path: Y:\0528_Goleta_WD\Source_Figures\011_Water_Supply_Mgmt_Plan\Figure1-1_OverviewMap.mxd, npalmer

2 Water Supplies

This section provides an overview of GWD's water supplies and describes the historical use, supply reliability, delivery constraints and cost of each supply source.

2.1 Sources of Supply

GWD has a variety of local and supplemental water supplies available to meet customers' needs. Water supplies include local surface water supplies from Lake Cachuma (Cachuma Project), groundwater from the Goleta Groundwater Basin, recycled water from the Goleta Sanitary District and importation of SWP water. During the recent drought, in December of 2015, GWD acquired 2,500 acre-feet (AF) of supplemental water from another SWP contractor through the Central Coast Water Authority (CCWA) Supplemental Water Purchase Program (SWPP) to augment existing supplies in response to a fourth consecutive year of drought. Although GWD has sold water to other CCWA contractors in prior years, this was the first SWPP purchase by GWD. GWD began taking delivery of the supplemental water in 2016 and began returning the water owed in the spring of 2024. Although this was a one-time purchase during the recent drought, it represents an additional source of supply during drought shortages.

The proportion of each source of supply has varied considerably over time, with SWP supplies replacing groundwater use during non-drought years since 2010, allowing the groundwater basin to recharge (Figure 2-1).

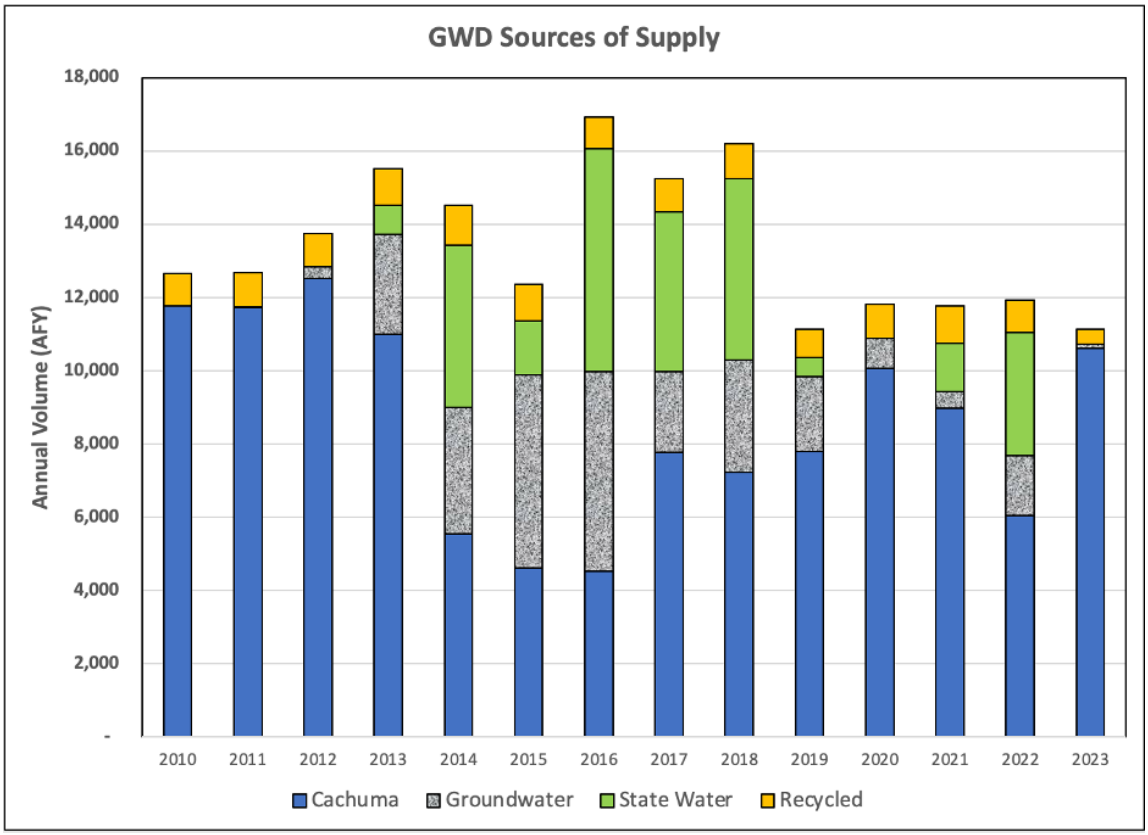


Figure 2-1. Historical Sources of Goleta Water District Water 2010 to 2023

Note

Of these supplies, approximately 15 percent were for non-potable uses (i.e., recycled water, Goleta West Conduit). "Cachuma Project" does not include water injected into the Goleta Groundwater Basin.

Since 2010, GWD has obtained approximately 62 percent of its water supplies from Lake Cachuma, 15 percent from the SWP (direct delivery and exchange water), 7 percent from recycled and 16 percent from groundwater. Of those supplies, approximately 15 percent were for non-potable uses. Monthly water deliveries are highest during August of most years (Figure 2-2), with Cachuma supplying an increasing amount of supply during the warmer months.

Table 2-1 provides a summary of all sources of GWD water supplies, including the costs, constraints and reliability of each source. As discussed above, the availability of these sources varies annually and is regularly assessed by GWD throughout any given year.

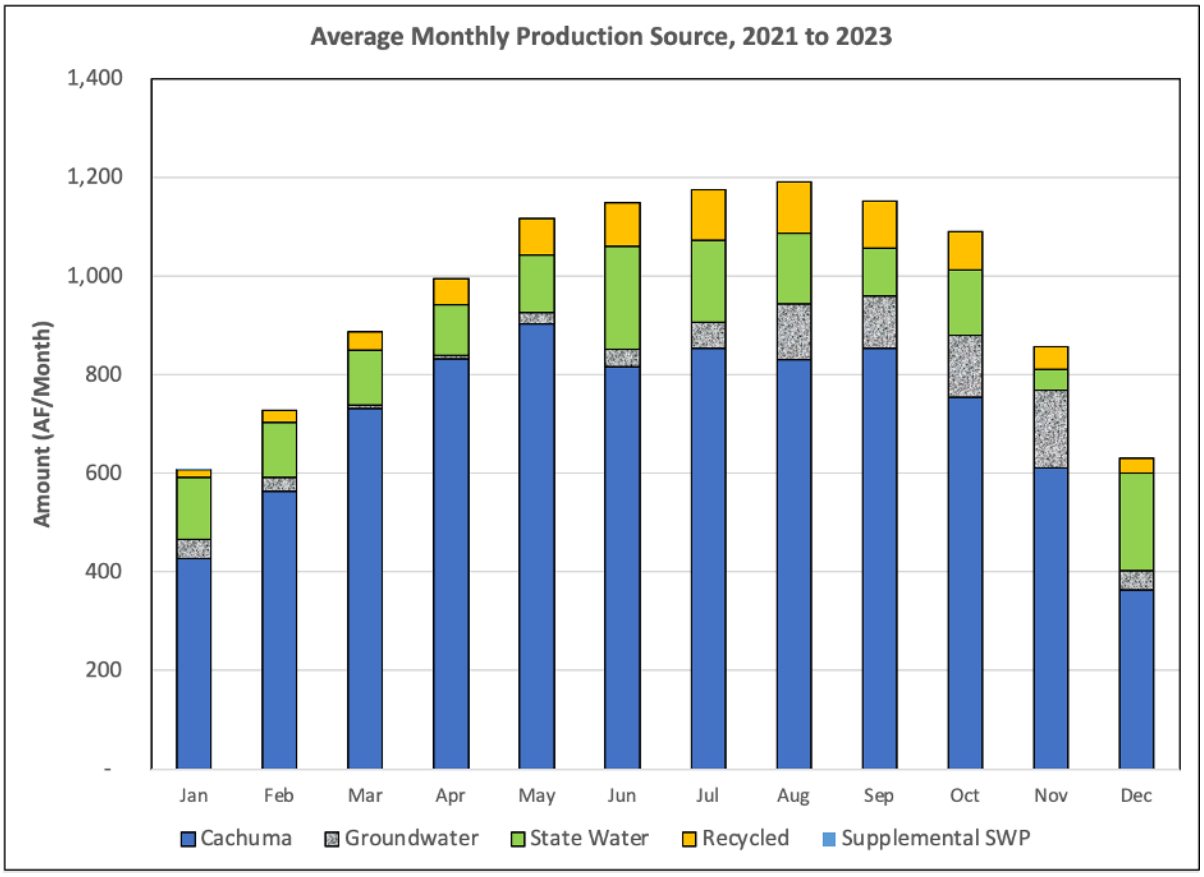


Figure 2-2. Sources of Water Supply by Month for Period 2021 to 2023

Note

"Cachuma Project" does not include water injected into the Goleta Groundwater Basin.

2.1.1 Cachuma Reservoir

The majority of GWD's water supply is sourced from the Cachuma Project, which was constructed by the U.S. Bureau of Reclamation (USBR) on the Santa Ynez River in the early 1950s. The Cachuma Project consists of Bradbury Dam, Tecolote Tunnel, South Coast Conduit, Lake Cachuma and various water conveyance facilities. Lake Cachuma has an estimated capacity of approximately 193,000 AF[1] and is operated by the

[1] Santa Barbara County Flood Control District, Rainfall and Reservoir Summary, April 8, 2024.

Cachuma Operation and Maintenance Board (COMB) under contract with USBR, except Bradbury Dam, which USBR continues to operate. Table 2-1 summarizes entitlements, costs, constraints and reliability.

Table 2-1. Summary of All Sources of Goleta Water District Water Supply

Supply Source	Annual Allocation, Entitlement, or Water Right (AFY)	Fixed Costs (per AF)	Variable Costs (per AF)	Constraints	Reliability (% of Full Supply)
Cachuma Potable[1]	9,322	$775	$144	None	86%
Cachuma – Goleta West Conduit	Included above	$1,237	$56	None	86%
Cachuma – Spill Water to Customers	NA	$0	$144	None; Irregular Reliability	NA
Cachuma – Spill Water to Injection, Later Extraction[2]	NA	$0	$421	596/251 AF/month	NA
Groundwater	2,350	$1,198	$277	596 AF/month SAFE	Varies according to SAFE
State Water – Table A[3]	4,500	$3,472	$584	4,500 AFY Pipeline	56%
Recycled Water[4]	3,300	$1,505	$93	Demand only 896 AFY 2010–2023	100%

Notes

This table does not reflect total system losses.

[1] Reliability is the percent of full entitlement available over the 82 years of the WSMP Model.

[2] Constraint is well injection capacity. Injection capacity is 251 AF/month, extraction 596 AF/month.

[3] 4,500 AFY is GWD's portion of the Coastal Aqueduct. Fixed costs (2024) spread over 1,951 AFY average of SWP deliveries 2010–2023. All variable costs from 2022, except Cachuma Potable from 2023.

[4] Fixed costs spread over 896 AFY average deliveries 2010–2023.

AF = acre-feet AFY = acre-feet per year GWD = Goleta Water District NA = not applicable

SAFE = SAFE Water Supplies Ordinance WSMP = Water Supply Management Plan

2.1.1.1 Cachuma Project Supply

There are three categories of Cachuma Project water: regular entitlement water, carryover water and spill water. Each category is described below.

- **Entitlement.** GWD is contractually entitled to 9,322 AFY of water from Lake Cachuma. Since 2010, an average of 77 percent of its Cachuma entitlement has been available to GWD. The annual average of Cachuma deliveries during that period has been 8,432 AFY, including spill and carryover water.

- Over the past decades, circumstances surrounding the Cachuma Project have changed, including reduced reservoir capacity as a result of sedimentation, increased downstream releases required by the National Marine Fisheries Service (NMFS) under the 2000 Biological Opinion (BiOp), (NMFS, 2000) and implementation of the Settlement Agreement with downstream water rights interests.
- The Congressionally approved Cachuma Project is operated by the USBR. USBR allocates project water annually to the District and other Cachuma Member Units through a Master Contract with the Santa Barbara County Water Agency. USBR is subject to state and federal laws governing reservoir operations, including how such operations affect both downstream water rights and protected species, notably southern California steelhead. The limitations and conditions that apply to USBR's Cachuma operations as they affect water rights and steelhead are enforced through permit requirements of the State Water Resources Control's (SWRCB's) 2019 Water Rights Order (2019-0148) and a 2000 BiOp issued by the NMFS. USBR formally initiated reconsultation of the BiOp with NMFS in 2014, resulting in a 2016 draft BiOp that was subsequently withdrawn. Pursuant to the federal Endangered Species Act's Section 7 consultation process, USBR will submit a new biological assessment to NMFS that evaluates how it proposes to comply with Water Rights Order 2019-0148 water regime and its effect on steelhead. The biological assessment is intended to describe the proposed action and its effects on listed species. NMFS will use the biological assessment in its issuance of a new BiOp that will govern project operations.
- The California Department of Fish and Wildlife is currently evaluating steelhead as a candidate for listing as Endangered under the California Endangered Species Act. The agency expects to provide its candidacy recommendation to the California Fish and Game Commission in the near future. Listing of the species as Endangered under California law could result in additional limitations and mitigation requirements on Cachuma Project operations, with potential water supply and fiscal impacts to the Cachuma Member Units and their customers. While no currently published evidence supports a long-term reduction in Cachuma Project yield and reduction in GWD entitlements, GWD should conservatively prepare to account for such potential reductions. Thus, this WSMP Update includes several scenarios specifically designed to account for a range of potential impacts from the pending BiOp and other factors, should they occur due to regulatory limitations on operations.
- Per the terms of the SWRCB's 2019 Water Rights Order, the Cachuma Member Units have been working with USBR to determine whether any revisions to the long-term yield of the Cachuma Project are necessary as part of negotiations on the Master Contract. Currently, the Cachuma Member Units have not identified any need to modify the long-term yield of the Project. The Cachuma Member Units completed a Yield Study of the Cachuma Project in 2023, which determined that the Cachuma Project can continue delivering its current full yield while providing a reliable long-term water supply and meeting other beneficial uses of the Cachuma Project, including downstream water rights obligations and environmental release requirements.

- **Carryover Water.** Entitlement that is not used in any Cachuma water year (October through September) is carried over to the following years. When Cachuma spills, all carryover water is considered to have been spilled and the accounting for carryover water is returned to zero (spill frequency is shown graphically in Figure 2-3). Thus, it is important to use carryover water as soon as possible, giving it the highest priority of use.
- **Spill Water.** When Cachuma spills, GWD can take as much water as it can use, without debiting its entitlement for that year. The amount of spill water that GWD can use for customer demand and groundwater injection is largely limited by GWD's treatment and injection capacity in compliance with the District's permit from the Regional Water Quality Control Board for its Aquifer and Storage Recovery Program. After the spill ceases, further use of Cachuma water by GWD is debited against its annual entitlement. The WSMP Model calculates the additional Cachuma yield from spill water by allocating spill water to customer demand in each month that Cachuma spills. The average amount of spill water allocated to customer demand over the 82-year model period was 796 AFY. An additional average of

351 AFY of spill water was allocated to injection from the spills. The occurrence of spills during the 78 years of the RiverWare model is indicated in Figure 2-3. Beyond the RiverWare model period, the Cachuma Project spilled for two consecutive years in 2023 and 2024. Spills generally occur from January through May and are typically 2 to 3 months in duration (Figure 2-4).

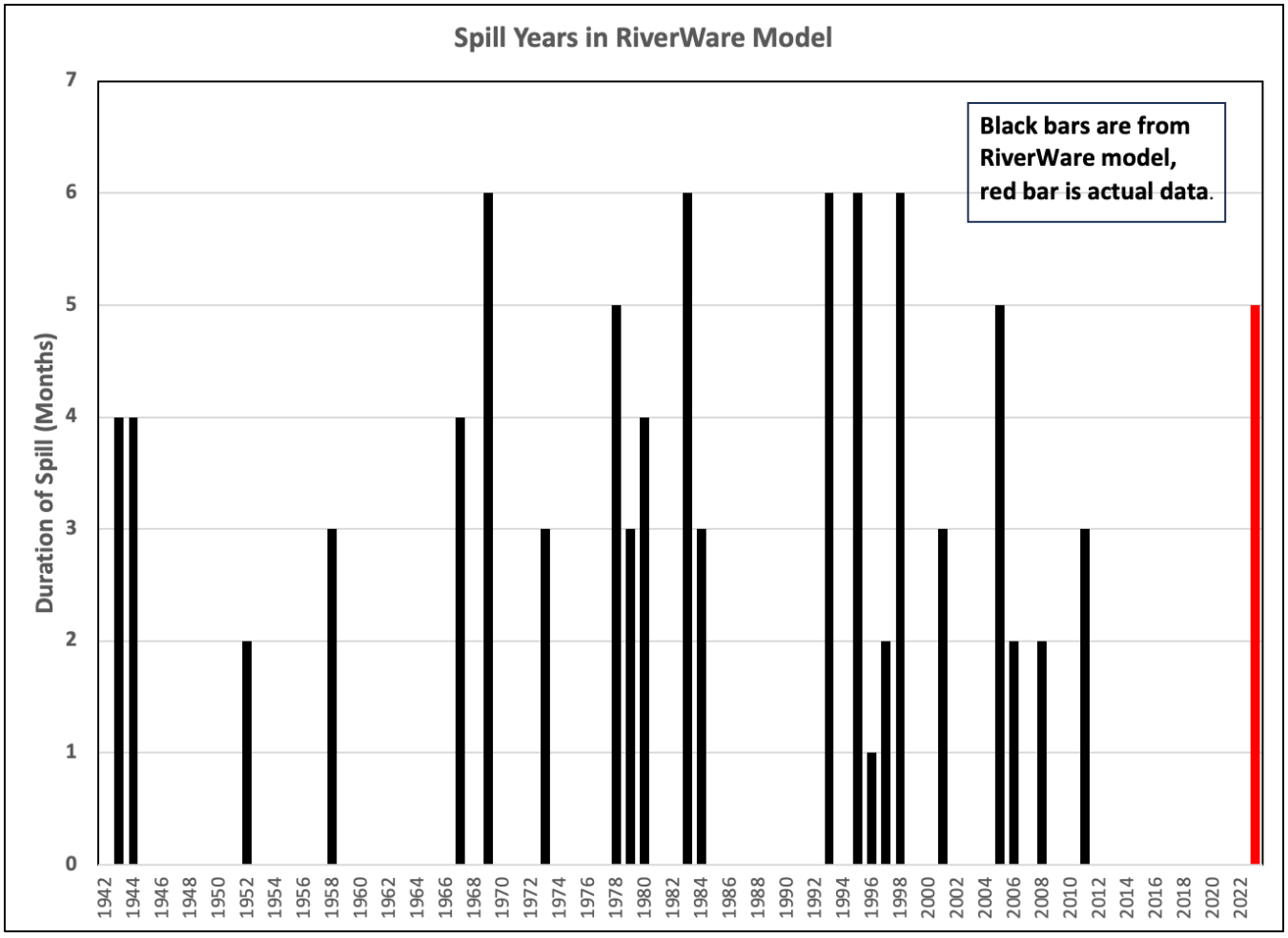


Figure 2-3. Years in Which There Is a Cachuma Spill in the RiverWare Model

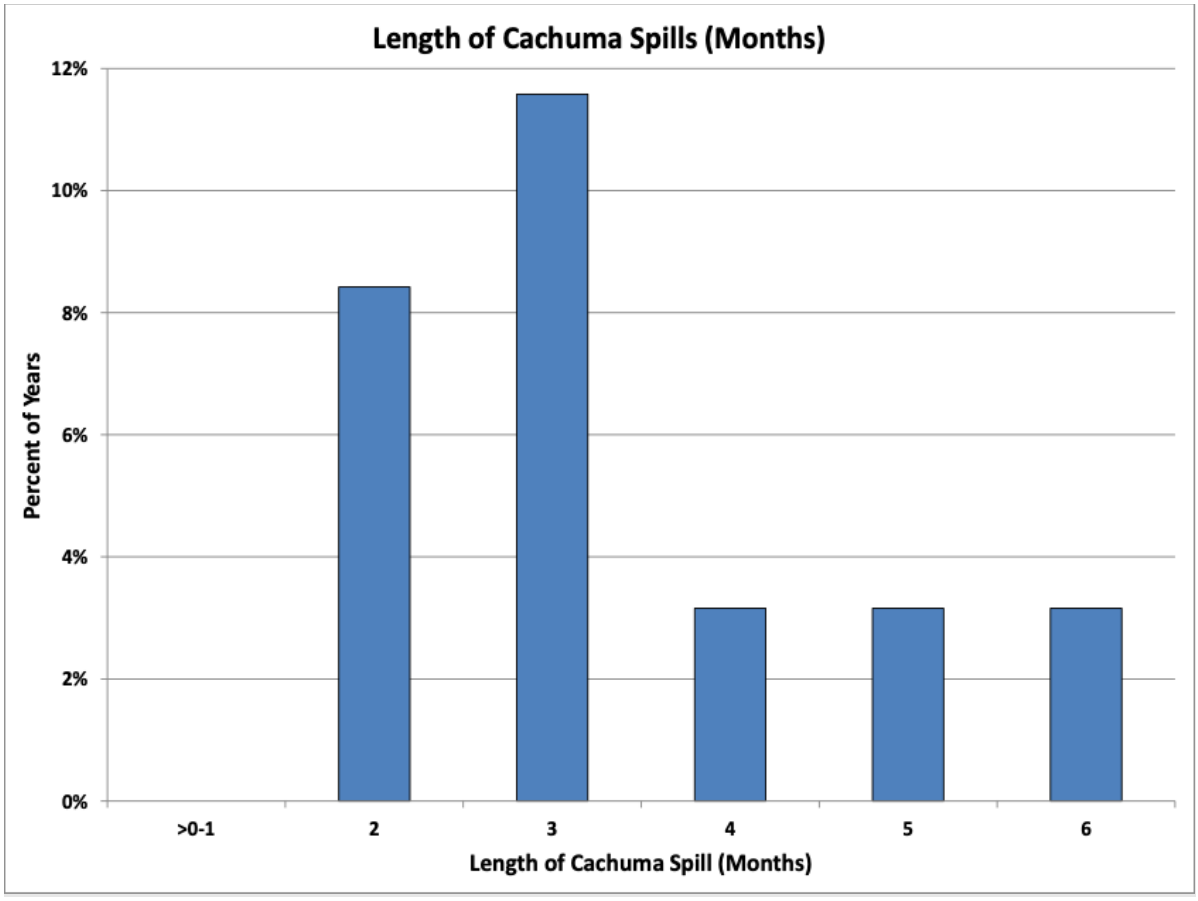


Figure 2-4. Months during Which Cachuma Spills, Based on RiverWare Model

2.1.1.2 Cachuma Reliability

Each Cachuma Member Unit has an entitlement to a specific amount of water, but the amount of Cachuma Project water delivered to member units varies from year to year depending on winter runoff, lake storage, water demand and downstream releases for fish. Historically, delivery reductions have only occurred during severe droughts. For instance, the Cachuma allocation was 0 percent in Water Year 2016 (Figure 2-5).

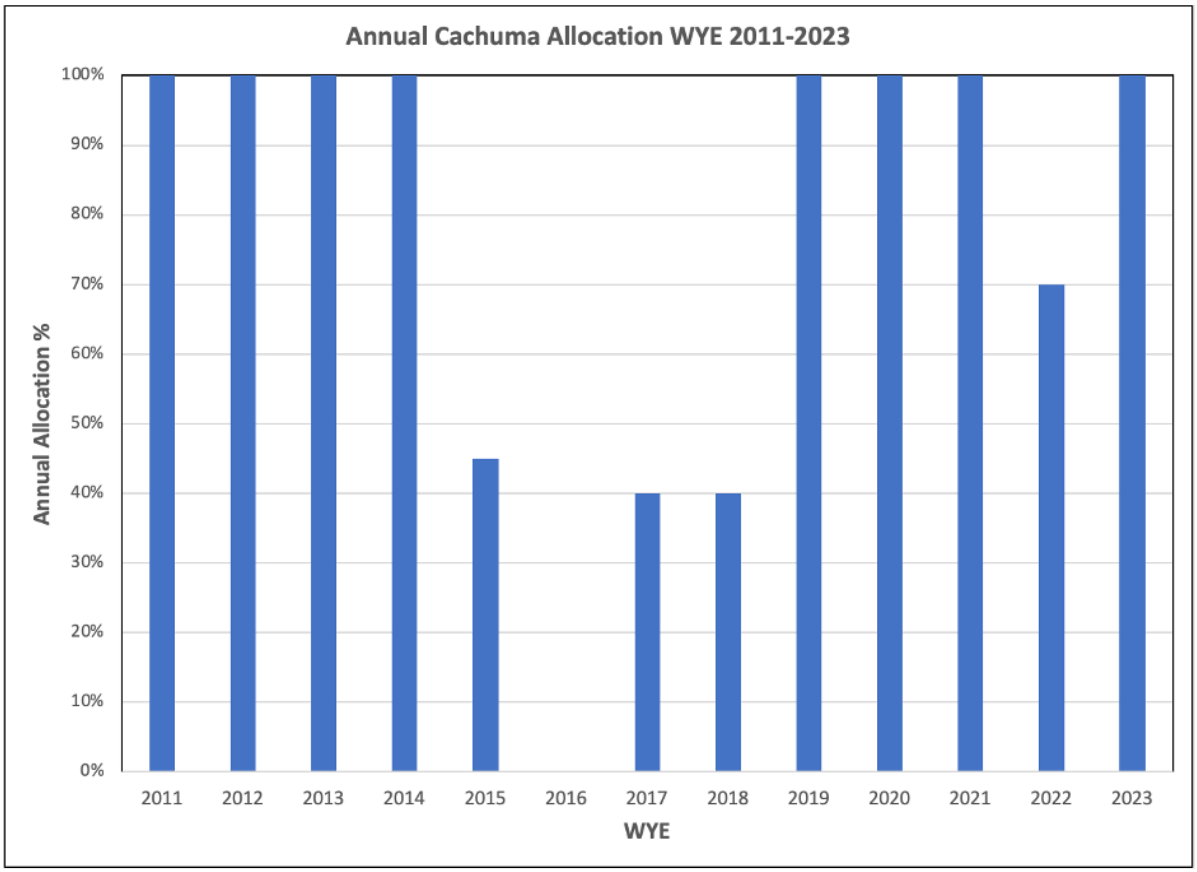


Figure 2-5. Actual Annual Cachuma Allocation since Water Year 2011

The future reliability of Cachuma Project supplies is evaluated using the RiverWare model of the Santa Ynez River. The RiverWare model was developed under the agreement of eight local water agencies and local government over the past decade to simulate flow rates along the river and dozens of tributaries, as well as capture and spilling of water from the three reservoirs along the river. The numerical model has been used for reservoir studies, to determine water rights issues, to plan conservation releases and to assist in issues related to fish flows.

The RiverWare model runs over the 78 water-year period from 1942 through 2020 in daily time steps. Measured and estimated historical stream flows, rainfall, evaporation and tunnel infiltration values provide the database for a set of algorithms that simulate reservoir and river-course conditions. Changes in one portion of the model (such as increasing annual deliveries from a reservoir) result in changes throughout the model. The RiverWare model used in this WSMP Update was based on Water Rights Order 2019-048 and Water Year 2021 Term 27 Annual Report fish release requirements. Output from the RiverWare model used in this study includes Cachuma Reservoir spills and forecasted Cachuma delivery amounts.

Over the 82-year period of the WSMP, RiverWare predicted that 86 percent of its Cachuma entitlement was available to GWD. Carryover water is generated only in a few years when Cachuma spills and GWD's entitlement is not used during those spill months.

Whenever there is a large storm event or following a fire in the Cachuma watershed, material is washed down the river and is caught behind Bradbury Dam. This "siltation" slowly fills the reservoir and decreases the yield of the Cachuma Project. River models take this into account for current conditions; some predict

future siltation. The RiverWare model uses current conditions. From an operational standpoint, sediment-laden water also reduces the capacity of GWD's Corona del Mar Water Treatment Plant, which can result in a temporary reduction in the availability of Cachuma Project water to GWD customers.

2.1.1.3 Cachuma Costs

GWD paid annual fixed costs for its Cachuma water supply of:

- Cachuma (potable): $6,653,536 annual total, $775 AFY fixed costs spread over an average 8,588 AFY of supply from 2010 to 2023.
- Goleta West (non-potable): $911,233 annual total, $1,237 AFY fixed costs spread over an average 737 AFY of supply from 2010 to 2023.

These fixed costs include Agency fees as well as costs associated with operation of GWD's potable water delivery system and Corona Del Mar Water Treatment Plant such as GWD debt service, capital spending with operating funds, labor, operations and maintenance as well as laboratory testing. For non-potable deliveries via the Goleta West Conduit, additional fixed costs associated with the operation of the conduit include labor and operations and maintenance.

In addition, GWD paid variable costs depending upon the amount of production. For calendar year 2023, variable costs for its Cachuma supplies include:

Cachuma (potable): $144 AFY variable cost

Goleta West (non-potable): $56 AFY variable cost

Variable costs include chemicals, power and waste disposal.

2.1.2 Groundwater

Groundwater used by GWD is pumped from its own wells within the Goleta Groundwater Basin, with both the amount and timing of the pumping determined in part by the Wright Judgment and GWD's SAFE Ordinance. Table 2-1 summarizes water rights, costs, constraints and reliability.

2.1.2.1 Groundwater Supply and Constraints

- **Wright Judgment.** GWD has a current water right to 2,350 AFY of groundwater from the Goleta Groundwater Basin under the terms of the Wright Judgment. Unexercised groundwater rights at the end of a year convert to a stored water right in the basin. GWD can also store water by injecting water into the basin for later extraction. The details of how both the Wright Judgment and the SAFE Ordinance affect groundwater use by GWD are contained in the Groundwater Management Plan Update for the Goleta Groundwater Basin (GWD, 2023).
- **SAFE Ordinance.** How this groundwater is used is regulated by GWD's SAFE Ordinance, which specifies conditions under which groundwater is either pumped or stored. The key determining factors are groundwater elevations in the basin and the availability of Cachuma water in any year. When groundwater elevations are below those measured in 1972, groundwater reserves in storage cannot be pumped and a pre-determined amount of water must be stored annually in the basin as a drought buffer. The exception to this rule is when there are reduced deliveries of Cachuma water—SAFE allows for pumping of groundwater during these "drought" conditions. The Groundwater Management Plan Update specifies which wells to use in determining groundwater elevations in 1972 and subsequent years (GWD, 2023). A copy of the SAFE Ordinance is included in Appendix B.

- **Groundwater Elevations Below 1972 Levels.** When groundwater elevations are below 1972 levels, SAFE requires certain actions to be taken. As discussed above, groundwater cannot be pumped below 1972 levels unless Cachuma supplies have been reduced. In addition, an "Annual Storage Commitment" of at least 2,000 AFY is required under the SAFE Ordinance for replenishment to 1972 levels (this has risen to 2,477 AFY in 2024 as new customers have been connected over time) (GWD, 2024). The Annual Storage Commitment will continue to increase as the District allocates any new water entitlements. For each AFY allocated, the required storage commitment will increase by 2/3 of each AFY allocated. Any excess State Water delivered that is beyond the supplies needed to serve existing customers that is over 3,800 AFY shall be stored in the Central subbasin until the basin is replenished to its 1972 level. Additionally, there can be no new service connections unless all the obligations for water service and the Annual Storage Commitment are met. Groundwater elevations as represented by the Key Well Index are presented in Figure 2-6.
- **Physical Facilities.** GWD currently has nine permitted groundwater production wells with various capacities and statuses (Figure 1-1). Well extraction and treatment capacity based on recent operations is approximately 596 AF per month. GWD production wells are located in the Central subbasin of the Goleta Groundwater Basin.

  Some, but not all, of the same wells used for extracting groundwater can also be used for injection. Historically, the source water for injection has been spill water from Cachuma. This injection of Cachuma spill water historically occurred in both GWD's wells and in La Cumbre Mutual Water Company's wells. However, after the Regional Water Quality Control Board adopted anti-degradation standards for the Goleta Basin, injection is only permitted for GWD wells pursuant to GWD's Aquifer Storage and Recovery Program. The injection capacity during spill events is controlled by the capacity of treatment facilities (raw water cannot be introduced in the distribution system), water demand during the spill event, well injection capacity, as well as water quality and groundwater elevation limits set forth in GWD's permit. GWD's injection capacity is currently approximately 251 AF per month. Notably, because existing production wells are used for potable water supply, current regulations would prohibit their use as injection wells for any recycled water or untreated storm water.

- **Groundwater in Storage Above 1972 Groundwater Elevations.** The Groundwater Management Plan Update (GWD, 2023) provides an estimate of how much water can be pumped from above 1972 groundwater elevations. It takes roughly 10,000 AF of cumulative pumping to drop from high groundwater elevations to the 1972 elevation (-26 feet [ft] mean sea level [msl]) during drought conditions. GWD can expect to pump approximately 6,300 to 8,100 AF of the 10,000 AF because GWD is not the only groundwater producer in the Basin, and because there is some natural groundwater outflow to the ocean.
- **Pumping from the Drought Buffer.** The Drought Buffer can only be used for delivery to existing customers when a drought on the South Coast causes a reduction in GWD's annual deliveries from Lake Cachuma and cannot be used as a supplemental supply for new or additional water demand. The amount of water that can be pumped from the Drought Buffer has been calculated in the Groundwater Management Plan Update (GWD, 2023), the results of which have been incorporated into this WSMP Update. It takes roughly 23,200 AF of cumulative pumping for water levels to drop from the historical high groundwater elevation to the historical low groundwater elevation during drought conditions. It takes approximately 16,900 AF of cumulative pumping to drop from the 1972 elevation (-26 ft msl) to the historically low level (-85 ft msl) during drought conditions.

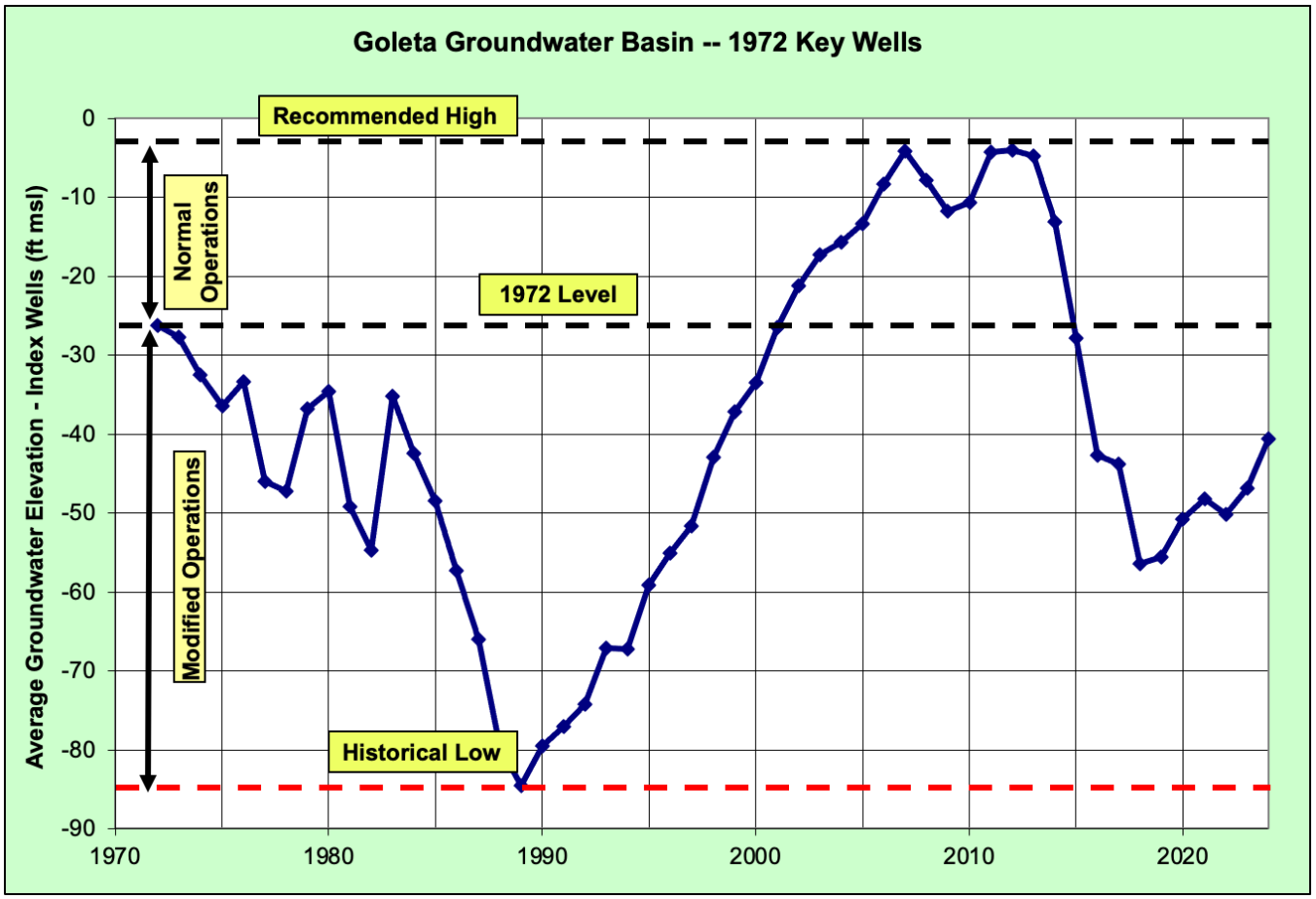


Figure 2-6. Groundwater Elevations in the Goleta Groundwater Basin, as Indicated by the Seven-Well 1972 Index Wells Average

Note

The 1972 groundwater elevation used in the SAFE Ordinance is indicated at -27 feet elevation.

2.1.2.2 Groundwater Reliability

Prior to the Wright Judgment and SAFE Ordinance, GWD used groundwater as an important source of its water supply, with groundwater elevations dropping to historical lows during the drought of 1986 through 1991. Following that drought, GWD pumped very little, which allowed the basin to rise to near-historical high groundwater elevations. Beginning in 2013, GWD began pumping significant quantities of groundwater because of the onset of dry conditions. Ongoing drought conditions and pumping from the Drought Buffer resulted in declining groundwater levels, with the District utilizing about half of the Drought Buffer by 2018. Since that time, decreased pumping has allowed the basin to stabilize and partially recover. After wet winters in 2023 and 2024 and the District injection of spill water, the basin has continued to see recovery.

Groundwater is a less expensive source of water than State Water, but its use must be balanced by the need to maintain a drought buffer of groundwater to ensure a reliable supply when Cachuma and/or State Water supplies are reduced in a drought. Determining this balance is one of the purposes of this WSMP Update.

2.1.2.3 Groundwater Costs

Extraction of Groundwater. The cost to extract and treat groundwater (variable cost) is approximately $277 per AF (2022 costs). The fixed costs of groundwater production are $1,198 per AFY, based on average annual production of 1,965 AFY during the period from 2010 to 2023.

Groundwater Injection. The cost for groundwater injection of spill water is the treatment cost for the source water. These treatment costs are approximately $144 per AF (2023 costs). When the water is pumped back out for use, the $277 for groundwater extraction must be added, resulting in an overall variable cost of $421 per AF.

Figure 2-8 illustrates the fixed and variable costs.

2.1.3 State Water

In 1991, voters within the service area of GWD chose to purchase an entitlement of State Water to increase water supply reliability during drought. In 1994, voters increased the amount of State Water purchased (but not the pipeline capacity) so that the reliability of State Water could be increased. Treated State Water is delivered to GWD by the CCWA using the Coastal Branch of the California Aqueduct. The terminus of the Coastal Branch is Lake Cachuma, where de-chlorinated State Water is mixed with untreated Cachuma water. The physical mixture of State and Cachuma water must be re-treated before delivery to customers. Table 2-1 summarizes State Water allocations, costs, constraints and reliability.

2.1.3.1 State Water Supply and Constraints

- **Entitlement.** GWD has a State Water entitlement of 7,000 AFY, plus an additional entitlement of 450 AFY through the CCWA Drought Buffer. However, GWD only purchased 4,500 AFY of capacity in the Coastal Branch of the California Aqueduct. The higher entitlement than carrying capacity reflects the reality that the State Project cannot on average deliver the full amount of its customers' entitlements.
- **Storage.** GWD currently uses two means of storing State Water–Cachuma Reservoir and CCWA storage in San Luis Reservoir (an off-aqueduct reservoir along the California Aqueduct). Long-term storage of State Water (such as for drought protection) in Cachuma Reservoir is problematic because Cachuma spills on average every 3 years, with State Water considered the first water over the spillway.

  CCWA stores State Water that has been ordered by its member agencies but is unused at the end of the year in San Luis Reservoir. Stored water can also be "spilled" from San Luis when the California Department of Water Resources (DWR) moves a large amount of water into the reservoir for temporary storage and displaces the CCWA stored water. Although no storage limits have been set, the WSMP Model sets an upper limit of 2,000 AF of storage for GWD. The reason for a practical limit is that San Luis "spills" its CCWA storage if DWR fills the reservoir with its own water.

  During a serious drought, banking State and/or Supplemental Water in San Luis Reservoir is very helpful in the early stages of the drought; when banked water is depleted, it is not likely to be re-filled until the drought is over.
- **Exchange Water.** Since 1997 (when SWP deliveries to the Central Coast began), approximately 44 percent of GWD's State Water delivery has been "exchanged" for Cachuma water with Santa Ynez River Water Conservation District-Improvement District No. 1 (ID#1). Under the Exchange Agreement, which is meant to minimize water treatment and delivery costs for the respective agencies, GWD SWP water is delivered directly to ID#1 and GWD receives an equal amount of ID#1's Cachuma Project Entitlement water in exchange.

2.1.3.2 State Water Reliability

Delivery of water from the SWP varies with climatic conditions in northern California and environmental/regulatory issues in the Sacramento Delta. The annual allocation is based each year on state reservoir levels, the amount of snow runoff expected and constraints on pumping from the Delta into the California Aqueduct.

The DWR has calculated probabilities of water delivery over a range of climatic conditions and environmental constraints. These probabilities are reported in DWR's SWP Delivery Capability Report 2021 (DCR). The DCR uses a sophisticated flow model, called CalSim II, to estimate the current and future volumes of water that can potentially be made available from the SWP. The DCR is based on computer models using data from between 1921 and 2015; according to its authors, these models were recalibrated to account for changes in land use and reduced snowpack as a result of climate change experienced in recent years. The DCR is widely considered the authoritative document in projecting future supply reliability and also provides estimated delivery data that is specific to Santa Barbara County. For example, the CalSim II model was used to calculate the volumes of water that could be provided by the SWP under "current conditions" and future conditions within the watersheds supplying the SWP. The DCR is currently being updated every 2 years. The reason that these simulations have to be updated so frequently is that judicial/environmental restrictions on the SWP continue to change almost annually. The latest update and the version used in this WSMP Update were prepared in 2021 and published in 2022 (DWR, 2022).

The DCR includes a baseline scenario representative of current delivery capabilities and a future scenario (2040). The future scenario has climate change conditions modeled by DWR that include 1.8 ft of sea level rise. The future scenario reduces State Water deliveries compared to existing conditions (Figure 2-7).

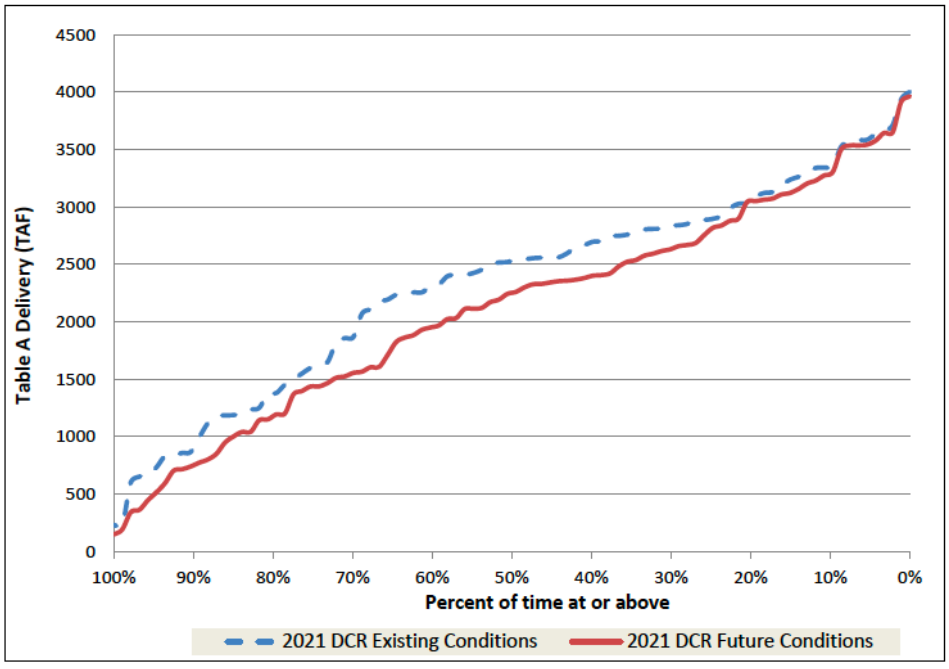


Figure 2-7. Results of Simulation of State Water Availability under Existing Conditions and for Future (2040) Conditions

Notes

Source: DWR, 2022

The probability of having 2 million acre-feet of Table A delivery in any year is approximately 70 percent under existing conditions and less than 60 percent in future conditions.

2.1.3.3 State Water Costs

State Water costs are divided into fixed (capital) and variable (operational) costs. GWD currently pays $6,773,827 a year to CCWA for its share of the fixed costs for State Water. The variable rate is discussed below.

- **Table A Water Delivered to Cachuma.** The variable cost of State Water delivered to Cachuma Reservoir and subsequently treated for GWD customers is $584 per AF (2022 costs). The fixed cost per AF is $3,472 when it is apportioned across an average of 1,951 AFY of SWP deliveries from 2010 to 2023.
- **Storage.** There is currently no supplemental charge for storing State Water in either Cachuma Reservoir or San Luis Reservoir. CCWA pays a per acre-foot fee for storage in Cachuma Reservoir under its Warren Act contract with USBR, the costs of which are included in the annual CCWA variable costs. The Warren Act contract extension is currently under negotiation.

Fixed and variable costs are illustrated in Figure 2-8.

2.1.4 Recycled Water

Through an agreement with the Goleta Sanitary District, GWD distributes recycled water within its service area for non-potable uses, such as landscape irrigation. This water would otherwise have been discharged into the ocean. Table 2-1 summarizes capacities, costs, constraints and reliability.

2.1.4.1 Supply and Constraints

- **Current Capacity.** The recycled water project (treatment and distribution) currently has a treatment and distribution capacity of approximately 3,300 AFY. The recycled water plant has a design capacity of 3 million gallons per day (mgd), which is approximately 9 AF per day (GSD and GWSD, 2023). The ability to fully utilize recycled water, however, is limited by outdoor irrigation recycled water demand patterns, which are typically condensed into a 12-hour period rather than a 24-hour period, and are driven by the irrigation season. While storage is available to address daily needs, storage is not available to address seasonal variability in irrigation demand between the wet winter months and dry summer months. For the period 2010 to 2023, GWD delivered between 410 and 1,087 AFY to the University of California Santa Barbara campus, several golf courses and other irrigation users, most of whom were previously using GWD potable water for irrigation. Infrastructure improvements and expansion of the existing recycled water distribution system would be needed before significant increases in recycled water deliveries could be made.
- **Future Capacity.** There is currently approximately 2,300 AFY of unused recycled water treatment capacity. In 2016, a Recycled Water Feasibility Study was completed to examine options to expand the use of recycled water, decrease the dependence on imported water and manage the groundwater basin. The study evaluated various water reuse projects such as IPR and direct potable reuse (DPR) with varying available supplies, potable reuse receptors, treatment requirements and locations. IPR was identified as the most feasible reuse water supply, though not cost effective. IPR involves additional treatment of the District's existing recycled water supply from Goleta Sanitary District and injecting the purified water into the Goleta Groundwater Basin where it would mix with existing groundwater supplies prior to its extraction for subsequent treatment and delivery. In the final Potable Reuse Facilities Plan completed in July 2017, the Plan recommended that were a project to move forward, a first phase of a potable reuse program to treat effluent from the Goleta Sanitary District Wastewater Treatment Program for recharge into the Goleta Groundwater Basin with 1,500 AFY of purified water. Potential future phases of the project that could include additional groundwater augmentation, raw water augmentation

and/or treated water augmentation could ultimately yield up to 4,550 AFY for recharge into the Basin. Since the completion of the Potable Reuse Facilities Plan in 2017, potential developing California SWRCB Division of Drinking Water and U.S. Environmental Protection Agency (EPA) regulations related PFAS may further limit opportunities for direct and indirect potable reuse.

2.1.4.2 Recycled Water Reliability

Recycled water is generally considered a very reliable source of supply because the amount of wastewater flowing into the Goleta Sanitary District, even in severe drought conditions, exceeds the recycled water demand.

2.1.4.3 Recycled Water Costs

Recycled water currently costs $1,505 per AF for fixed costs when they are distributed across the 2010 through 2023 average of 896 AFY of deliveries. Variable costs are $93 per AF (2022 costs), for a total fixed and variable cost of $1,598 per AF. Fixed and variable costs are illustrated in Figure 2-8.

2.1.5 Supplemental Water

The CCWA contractors can also sell and exchange water among themselves, or among other SWP contractors through the SWPP. A member agency wishing to participate in the program indicates the amount of water desired and CCWA will attempt to find water to meet those needs. In December 2015, GWD acquired 2,500 AF of supplemental water from another contractor through the CCWA SWPP to augment existing supplies in response to a fourth consecutive year of drought. GWD has also sold water to other CCWA contractors in prior years. Purchased Cachuma Project or SWP water would have similar reliability constraints as discussed above. The cost of supplemental water is highly variable depending on market conditions. Currently, based on recent purchases by agencies within CCWA, the variable cost for supplemental SWP purchases is $2,000 per AF. Fixed costs for the SWP supplies are already factored into the model. While current costs are unavailable, storm water capture projects may also be a viable source of supplemental supplies.

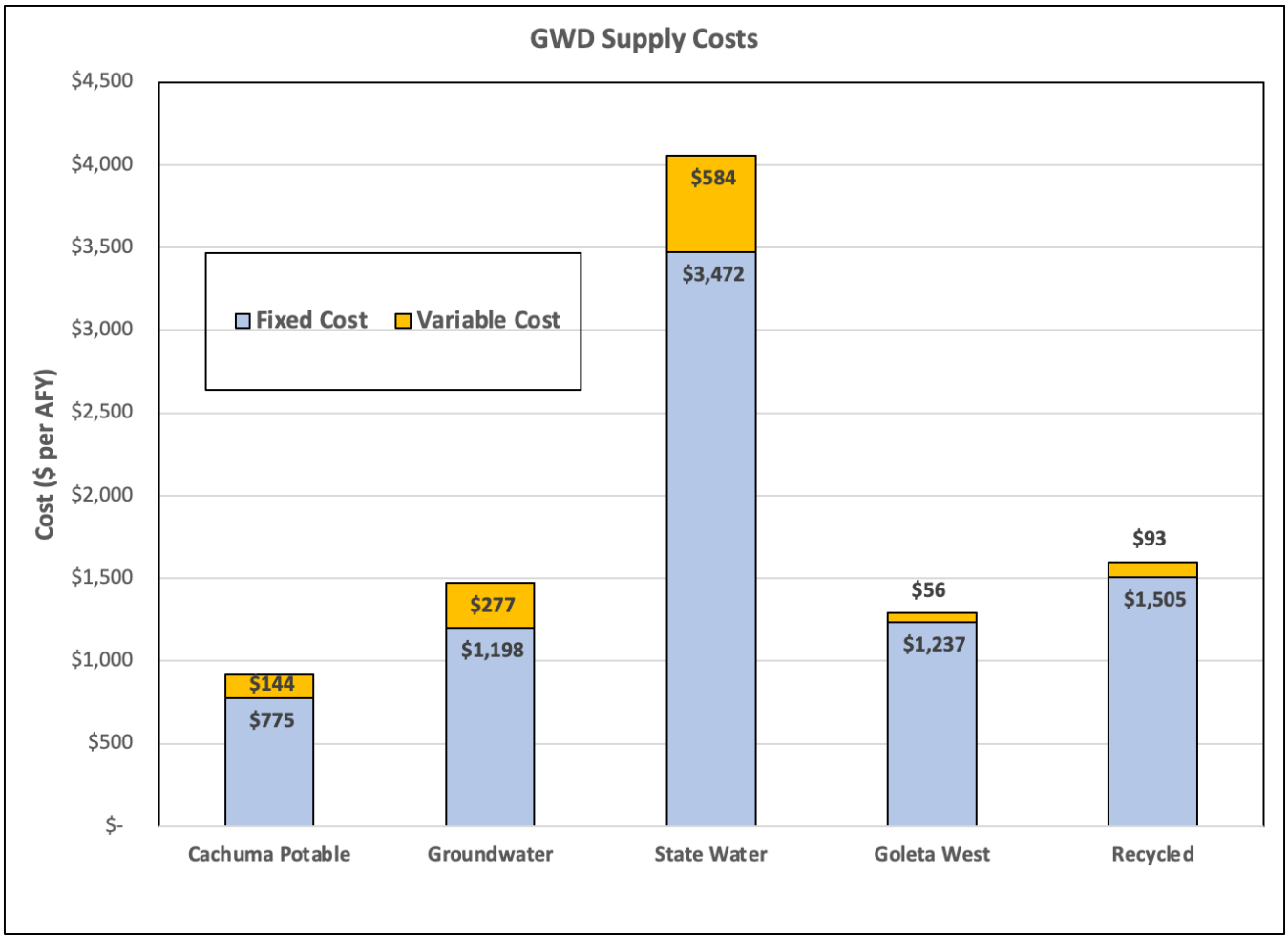


Figure 2-8. Cost per Acre-Foot of Goleta Water District's Water Supplies

Note

Fixed costs are spread across average supply in years 2010–2023.

2.2 Critical Supply Components

There are several critical supply components that affect the reliability of GWD's water supplies. These include: (1) Cachuma supplies availability in a severe drought; (2) State Water availability during droughts or emergencies; (3) GWD capacity in the Coastal Aqueduct of the SWP; (4) restrictions on the timing of use of groundwater; and (5) treatment/pumping limitations.

2.2.1 Cachuma Reliability

Historically, Cachuma Reservoir has been a reliable source of water for GWD. However, during the dry years of 2015 through 2018, Cachuma water deliveries were as low as 0 percent of allocations (Figure 2-5). Given that Cachuma is normally GWD's principal source of supply, such reductions have a significant impact on GWD's water supplies. The WSMP modeling incorporates these newly experienced extremes.

2.2.2 State Water Reliability

SWP reliability is a concern for all State Water customers. To determine the effect of highly variable annual deliveries on GWD, all scenarios in the WSMP modeling used the year-by-year current reliability modeling in DWR's DCR. A detailed discussion of SWP reliability assumptions for the current and future demand scenarios is provided in Section 3.

2.2.3 Central Coast Water Authority Storage Allowance

The CCWA stored carryover water in San Luis Reservoir is subject to a "spill" when DWR displaces the storage with its own water. This can happen when early winter rains and snowmelt cause DWR to move water out of its Sierra reservoirs to ensure that there is adequate space for flood control and to maximize runoff capture if the Sierra reservoirs spill. Thus, water stored in San Luis Reservoir, which can have a very positive effect on GWD reliability, does have an element of risk as a storage facility because such water can spill in wet years. GWD's analyses indicate that San Luis has a "spill" on an average of about two times per decade.

2.2.4 Goleta Water District Capacity in Coastal Aqueduct

GWD purposely acquired a larger State Water allocation (7,450 AFY) than its acquired capacity in the Coastal Aqueduct (4,500 AFY). This was done because the average reliability of the State Project is significantly less than 100 percent of allocation (and is continuing to decline). The WSMP modeling used the aqueduct capacity as the limiting amount of State Water and Supplemental Purchased Water that GWD could receive in any given year. The effect of this limitation was evaluated in the modeling.

2.2.5 Groundwater Reliability

The SAFE Ordinance was enacted to ensure that there would be adequate groundwater supplies during a drought to supplement reduced Cachuma and State Water deliveries. SAFE requires that pumping of groundwater below 1972 levels only occurs when Cachuma supplies are reduced—if State Water supplies are reduced but Cachuma supplies are not, groundwater pumping of the Drought Buffer is not allowed. The WSMP modeling examined the effects of the SAFE Ordinance over the modeling period, with the perspective both from building an adequate drought buffer and from subsequent pumping of that drought buffer.

2.2.6 Facilities Limitations

There are necessary limitations on water production and treatment facilities within GWD— overbuilding of facilities is not an efficient or effective use of resources. However, it is also important to ensure that these limitations do not adversely affect water supply reliability.

Facility limitations that could affect reliability include: (1) groundwater well pumping capacity during drought periods of increased pumping; (2) groundwater well injection capacity when large amounts of water are available during a Cachuma spill event or via storm water catchment; (3) capacity to treat the available Cachuma spill water, or storm water, prior to injection; and (4) GWD's share of Coastal Aqueduct capacity.

The WSMP modeling uses current facility capacities to determine if they are limiting factors in optimizing the use of the various water supplies.

2.3 Historical Priorities for Use of Supplies

GWD has varied its priorities in the use of its various supplies over time, partly related to drought conditions and partly related to the purchase of SWP allocation in the 1990s. This history of water use was discussed

earlier in this section and illustrated in Figure 2-1. Prior to the importation of State Water, GWD relied heavily upon groundwater during drought periods, resulting in historically low groundwater elevations in the basin in the early 1990's. Following the importation of State Water, the Wright Judgment and the passage of the SAFE Ordinance, groundwater pumping was reduced or eliminated in many years. This allowed the groundwater basin to refill to historical highs, significantly above 1972 groundwater elevations. Groundwater should largely be preserved for drought protection, but if groundwater is allowed to rise too high, flooding and other adverse effects could occur. Thus, a balanced approach to using State Water and groundwater is necessary.

3 Water Supply Management Plan Model

The following sections provide a description of the WSMP Model and its key features.

3.1 Water Supply Management Plan Model Description

The WSMP Model is a spreadsheet model designed to simulate GWD's current and potential future water supplies. The model attempts to satisfy user-specified water demand by calculating the use of individual supplies in priority order, subject to operational capacity and regulatory constraints. The spreadsheet model was originally developed and used in the 2011 WSMP (GWD, 2011) as well as in the previous 2017 WSMP Update. The spreadsheet model has now been updated through 2023 for potential future reductions in Cachuma Project Allocations, increased pumping/injection capacity and updated RiverWare modeling and State Water capabilities.

The model uses monthly time steps from 1942 through 2023. The period coincides with the periods of overlap of the local and state-wide watershed models discussed in Section 2. For Cachuma Project availability and spills, results from the RiverWare model were used. For SWP projections, the delivery capability results were used for the years that it simulates (through 2015) and historical data was used for 2016 through 2023. To mesh the results of these models, the period 1942 to 2023 was used in this WSMP. In both the RiverWare and DWR models, current and future water resource facilities, policies and flow restrictions were superimposed on the historical hydrology of the Santa Ynez River and the rivers within the SWP. The results of these models were then incorporated into the monthly WSMP spreadsheet model for the 82-year period that simulates GWD's operations.

The 82-year period of analysis allows the interaction of differing climate trends in northern and southern California, where drought and wet periods do not always coincide. The 82-year period of the WSMP Model represents several local wet and dry periods (Figure 3-1). All of the droughts of the 20th and 21st centuries are included in the modeling period from 1942 onward.

The WSMP spreadsheet model takes into account both the Wright Judgment and the SAFE Ordinance in its calculations (see description of these in GWD's Groundwater Management Plan Update [GWD, 2023]). Because the SAFE Ordinance requirements are based in part on groundwater elevations in the Goleta Groundwater Basin, the WSMP uses the results of the Goleta Basin Groundwater Model to predict groundwater elevations each year depending upon the amount of pumping/injection that has occurred in the basin. To do this, the Goleta Basin Groundwater Model was used to simulate nine different conditions: three different weather year types (wet, average and dry years) with three different pumping amounts in each series (1,500 AFY, 2,350 AFY and 5,341 AFY). Thus, the WSMP Model used the climatic condition of any year and the simulated pumping to determine the annual change in basin groundwater elevations.

The model has two major modes of operation—current supply/demand and future (2040) supply/demand. Current and future demand assumptions are presented in Sections 4 and 5. The model uses one set of operational criteria and constant customer demand over the entire hydrologic period—the model does not sequentially increase demand as if it was a time series through 82 years. To determine the results for future demand, a new model run must be performed with the new demand applied over the 82-year period. To predict the availability of supplies and the groundwater elevations in a drought (as required in an UWMP), a drought period can be selected during the 82-year period.

As detailed in Sections 4 and 5, the spreadsheet model was used to experiment with potential future reductions in Cachuma Project Allocations, priorities of water supply options, expansion of injection/extraction capabilities and potential future supply augmentation projects such as storm water

catchment. The model evaluated the reliability and costs of various water supply management strategies under various conditions.

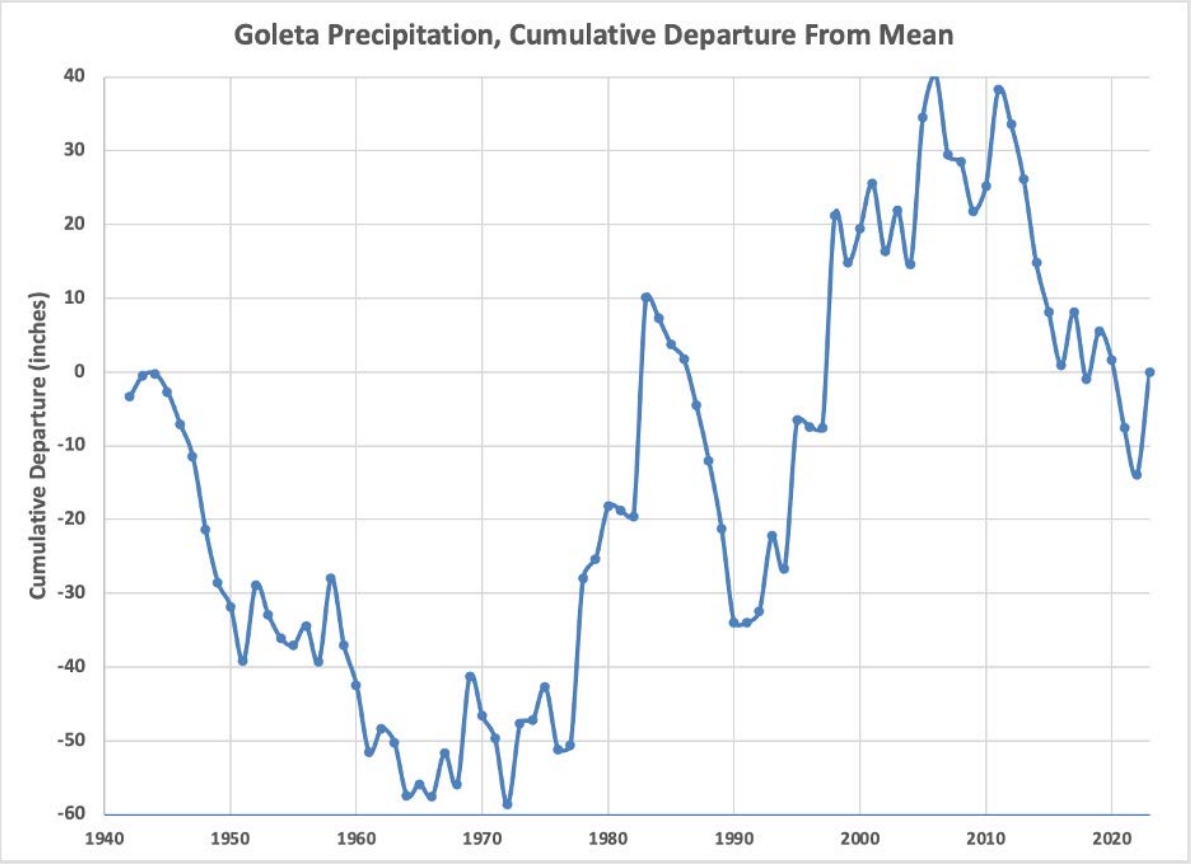


Figure 3-1. Cumulative Departure of Rainfall (Goleta Fire Station) That Includes the Period of the WSMP

Note

Wet periods are indicated by rising values, whereas dry periods are indicated by falling values.

3.2 Water Supply Management Plan Model Supply Priorities

A key function of the WSMP Model is its ability to prioritize the simulated use of GWD's water supplies. This allows GWD to evaluate how water supply reliability and costs vary with different supply priorities.

In all cases, the model first satisfies non-potable recycled water demand with recycled water and then proceeds to satisfy potable/raw water demand. Cachuma Project water is utilized first to meet potable/raw water demand because this is the least expensive supply and because reservoir spills result in loss of carryover water. The three classifications of Cachuma Project water are prioritized in the following order, consistent with the COMB rules: (1) spill water (the quantity of spill water usually far exceeds water supply and environmental needs); (2) carryover water (unused entitlement from previous years which is lost when the reservoir spills); and (3) annual Cachuma entitlement.

For current supply/demand scenarios, the third supply priority varies with each scenario, as detailed in Section 4. The fifth water supply used to serve customers is supplemental SWP Allocation ("Drought Water") purchased from other SWP contractors or other Cachuma Member Units.

For future supply/demand scenarios, the third, fourth and fifth supply priorities are always groundwater, SWP water and supplemental SWP allocation purchased from other SWP contractors or Cachuma Member Units. The future supply/demand scenarios also consider a sixth supply called "Future Supply Augmentation Projects." This lowest priority supply is a catch-all for future potential local water supplies that may be available to the District. Such projects might include stormwater capture or the purchase of local supplies from other water suppliers in the region. The District prepared a Storm Water Resources Plan in 2017 that identified a series of projects in the District service territory that could potentially augment surface water supplies. The District continues to work with Santa Barbara County Flood Control and the City of Goleta to identify potential funding opportunities for projects within those agencies' jurisdiction.

3.3 Optimization of Supplies during Peak Demand Months

A number of scenarios considered will implement a "Hybrid Priority" strategy that seeks to minimize the use of more expensive SWP water for peaking during high-demand months, particularly during periods when Cachuma Project allocations are reduced. The approach is to begin using groundwater early in the water year, concurrently with Cachuma Project water, so that Cachuma Project supplies may be extended later in the year to help meet peak demand. If Cachuma Project supplies are exhausted early in the water year, groundwater capacity generally is insufficient to meet peak demand and more expensive SWP water will be needed to supply unmet demand.

The WSMP Model allows the user to define a percentage of Cachuma Project Entitlement that will "trigger" the "Hybrid Priority" functionality in the model. This is referred to as the "Cachuma Trigger." For example, if a given scenario calls for the Hybrid Priority whenever Cachuma Project Allocations are 30 percent less than GWD's Cachuma Project Entitlement, the user would enter a Cachuma Trigger value of 70 percent.

3.4 State Water Project Water Storage

In all scenarios (current and future), GWD's SWP Allocation is used to maintain GWD's portion of the CCWA storage capacity in San Luis Reservoir. San Luis Reservoir is jointly operated by DWR and USBR and has a storage capacity of more than 2 million AF. DWR's share of gross storage in the reservoir is about 1.062 million AF. Generally, water is pumped into San Luis Reservoir during late fall through early spring and is temporarily stored for release back to the California Aqueduct to meet summertime peaking demand for SWP and CVP contractors.

Pursuant to the SWP Water Supply Contract, Contractors have the opportunity to carry over a portion of their allocated water approved for delivery in the current year for delivery during the next year. The carryover program was designed to encourage the most effective and beneficial use of water and to avoid obligating the Contractors to use or lose the water by December 31 of each year. The water supply contracts state the criteria for carrying over SWP Table A water from one year to the next. Normally, carryover water is water that has been exported during the year from the Delta, has not been delivered to the Contractor during that year, and has remained stored in the SWP share of San Luis Reservoir. Storage for carryover water no longer becomes available to the Contractors if it interferes with the storage of SWP water for project needs. Once this occurs, the carryover water is lost. to make room for additional allocation back to the State Water Project system.

For planning purposes, GWD storage is generally "capped" at 2,000 AF (see Section 2.1.3). The reason for a practical limit is that San Luis can "spill" its CCWA storage if DWR fills the reservoir with its own water, and carrying over additional water beyond this limit runs a high risk of loss. The District performed an analysis of San Luis spills (GWD, 2023) which indicated that spills occur five times every 20 years. This analysis is integrated into the WSMP Model.

The WSMP Model also increases groundwater storage via injection of SWP water. SWP is injected if groundwater levels are below 1972 levels, SWP is available, CCWA pipeline capacity is not exceeded and demand has been met.

3.5 Assumptions for Current Supply/Demand Scenarios

To test the reliability of current supplies under current customer demand, a series of WSMP Model runs (scenarios) were performed. Ten scenarios were modeled to test the reliability and cost of GWD's water supplies against current water demand. The scenarios explore different priorities of use and well capacities.

3.5.1 Current Water Production to Meet Demand

Annual water production (water needed to meet customer demand and system losses) under current conditions was developed based on recent actual production, as detailed in Table 3-1. The figures show that production required to meet demand fluctuates by an average of 10 percent between wet and drought climatic conditions. Specifically, production increases by 7 to 8 percent above normal production during drought conditions (warm, dry weather) due primarily to increased landscape and agricultural irrigation; and demand drops by approximately 2 percent under wet conditions, when less irrigation is occurring.

Table 3-1. Current Demand Assumptions Used in the Water Supply Management Plan Model

Category	Average Conditions (AFY)	Drought Conditions (AFY)	Wet Conditions (AFY)	Basis for Production Required
Potable + Raw	10,259	11,012	10,044	Based on actual production: Average = based on years 2019 and 2020 Dry = based on 2016, 2018, 2021, 2022 Wet = based on 2017, 2023
Recycled Water	774	867	763	Based on actual production Average = based on 2019, 2020 Dry = based on 2016, 2018, 2021, 2022 Wet = based on 2017, 2023
Total	11,033	11,879	10,807	

Note

AFY = acre-feet per year

3.5.2 Supply Priorities

Table 3-2 lists and describes the water supply priorities used in the current water supply/demand scenarios.

Table 3-2. Water Supply Priorities for Current Supply/Demand Scenarios

Supply Priority	Water Supply	Description	Current Supply/Demand Scenarios
1	Non-Potable Recycled Water	The model first satisfies non-potable recycled water demand with recycled water and then proceeds to satisfy potable/raw water demand	All
2	Cachuma Project	Cachuma Project water is utilized first to meet potable/raw water demand	All
3 and 4	Groundwater or SWP Water	Depending on the scenario, groundwater and SWP water are prioritized 3rd or 4th. Groundwater is utilized in accordance with the SAFE Ordinance. When implemented, the "Hybrid Priority" allows groundwater to be used concurrently with Cachuma Project earlier in the year to minimize volume of SWP needed during peak demand months. SWP supply is from GWD's SWP Allocation or SWP water stored in San Luis Reservoir.	Groundwater 3rd Priority: All scenarios except Scenario 1b SWP Water 3rd Priority: Scenario 1b
5	Purchase SWP Allocation	Temporary purchase of supplemental SWP Allocation during droughts.	All

Notes

GWD = Goleta Water District SWP = State Water Project

During years with low Cachuma Project allocations, using groundwater concurrently with the Cachuma Project earlier in the year extends Cachuma supplies and, therefore, minimizes the quantity of SWP water required to meet peak demand later in the water year.

3.5.3 Supply Costs

The cost of each supply used in the model is based on the current cost for that supply. The supply costs are discussed in Section 2 and summarized in Table 2-1.

3.6 Current Supply/Demand Scenarios

Optimizing water supplies involves finding the appropriate balance of cost, reliability and energy use. Usually, the tradeoff is that increased reliability costs more. For this WSMP Update, both individual water sources and combinations of sources were analyzed. As described above, the combinations always prescribed using Cachuma Project sources first to meet potable/raw water demand because of their lower cost, lower energy demand for delivery and vulnerability to reservoir spillage. Thus, the analysis of the optimum combination of water sources involves varying the priorities of groundwater and SWP supplies, increased treatment and well capacities. The supply optimization concepts evaluated are described below.

Scenarios:

- **Scenario 1a ("Groundwater Priority").** Evaluate the utilization of groundwater as the first supply after recycled water and Cachuma Project water.
- **Scenario 1b ("SWP Priority").** Evaluate the utilization of SWP as the first supply after recycled water and Cachuma Project water.
- **Scenario 1c (Series) ("Hybrid Priority").** Evaluate a hybrid that seeks to minimize the use of more expensive SWP water for peaking during high-demand months, particularly during periods when Cachuma Project availability is reduced. The approach is to begin using groundwater early in the water year, concurrently with Cachuma Project water, so that Cachuma Project supplies may be extended later in the year to help meet peak demand. If Cachuma Project supplies are exhausted early in the water year, groundwater capacity is insufficient to meet peak demand and more expensive SWP water will be needed to supply unmet demand. This series of scenarios consider a range of Cachuma Project allocation percentages (termed Cachuma Triggers) that trigger the Hybrid Priority functionality in the model. The Cachuma Triggers evaluated the range from 30 to 100 percent of GWD Cachuma Project Entitlement.
- **Scenario 1d (Series) ("Hybrid Priority with Increased Pumping/Injection Capacity").** Same as Series 1c, but with increased pumping and injection capacity of from 10 to 30 percent. These scenarios use a Cachuma Trigger of 50 percent.

In all scenarios, any remaining SWP Allocation is used to increase GWD's portion of the CCWA storage capacity in San Luis Reservoir. The modeled maximum San Luis Reservoir storage is 2,000 AF of GWD water (Section 2.1.3.1). Periodic spillage of San Luis storage is based on the District's 2023 analysis. In addition, SWP is injected if groundwater levels are below 1972 levels, there is additional SWP available, CCWA pipeline capacity is not exceeded and demand has been met.

Table 3-3 summarizes the elements in each of the 10 scenarios.

Table 3-3. Matrix of Water Supply Management Plan Model Scenarios for Current Demand

Scenario or Series of Scenarios	Uses GW before SWP	Uses SWP before GW	"Hybrid Priority" Cachuma Trigger Value[1]	Pumping/ Injection at Current Capacity	Pump and Inject Increased Capacity
Scenario 1a	√			√	
Scenario 1b		√		√	
Scenario 1c (Series)	√		30%/50%/70%/90%/100%	√	
Scenario 1d (Series)	√		50%		+10%/+20%/+30%

Notes

[1] "Cachuma Trigger" refers to Cachuma Allocation as a percentage of full Cachuma Project Entitlement. Allocations less than the Cachuma Trigger will "trigger" early use of groundwater supplies in an effort to extend Cachuma supplies to help meet peak demand later in the year (see Section 3.3 for further explanation).

GW = groundwater SWP = State Water Project

3.7 Results of Current Supply/Demand Scenarios

WSMP modeling used the results from the RiverWare model, DWR State Water modeling predictions for SWP availability, the GWD Groundwater Model and operating requirements for the Goleta Groundwater Basin for an 82-year period from 1942 through 2023 to examine GWD's various sources of water supply relative to current demand. Importantly, even though these models are very sophisticated, actual results will vary from model predictions because future hydrology will certainly not be identical to the 1942 through 2023 period and water supply constraints will continue to evolve. As with any planning exercise, the models used in this WSMP Update are intended to inform the decision-making process using the best available information and analytical techniques.

The current supply/demand scenarios were evaluated using five criteria:

1. Cost
2. Reliability
3. Impact on Groundwater Levels
4. Supplemental Water Needs
5. Energy Used

3.7.1 Cost Results

The metric for evaluating costs is the average cost per AF of water for the entire 82-year simulation period. Costs included in the evaluation include both variable and fixed costs, as used in GWD accounting methods. The average cost for all supply strategies evaluated over the 82-year period of the model ranges from $1,780 to $2,111 per AF, as shown in the Cost versus Reliability graph below (Figure 3-2).

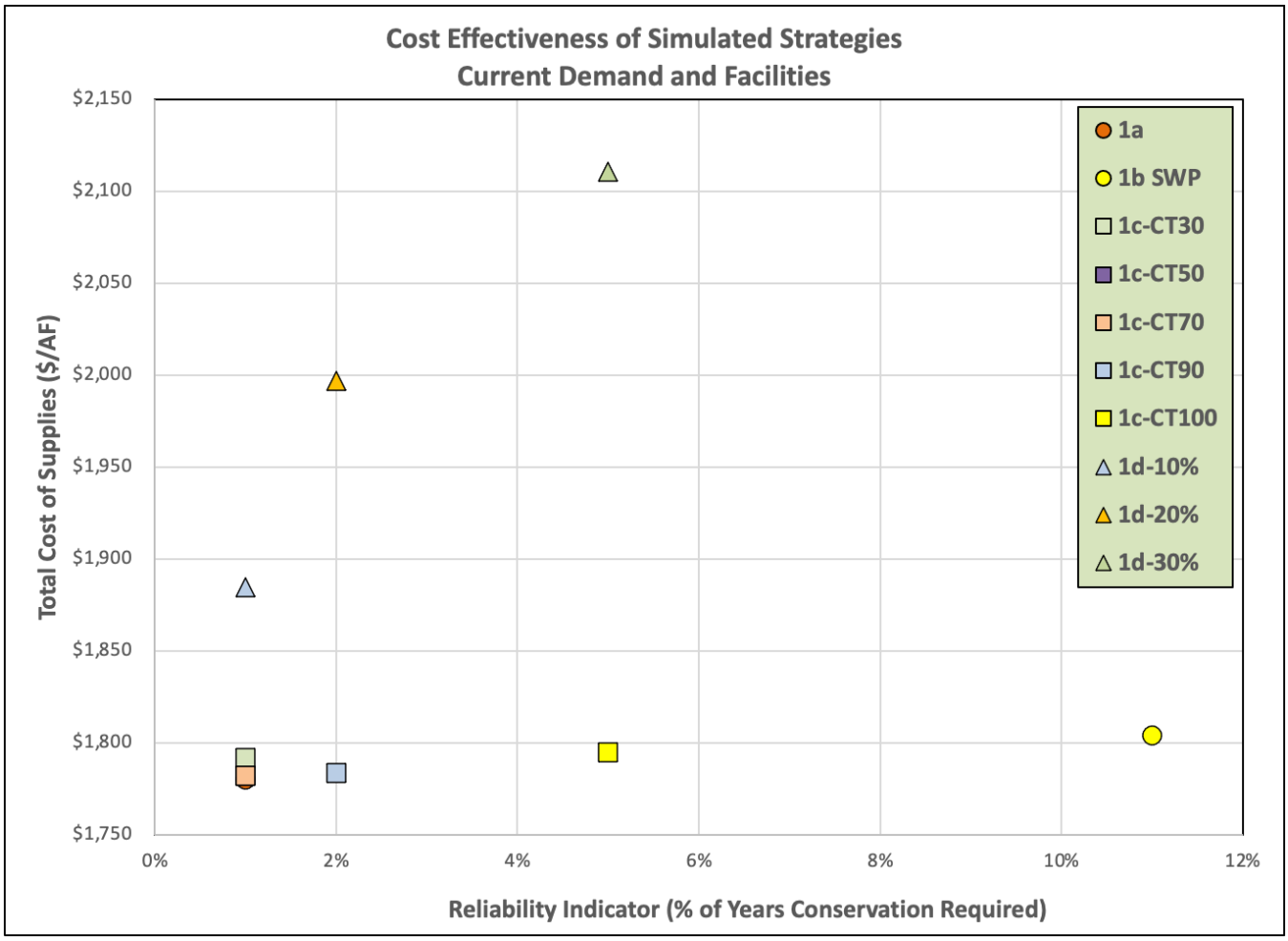


Figure 3-2. Cost Versus Reliability for Current Supply/Demand Scenarios

The lowest cost strategies are associated with the Hybrid Priority strategies used in the Scenario 1c series. These strategies also provide the highest reliability, as discussed in the next section.

The highest cost strategy is when State Water use is prioritized over groundwater use (Scenario 1b).

3.7.2 Reliability Results

Two metrics were developed to evaluate the reliability of the water supply strategies:

1. Percent of years during the 82-year simulation period when mandatory conservation is required (Figure 3-2 and Table 3-4). Lower percentages indicate higher supply reliability.
2. Maximum conservation required in any year (Table 3-4). Lower percentages indicate higher supply reliability.

The percentage of years with mandatory conservation required ranges from 1 to 5 percent (1 to 6 years of the 82-year WSMP Model), as shown in the Cost versus Reliability chart above (Figure 3-2). The WSMP Model indicates that the highest demand reductions would be required 5 percent of the time (6 years out of 82 years) for the 30 percent Cachuma Trigger and 11 percent of the time (14 years out of 82 years) for the SWP Priority strategy (Table 3-4). Adding pumping/injection capacity actually decreases reliability and increases costs because the higher pumping rates decrease groundwater elevations in the basin too rapidly during a drought period (Figure 3-2).

The highest level of demand reduction required in any single year ranges from 1 to 11 percent, as shown in Table 3-4. The WSMP Model suggests that the highest demand reduction levels would occur when implementing the SWP Priority strategy (Scenario 1b).

Table 3-4. Supply Reliability Metrics for Current Supply/Demand Scenarios

Scenario or Series of Scenarios	Percent of Years with Any Demand Reductions Required	Maximum Demand Reductions Required in Any Year
Scenario 1a	1%	20%
Scenario 1b	11%	9%
Scenario 1c (Series)	1–5%	20%
Scenario 1d (Series)	1–5%	11–25%

Note: Results reference percent of years in the 82-year model simulation.

3.7.3 Groundwater Level Results

A quantitative metric for evaluating groundwater levels was not developed; rather, the WSMP Model groundwater level results were qualitatively evaluated. The simulated groundwater levels are shown in Figures 3-3 and 3-4. Figure 3-3 shows the results of scenarios that include priorities of use for groundwater, State Water and increased pumping/injection capacity. Figure 3-4 shows the results of scenarios that vary the Cachuma Trigger from 30 to 100 percent.

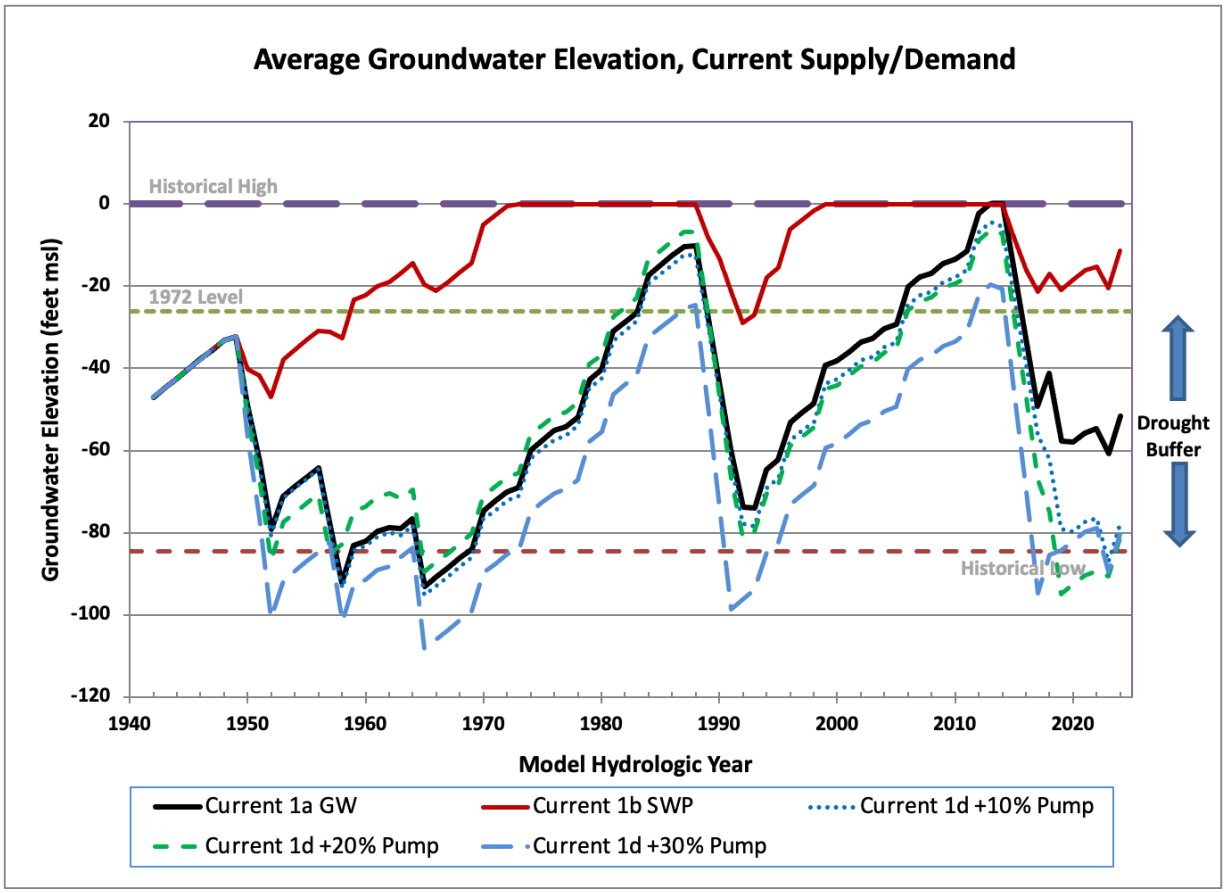


Figure 3-3. Groundwater Levels for Current Supply/Demand Scenarios 1a, 1b and 1d

For the scenario that prioritizes the use of State Water over groundwater (Scenario 1b), groundwater elevations are much higher than other scenarios because not much groundwater is used and water level elevations reach historical highs (Figure 3-3). It is likely that at these high elevations, there is significant leakage to surface waters and the water is lost from the basin.

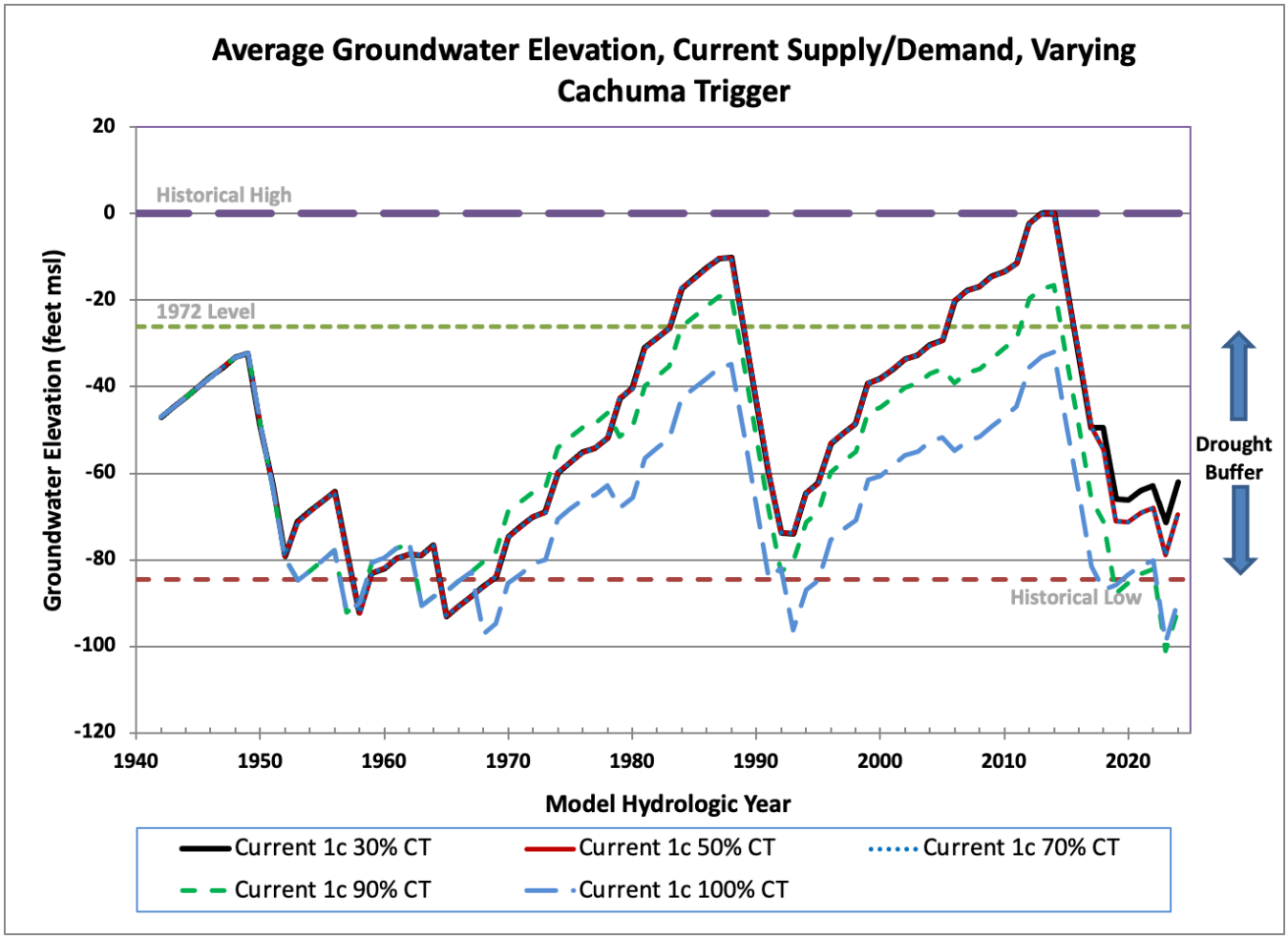


Figure 3-4. Groundwater Levels for Current Supply/Demand Scenarios with Varying Cachuma Triggers

Varying the Cachuma Trigger has a progressive effect on groundwater elevations (Figure 3-4). At a Cachuma Trigger of 30 percent, groundwater elevations reach historical highs: it is likely that at these high elevations, there is significant leakage to surface waters and the water is lost from the basin.

3.7.4 Supplemental Water Use

Supplement water purchases are evaluated because scenarios that utilize greater amounts of supplemental water may actually be less reliable than indicated in Figure 3-2 if supplemental water is not available when it is needed. The metric for evaluating supplemental water purchases is the average annual supplement water purchase during the 82-year simulation period. Table 3-5 shows the simulated average annual supplemental water purchases.

Table 3-5. Annual Supplemental Water Purchases for Current Supply/Demand Scenarios

Scenario or Series of Scenarios	Average Supplemental State Water Project Allocation Purchase (AFY)
Scenario 1a	7
Scenario 1b	66[1]
Scenario 1c (Series)	0 to 34
Scenario 1d (Series)	4 to 42

Notes

[1] Value is likely higher than would be necessary under actual operations because supplies would be utilized in such a way as to increase supply reliability during high demand months, such as using SWP water *and* groundwater together to meet demand.

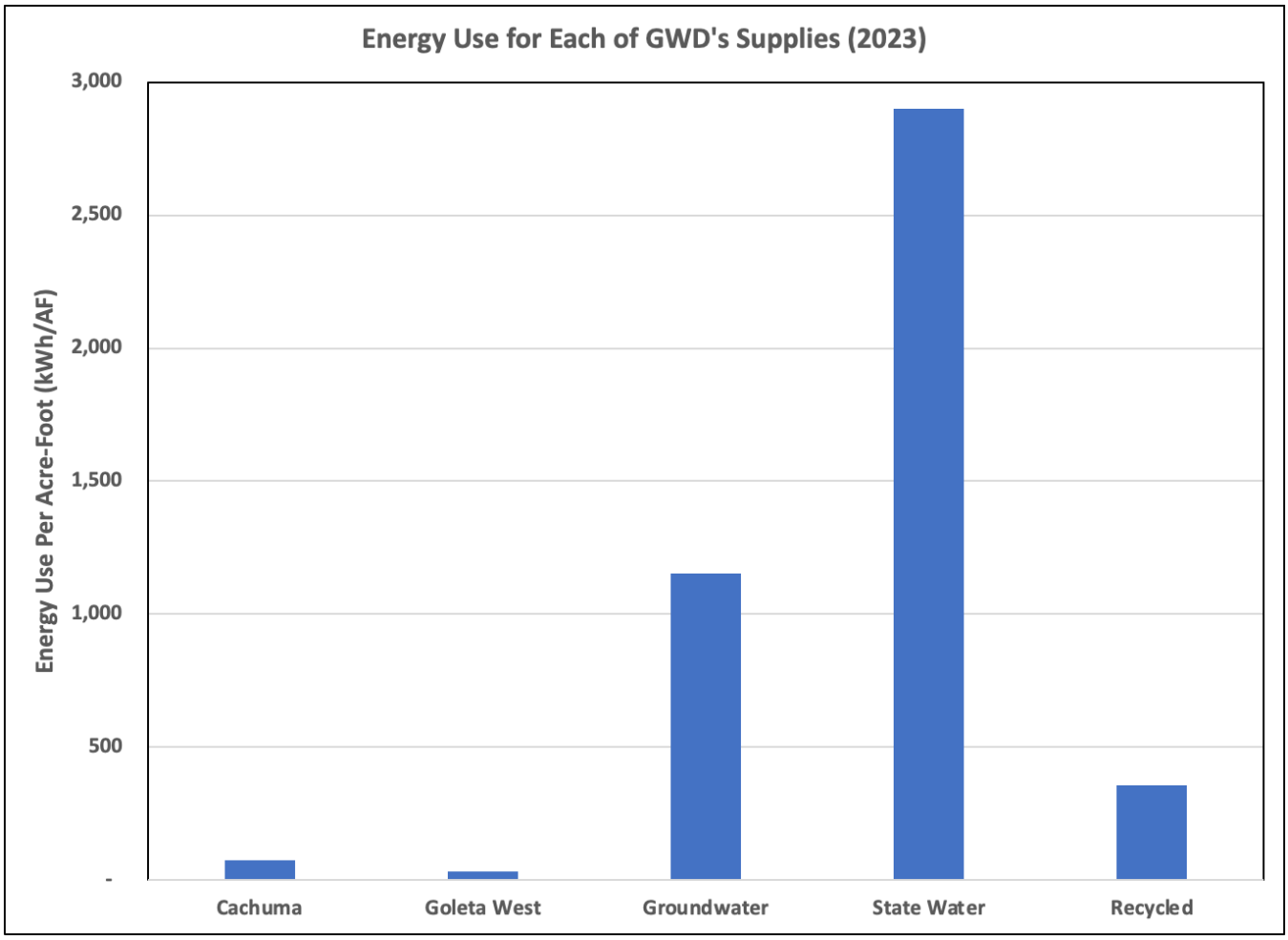
AFY = acre-feet per year

Predicted supplemental water purchases are relatively low for all scenarios. The estimated supplemental SWP Allocation needs for the SWP Priority strategy (Scenario 1b) are higher than would be expected under actual operations. This occurs because the model uses all SWP water before any groundwater, resulting in supply capacity limitations in years with low Cachuma Project allocations (i.e., after Cachuma and SWP supplies are exhausted, the groundwater pumping capacity is insufficient to meet demand). Under actual operations, SWP and groundwater supplies would be used together in a manner that increases the supply capacity during higher-demand months. Supplemental water purchases are at a minimum (7 AFY) under current operating conditions.

3.7.5 Energy Use

Energy use per acre-foot of water delivered varies widely among GWD's sources of supply (Figure 3-5). Strategies that use the least amount of energy would be favored in this category of evaluation. Cachuma water, one of the most energy-efficient of GWD's sources of supply, is the first water used in all the scenarios. Recycled water, which is in the mid-range of energy efficiency, is also used to the extent that there is customer demand. Groundwater, although a less energy-efficient source of supply, is critical during droughts, and is mostly replenished and kept in reserve at other times. With the exception of Scenario 1b, State Water, the least energy-efficient water source, is used to fill in demand and recharge the groundwater basin.

Figure 3-5. Energy Use per Acre-Foot for Each of GWD's Supply Sources



3.7.6 Recommended Current Supply Strategy for Current Demand

The optimal water supply strategy for meeting current demand involves: (1) using Cachuma Project water first to meet potable/raw water demand except as noted below; (2) injection of SWP supplies into the Goleta Groundwater Basin when feasible and allowed by the District's injection permit; and (3) optimization of groundwater and SWP supplies when Cachuma Project allocations are less than 50 percent such that groundwater is used earlier in the water year to ensure that Cachuma Project water is available to meet peak demand later in the year (Scenario 1c with a 50 percent Cachuma Trigger). This strategy provides very high reliability at a low cost and maintains appropriate groundwater elevations in the basin under all climatic conditions. There is only a single year in the 82 years of the WSMP Model where a demand reduction is required with the recommended water supply strategy.

4 Future Reliability of Water Supplies

To test the reliability of GWD's water supplies under future customer demand, a series of six WSMP model runs (scenarios) were performed. The scenarios explore the effects of higher future demand, reductions in Cachuma allocations and increased pumping/injection capacities.

4.1 Assumptions for Future Supply/Demand Scenarios

4.1.1 Future Water Production to Meet Demand

Annual production to meet future (2040) demand was based on GWD's 2020 UWMP (see Table 4-1), which includes historical changes in demand during wet, average and dry years. The totals include system losses.

Table 4-1. Future Production Required to Meet Demand Used in the Water Supply Management Plan Model

Category	Average Conditions (AFY)	Dry Conditions (AFY)	Wet Conditions (AFY)	Basis for Demand
Potable + Raw + Recycled	12,771	13,750	12,510	GWD UWMP 2020, Table 3-7, for average, which is a 16% increase over current.

Notes

AFY = acre-feet per year GWD = Goleta Water District UWMP = Urban Water Management Plan

4.1.2 Supply Priorities

Table 4-2 lists and describes the water supply priorities utilized in the future water supply/demand scenarios presented in Section 5.

Table 4-2. Water Supply Priorities for Future Supply/Demand Evaluation

Supply Priority	Water Supply	Description	Future Supply/Demand Scenarios
1	Non-Potable Recycled Water	The model first satisfies non-potable recycled water demand with recycled water and then proceeds to satisfy potable/raw water demand	All
2	Cachuma Project	Cachuma Project water is utilized first to meet potable/raw water demand	All
3	Groundwater	Groundwater is utilized in accordance with the SAFE Ordinance. When implemented, the "Hybrid Priority" allows groundwater to be used concurrently with Cachuma Project earlier in the year to minimize volume of SWP needed during peak demand months.	All
4	SWP Water	SWP supply is from GWD's SWP Allocation or SWP water stored in San Luis Reservoir.	All

Supply Priority	Water Supply	Description	Future Supply/Demand Scenarios
5	Purchase Supplemental Water	Temporary purchase of supplemental water during droughts.	All
6	Future Supply Augmentation Projects	Catch-all for future potential local water supplies that may be available to or developed by the GWD.	All

Notes

GWD = Goleta Water District SWP = State Water Project

Supplemental water purchases are made whenever Cachuma, groundwater and State Water supplies are insufficient to meet demand. GWD's contracted capacity in the Coastal Aqueduct is commonly a limiting factor in the amount of drought supplies that can be imported to GWD. The potential purchase of Cachuma Member Unit water could eliminate this limiting factor.

The term "future supply augmentation projects" is a catch-all for future potential local water supplies that may be available to the District to meet future demand. Such projects might include stormwater capture or the purchase of local supplies from other water purveyors in the region. These supplies are assumed to be available only during wet and average precipitation years and are always the last supply used as a result of the high anticipated cost.

4.1.3 Supply Costs

The cost of each supply used in the model is based on the current cost for that supply. The supply costs are described in Section 2 and summarized in Table 2-1. Potential future supplies considered in the scenarios include supplemental water purchases and future supply augmentation projects. The variable cost for supplemental water purchases is $2,000 per AF, based on recent GWD data (fixed costs for SWP are already factored into the model). The costs of local augmentation projects are not known at this time.

4.2 Future Supply/Demand Scenarios

Future WSMP supply/demand scenarios use the same strategies as for current supply/demand, as discussed in Section 3.6. In addition, the effects of a reduction in the Cachuma safe yield to 6,832 or 7,631 AFY were evaluated. Pumping/injection capacity that was increased by 10 to 30 percent was also evaluated.

Availability of State Water in 2040 came from the DWR 2021 State Water Capability Report which provides year-by-year availability for each contractor. The modeled maximum San Luis Reservoir storage is 2,000 AF. San Luis Reservoir's "spillage" is taken into account by using actual spillage years from historical records for the last 20 years according to the District's 2023 analysis and using the average of 5 spills every 20 years for earlier years in the model.

The analysis of the optimum combination of water sources involves evaluating the benefits and costs of increased well capacities, the purchase of supplemental SWP and future supply augmentation projects.

Future Scenarios:

- **Scenario 2a:** Using 2040 demand, evaluate the utilization of groundwater as the first supply after recycled water and Cachuma Project water.
- **Scenario 2b:** Inputs of Scenario 2a, except Cachuma yield reduced to 6,832 AFY.
- **Scenario 2c:** Inputs of Scenario 2a, except Cachuma yield reduced to 7,631 AFY.
- **Scenario 2d (Series):** Inputs of Scenario 2b, with pumping/injection capacity increased by 10, 20 and 30 percent.

These scenario components are presented in Table 4-3.

Table 4-3. Matrix of Water Supply Management Plan Model Scenarios for Future Demand

Scenario	"Hybrid Priority" Cachuma Trigger Value[1]	Pumping/Injection Capacity	Future Supply Augmentation Projects	Reduction in Cachuma Entitlement
Scenario 2a	50%	Current Capacity	Yes	No
Scenario 2b	50%	Current Capacity	Yes	Reduced to 6,832 AFY
Scenario 2c	50%	Current Capacity	Yes	Reduced to 7,631 AFY
Scenario 2d (series)	50%	+10%, 20% and 30%	Yes	Reduced to 6,832 AFY

Notes

[1] "Cachuma Trigger" refers to Cachuma Allocation as a percentage of full Cachuma Project Entitlement. Allocations less than the Cachuma Trigger will "trigger" early use of groundwater supplies in an effort to extend Cachuma supplies to help meet peak demand later in the year (see Section 4.3 for further explanation).

AFY = acre-feet per year

4.3 Results of Future Supply/Demand Scenarios

WSMP modeling used the results from the RiverWare model, DWR modeling predictions for future SWP availability, the GWD Groundwater Model and operating requirements for the Goleta Groundwater Basin for an 82-year period from 1942 through 2023 to examine GWD's various sources of water supply relative to future demand. Even though these models are very sophisticated, actual results will vary from model predictions because future hydrology will certainly not be identical to the 1942 through 2023 period and water supply constraints will continue to evolve. As with any planning exercise, the models used in the WSMP are intended to inform the decision-making process using the best available information and analytical techniques.

As with the current supply/demand scenarios, future scenarios were also evaluated using five criteria:

1. Cost (in 2024 dollars)
2. Reliability
3. Impact on Groundwater Levels
4. Supplemental Water Needs
5. Energy Use

4.3.1 Cost Results

The metric for evaluating costs is the average cost per AF of water for the entire 82-year simulation period. Costs included in the evaluation include both variable and fixed costs, as used in GWD accounting methods. The average cost for all water supplies with no change in Cachuma entitlement (Scenario 2a) is $1,617 per AF in 2024 dollars, as shown in the Cost versus Reliability graph below (Figure 4-1). When potential future reductions in Cachuma entitlement are factored in, the average cost of supplies ranges from $1,701 to $1,736 per AF (Figure 4-1). With increased pumping/injection capacity, average costs range from $1,818 to $2,006 per AF.

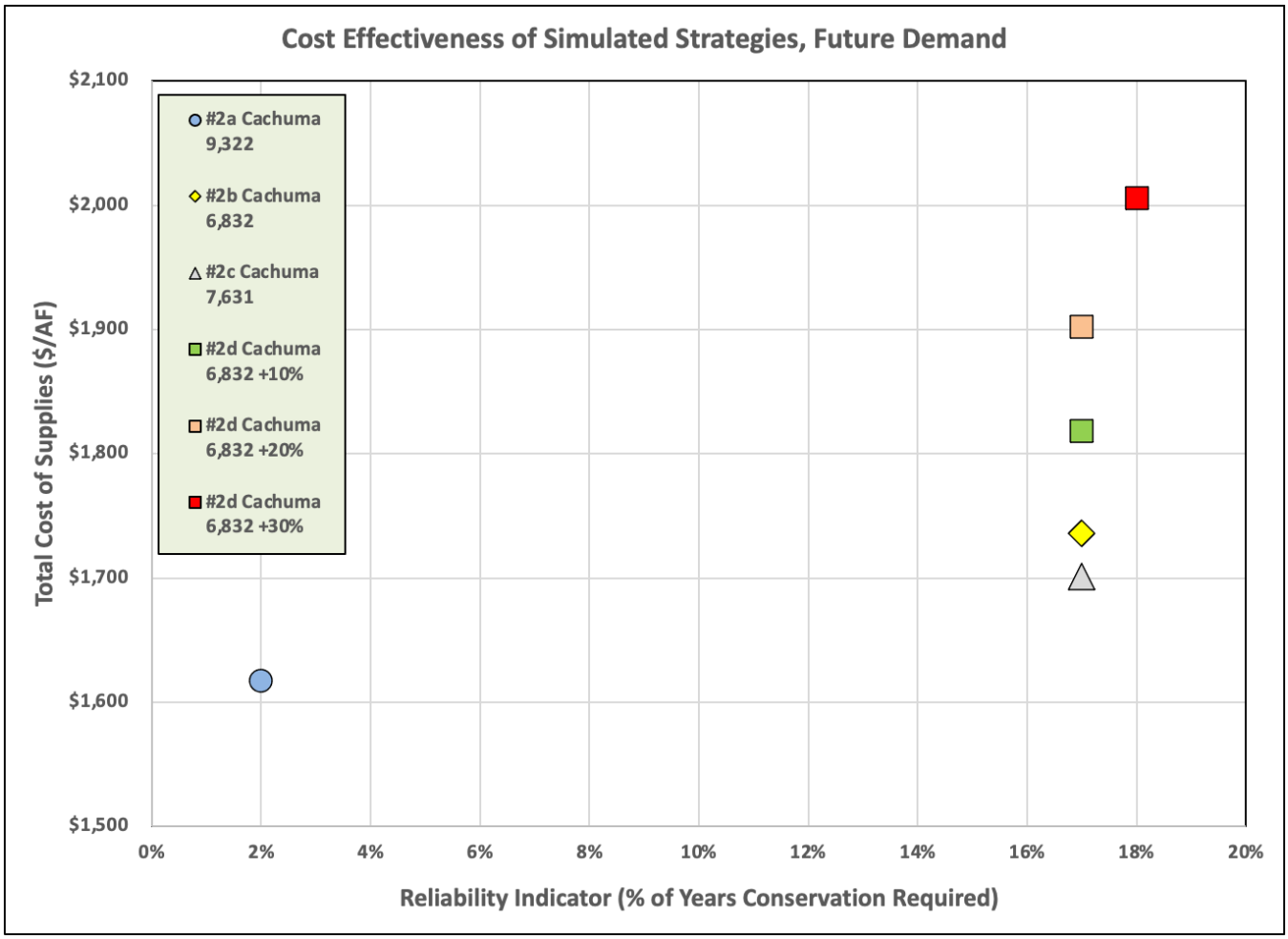


Figure 4-1. Cost Versus Reliability for Future Supply/Demand Scenarios

Note

The scenarios with the most reliability are plotted to the left.

If Cachuma entitlement remains the same as today, strategies recommended for current levels of demand would continue to yield the lowest cost for future demand (Figure 4-1). Costs per AF go up if the Cachuma entitlement is reduced (Figure 4-1).

4.3.2 Reliability Results

Two metrics were developed to evaluate reliability of the future water supply strategies:

1. Percent of years during the 82-year simulation period when any mandatory demand reduction is required (Figure 4-1 and Table 4-4). Lower percentages indicate higher supply reliability.
2. Maximum annual mandatory demand reduction required (Table 4-4). Lower percentages indicate higher supply reliability.

In the scenario with future demand and no reduction in Cachuma entitlement (Scenario 2a), 2 of the 82 years in the model (2 percent) require some additional conservation, with the conservation amount up to 35 percent. If Cachuma entitlement was reduced to 7,631 or 6,832 AFY (Scenarios 2b and 2c), 17 percent of years in the model (14 years out of 82 years) would require conservation, while the maximum conservation in any year would be 40 to 42 percent (Table 4-4). The reliability metrics can best be viewed by comparing the WSMP reliability numbers with the historical reliability of GWD supplies. Since 1985, mandatory conservation has been required in 20 percent of the years, with maximum conservation of 55 percent achieved in 1991.

The three scenarios that evaluated the effect of increasing pumping/injection capacity if Cachuma entitlement was as low as 6,832 AFY (Scenarios 2d, +10% to +30%) indicated that the percentage of years requiring conservation increased (Table 4-4). This unexpected result is explained in Section 4.3.3.

Table 4-4. Supply Reliability Metrics for Future Supply/Demand Scenarios

Scenario	Percent of Years with Any Demand Reduction Required	Maximum Demand Reduction Required in Any Year
Scenario 2a No Reduction Cachuma Entitlement	2%	35%
Scenario 2b Cachuma reduced to 6,832 AFY	17%	42%
Scenario 2c Cachuma reduced to 7,631 AFY	17%	40%
Scenario 2d Cachuma reduced to 6,832 AFY, +10% Pumping Capacity	17%	42%
Scenario 2d Cachuma reduced to 6,832 AFY, +20% Pumping Capacity	17%	42%
Scenario 2d Cachuma reduced to 6,832 AFY, +30% Pumping Capacity	18%	42%

Note

AFY = acre-feet per year

Results refer to percent of years in the 82-year model simulation scenario.

4.3.3 Groundwater Level Results

A quantitative metric for evaluating groundwater levels was not developed; rather, the WSMP Model groundwater level results were qualitatively evaluated. The simulated groundwater levels are shown in Figures 4-2 and 4-3. Figure 4-2 shows the results of scenarios for future supply/demand with 9,322, 6,832 and 7,631 AFY of Cachuma entitlement. Figure 4-3 shows the results of scenarios with 6,832 AFY of Cachuma entitlement and added pumping/injection capacity of 10, 20 and 30 percent.

When Cachuma entitlement decreases, groundwater contributes some of the difference. This increased pumping lowers basin groundwater elevations, as shown in Figure 4-2. Groundwater elevations in the three scenarios remain within reasonable ranges.

When pumping/injection capacity is increased, the range of resultant elevations increases – particularly the drought-driven lower elevations (Figure 4-3). This is particularly evident in the 1950s and 1960s and from 2012 to 2023 in Figure 4-3, where the higher pumping capacity drives groundwater elevations more rapidly downward towards historically low elevations. Thus, the inability to pump groundwater from 2021 through 2022 paired with low amounts of drought-affected Cachuma water, created shortages of supply. In other words, the extra pumping capacity creates the shortage by pumping too much water early in the drought. During the 82 years of model hydrology, this occurred several times and would have to be mitigated by reducing groundwater pumping as a long drought progresses.

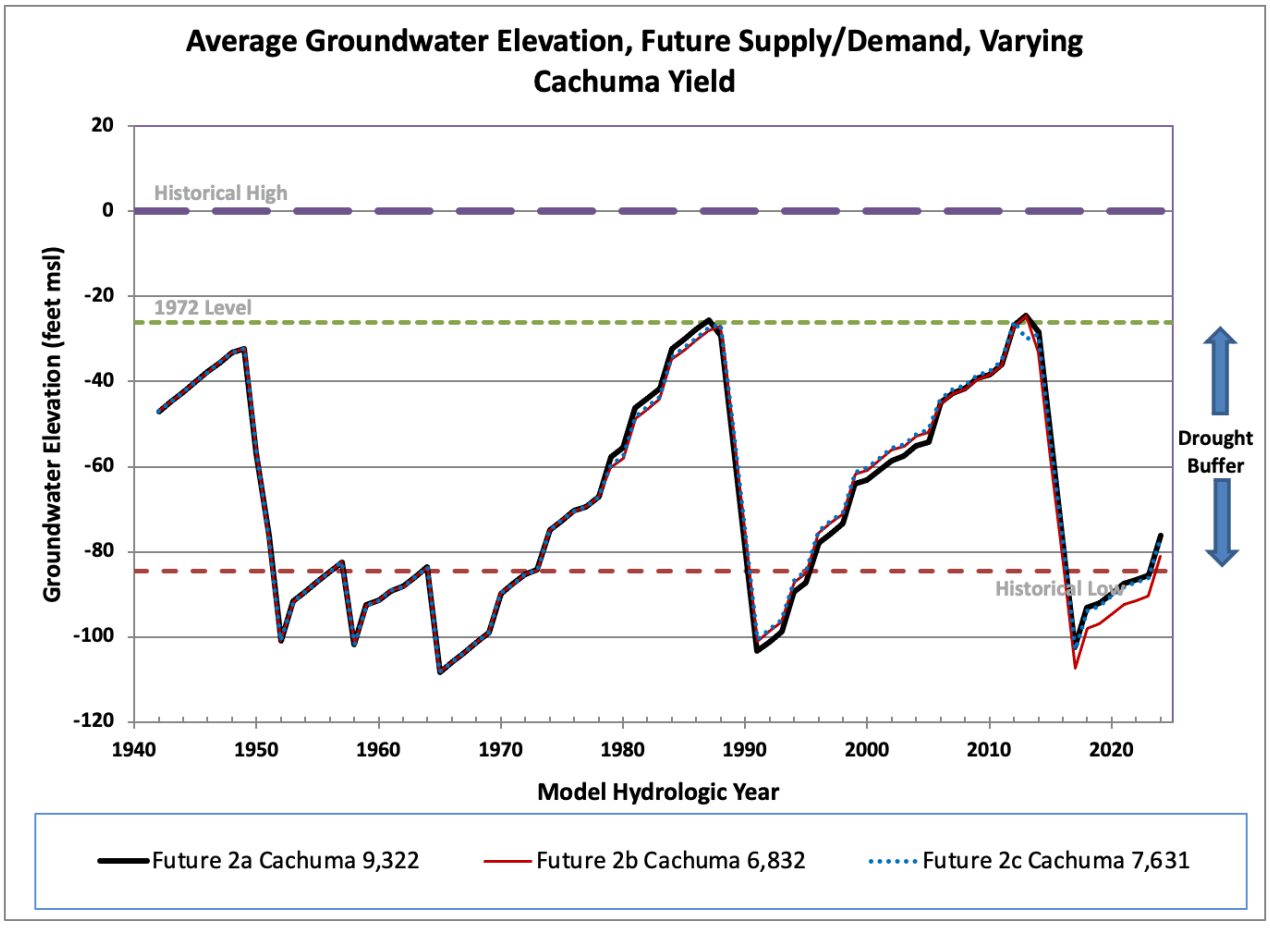


Figure 4-2. Groundwater Levels for Future Supply/Demand Scenarios with Various Cachuma Entitlements

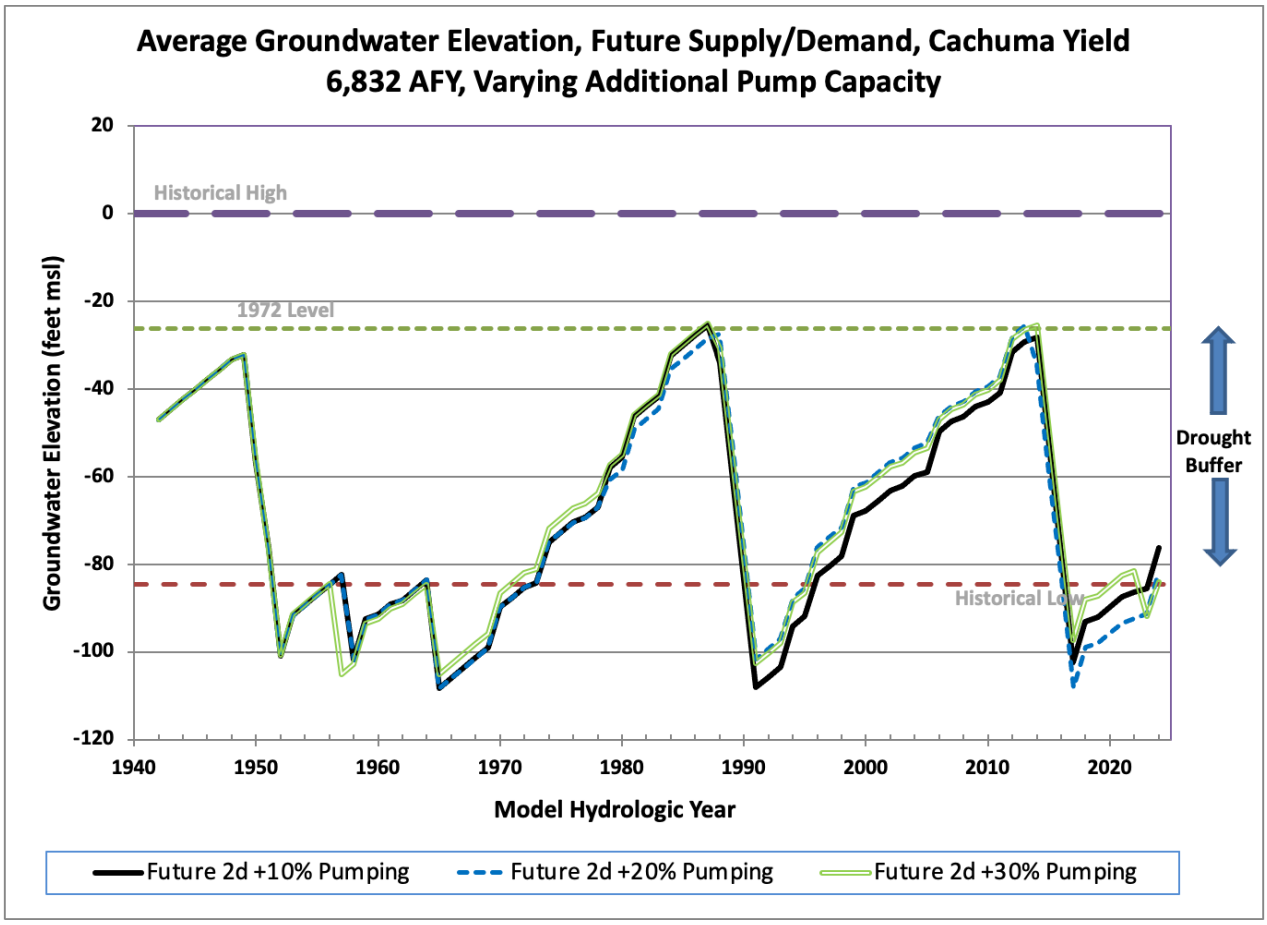


Figure 4-3. Groundwater Levels for Future Supply/Demand Scenarios, Cachuma Yield 6,832 AFY with Additional Pumping/Injection Capacity

4.3.4 Supplemental Water Use

As in the discussion of current supply/demand, supplement water use is evaluated because scenarios that utilize greater amounts of supplemental water may be less reliable than indicated on Figure 4-1 if supplemental water is not available when it is needed. The metric for evaluating supplemental water purchases is the average annual supplement water purchase during the 82-year simulation period. For the future supply/demand scenarios, supplemental water was considered the purchase of drought supplies—supplies that are interruptible because contracts are generally for a short period of time. Table 4-5 shows the simulated average annual supplemental water purchases.

Table 4-5. Annual Supplemental Water Purchases for Future Supply/Demand Scenarios

Future Demand Scenarios	Average Supplemental SWP Allocation Purchase (AFY)	Average Purchase Local Water (AFY)
Scenario 2a No Reduction Cachuma Entitlement	188	188
Scenario 2b Cachuma reduced to 6,832 AFY	656	515
Scenario 2c Cachuma reduced to 7,631 AFY	529	280
Scenario 2d Cachuma reduced to 6,832 AFY, +10% Pumping Capacity	573	515
Scenario 2d Cachuma reduced to 6,832 AFY, +20% Pumping Capacity	519	515
Scenario 2d Cachuma reduced to 6,832 AFY, +30% Pumping Capacity	523	456

Notes

AFY = acre-feet per year SWP = State Water Project

Predicted supplemental water purchases are somewhat higher in the Future Supply/Demand scenarios than for Current scenarios. The biggest effect on purchases of Supplemental Water is Cachuma entitlement—if entitlement is lower, more Supplemental Water must be purchased.

4.3.5 Energy Use

Energy use per acre-foot of water production varies considerably among GWD's sources of water (Figure 3-5). As with the supply strategies for current demand, the strategies for future demand also place greater emphasis on more energy-efficient sources such as Cachuma water. Future demand scenarios also reserve groundwater for use during droughts, and State Water is used to help meet demand when other sources are insufficient.

4.3.6 Recommended Supply Strategies for Future Demand

For future supply/demand with an unchanged Cachuma entitlement, the results of the WSMP Model suggest that additional conservation would be required in 2 percent of years, with the additional conservation required at 35 percent. Thus, current supply strategies (including the purchase of supplemental State Water and/or local water at times) appear to be sufficient for projected 2040 demand. This was not the conclusion of the 2017 WSMP (GWD, 2017), which recommended additional supplies. The reason for this difference is the subsequent decrease in customer demand, which has decreased the projections for future demand. It should be noted that if customer demand increases beyond current projections, the conclusions of this WSMP Update will need to be revisited.

If there are future reductions in Cachuma entitlements to 7,631 or 6,832 AFY, for instance, the percentage of years where additional conservation would be required is 17 percent, with the maximum conservation required in any year of 40 to 42 percent. This conservation is less than what was required by GWD in previous drought years. If GWD would want to mitigate this required conservation, additional pumping/injection capacity was investigated as an option. However, as discussed earlier in this section, additional pumping capacity could draw down basin groundwater elevations rapidly in long drought periods,

so the pumping amounts would have to decrease below capacity if future droughts persist beyond a few years. Thus, this added capacity is recommended if additional pumping is used sparingly in critical drought years and not continuously over several sequential drought years. Adding injection capacity could be important in the future particularly if recycled water becomes an additional source for injection recharge.

5 Summary of Key Findings and Conclusions

5.1 Current Supply/Demand

Under current supply/demand conditions, this work has led to the following principal findings and conclusions:

- GWD's full supplies (Cachuma Project Entitlement, SWP Table A entitlement, groundwater right and recycled water) can yield approximately 17,000 AFY with current infrastructure and entitlements, compared to current demand for water, which ranges from approximately 11,000 to 11,900 AFY. With the exception of recycled water, GWD's normal supplies are each subject to reductions, particularly during droughts.
- The WSMP Model suggests that supplies during average hydrologic years are approximately 11,000 AFY (Table 5-1).
- The lowest single-year supply in the WSMP Model is 8,816 AFY. This occurred because groundwater elevations were below the historical low level and no groundwater could be pumped. Should a drought that is more severe than simulated occur, water supplies would be further constrained, thereby increasing the volume of supplement water and/or demand reduction needed.
- Demand reduction and/or supplemental water purchases are indicated primarily during drought periods. Current supplies combined with relatively minor supplemental water purchases were capable of meeting current demand except in one year in the 82 years of the WSMP Model. In that year, 20 percent conservation would be required. Supplemental purchases are indicated primarily during the driest periods, with an average of 7 AFY over the 82-year simulation period.
- The optimal water supply strategy for meeting current demand involves: (1) using Cachuma Project water first to meet potable/raw water demand except as noted below; (2) injection of SWP supplies into the Goleta Groundwater Basin when feasible and allowed by the District's injection permit; and (3) optimization of groundwater and SWP supplies when Cachuma Project allocations are less than 50 percent such that groundwater is used earlier in the water year to ensure that Cachuma Project water is available to meet peak demand later in the year (Scenario 1c with a 50 percent Cachuma Trigger). This strategy provides very high reliability at a low cost and maintains appropriate groundwater elevations in the basin under all climatic conditions. There is only a single year in the 82 years of the WSMP Model where a demand reduction is required with the recommended water supply strategy.
- The storage of unused State Water in San Luis Reservoir is an important component in GWD's water supply reliability. Alternative banks in addition to GWD injection in the Goleta basin should also be examined individually, recognizing that some of the existing groundwater banks are relatively expensive and have storage/delivery restrictions.
- Injection of SWP water into the Goleta Groundwater Basin is important for the maintenance of groundwater levels. This helps decrease operations and maintenance costs (because of decreased electrical cost for less pumping lift), decrease the frequency of well rehabilitation, decrease the probability of groundwater quality degradation and decrease the risk of land subsidence.
- Increasing groundwater pumping capacity raises fixed costs and is largely unnecessary at current demand levels.

5.2 Future Supply/Demand

Under future supply/demand conditions, this work has led to the following principal findings and conclusions:

- GWD's full supply portfolio (Cachuma Project Entitlement, SWP Table A entitlement, groundwater right and recycled water) is sufficient in 2040 to supply all but 2 percent of future years (2 out of the 82 years of the WSMP Model) with water to meet demand. WSMP modeling suggests that required conservation in those shortfall years does not exceed 35 percent of total demand. Supplemental water was included in the model as a necessary supply in some years. The 4,500 AFY GWD share of the Coastal Aqueduct's capacity is commonly a limiting factor in how much supplemental can be imported in any year. Average year supplies from the future modeling are approximately 12,771 AFY with current infrastructure and entitlements, compared to future average-year demand of approximately 12,771 (Table 5-2). Of the average supply of 12,771 AF, 456 AFY would be from supplemental water and supply augmentation projects.
- During the worst drought years for supplies within the 82-year modeling period, supplies totaled just over 13,750 AFY, compared to dry-year future demand of 13,750 AFY. In particular, during the single worst drought year for supplies within the 82-year modeling period, supplies totaled just over 8,900 AFY. Compared to dry-year future demand of 13,750 AFY, the single worst drought year results in a shortfall of approximately 35 percent of demand during that year. This compares to the peak conservation by GWD customers of 55 percent during 1991.
- Any potential future reductions in Cachuma entitlement would reduce supplies and create tighter supplies. For comparison, if the entitlement was reduced from 9,322 to 7,631 AFY, the worst shortfall of supplies would increase to 35 to 40 percent. The purchase of supplemental water/augmentation projects would increase from 386 to 809 AFY. If the potential future Cachuma entitlement was 6,832 AFY, the purchase of additional supplemental water/augmentation projects would increase to over 1,000 AFY.
- The optimal water supply strategy for meeting future demand involves: (1) using Cachuma Project water first to meet potable/raw water demand except as noted below; (2) injection of SWP into the Goleta Groundwater Basin when available; and (3) optimization of groundwater and SWP supplies when Cachuma Project allocations are less than 50 percent such that groundwater is used earlier in the water year to ensure that Cachuma Project water is available to meet peak demand later in the year (Scenario Future 3 with a 50 percent Cachuma Trigger). This strategy provides reliability at the lowest cost and maintains groundwater elevations.
- An increase in pumping capacity/treatment surprisingly does not provide a benefit at future demand levels, even if Cachuma entitlement is reduced. The increased pumping capacity draws down groundwater elevations rapidly during dry periods, reaching the historical low; when this happens, groundwater pumping must cease, leaving a shortage of supplies. Increasing injection capacity could be beneficial if new sources of injection water become available such as indirect potable reuse of recycled water.
- The need for additional water sources in the future depends upon GWD's tolerance for temporary increased conservation by customers. With no future reduction in Cachuma entitlement, that conservation is required in 2 percent of years (2 years out of the 82 years of the WSMP Model), with approximately 35 percent conservation required in those years. If Cachuma entitlement was reduced in the future, then conservation would be required 17 percent of the time. This conservation could reach 40 to 42 percent of total demand in 1 to 2 percent of the years. Purchases of supplemental imported water were already included in the WSMP modeling, although the quantity is limited by pipeline capacity. Local purchases of Cachuma Member Unit water may mitigate this limitation. Additional local water

sources would help reduce the periodic required conservation. These additional supplies might include injection using alternative water supply sources and future supply augmentation projects during non-drought periods. These conclusions are based on the reduced customer demand experienced by GWD over the past decade or so. If demand was to increase beyond current projections, additional periodic conservation would be required.

Table 5-1. Current Conditions Average Water Supply

Current Conditions	Average Year Supply (AFY)	Single Dry Year (AFY)	Multiple Dry Years (AFY)
Required Production	**11,033**	**11,879**	**11,879**
Supply Sources			
Cachuma Potable and GWC	9,062	3,542	3,542
State Water	416	442	442
Groundwater	781	7,028	7,028
Recycled Water	774	867	867
Supplemental SWP Allocation	0	0	0
Total Supply	**11,033**	**11,879**	**11,879**
Total Surplus (Deficit)	***0***	***0***	***0***

Notes

Supplies are based on the optimal water supply strategy model run. Average year supply is the mean of all "average" years determined from historical Goleta rainfall. The single dry year was 2014 and the multiple dry years were 2014–2016. These results are from the WSMP Model. They are not identical to the actual data from those years because Cachuma and State Water supplies for those and preceding years come from the RiverWare and SWP Delivery Capability Report 2021 modeling results.

AFY = acre-feet per year GWC = Goleta West Conduit SWP = State Water Project

Table 5-2. 2040 Conditions Average Water Supply

2040 Conditions	Average Year Supply (AFY)	Single Dry Year (AFY)	Multiple Dry Years (AFY)
2040 Required Production	**12,771**	**13,750**	**13,750**
Supply Sources			
Cachuma Potable and GWC	9,456	3,542	3,542
State Water	1,765	2,149	2,262
Groundwater	322	7,016	7,016
Recycled Water	772	865	865
Supplemental SWP Allocation and Future Supply Augmentation Projects	456	178	65
Total Supply	**12,771**	**13,750**	**13,750**
Total Surplus (Deficit)	***0***	***0***	***0***

Notes

Supplies are based on the optimal water supply strategy model run with indirect potable re-use and increased well capacity. The single dry year hydrology was 2014 and the multiple dry year hydrology was 2014–2016. These results are from the WSMP Model.

AFY = acre-feet per year GWC = Goleta West Conduit SWP = State Water Project

6 Recommendations

The recommendations developed from this WSMP Update are divided into segments based on the potential timing of implementation and type of recommendation.

6.1 Immediate Actions

- Continue to use the water supply strategy as detailed further in Section 7. This strategy includes (1) using groundwater and State Water in a manner that balances drought storage against supply costs and optimizes GWD's groundwater well capacity during drought periods and (2) injection of SWP into the Goleta Groundwater Basin when groundwater levels are below 1972 levels, CCWA pipeline capacity is not exceeded and demand has been met.
- Use the findings in this WSMP as input to appropriate portions of the upcoming UWMP and in any assessments of GWD's water supplies.

6.2 Ongoing Actions

- Continue to fund the semi-annual collection of groundwater elevation data so that average groundwater elevations in the basin can be calculated to assist in determining water supply priorities.
- Calculate average spring groundwater elevations each year using wells designated in the Groundwater Management Plan (GWD, 2023). Plot this average on the Index wells chart to determine where current groundwater conditions are relative to 1972 and historical low groundwater elevations.
- Continue to maintain the District's wells. Each well should be operated periodically to maintain the operational readiness of all mechanical equipment. The District should continue tracking the specific capacity of each well and perform well rehabilitation when a notable decline in specific capacity occurs. Wells should be replaced, as needed, to maintain current production and injection capacities.

6.3 Planning Actions

- CCWA pipeline capacity was identified as a key constraint in maximizing the effectiveness of supplemental imported water purchases to address potential shortfalls in future supplies. It is recommended that GWD look for opportunities to increase GWD's portion of the pipeline capacity when available.
- The WSMP Model results suggest that additional local supplies may be needed to reduce both the frequency and magnitude of future supply shortfalls. Additional local supplies could potentially include the injection of fully advanced-treated recycled water into the Goleta Groundwater Basin, storm water capture and/or the purchase of local supplies from other water purveyors in the region.
- Update the WSMP to reflect changes in the Santa Ynez RiverWare Model, the SWP DCR projections and operation of Cachuma Reservoir. It is recommended that these updates be implemented every 5 years, or more often if the input information changes significantly.
- During updates to the WSMP, continue to analyze whether GWD's groundwater pumping capacity is adequate for drought protection. Because results from GWD's groundwater model are an integral part of this WSMP, any recalibration of the model should be reflected in WSMP updates.
- Modify the WSMP every 5 years, preferably in the year prior to the UWMP being prepared.

7 Management Plan

This section presents a recommended plan for managing current water supplies relative to current customer demand. As discussed in Section 3.7.6, the optimal water supply strategy for meeting current demand is the Hybrid Priority strategy with SWP injection (Scenario 1a). This management strategy involves several management actions:

1. SWP water is purchased when available to keep GWD's portion of CCWA's storage in San Luis Reservoir maximized. The model places a 2,000 AF limit on banked water.
2. Inject SWP into the Goleta Groundwater Basin when groundwater levels are below 1972 levels, CCWA pipeline capacity is not exceeded and demand has been met.
3. Optimization of groundwater and SWP supplies, particularly during periods when Cachuma Project allocations are reduced. Groundwater is used earlier in the water year when Cachuma Project allocations are reduced, thereby allowing Cachuma Project water to be available later in the year to meet peak demand. This optimization approach reduces the amount of more expensive SWP water used for peaking. The recommended Cachuma Trigger (Cachuma Project Allocation) is 50 percent because the modeling results suggest that this level provides high reliability at a low cost and does a good job of helping maintain groundwater levels.

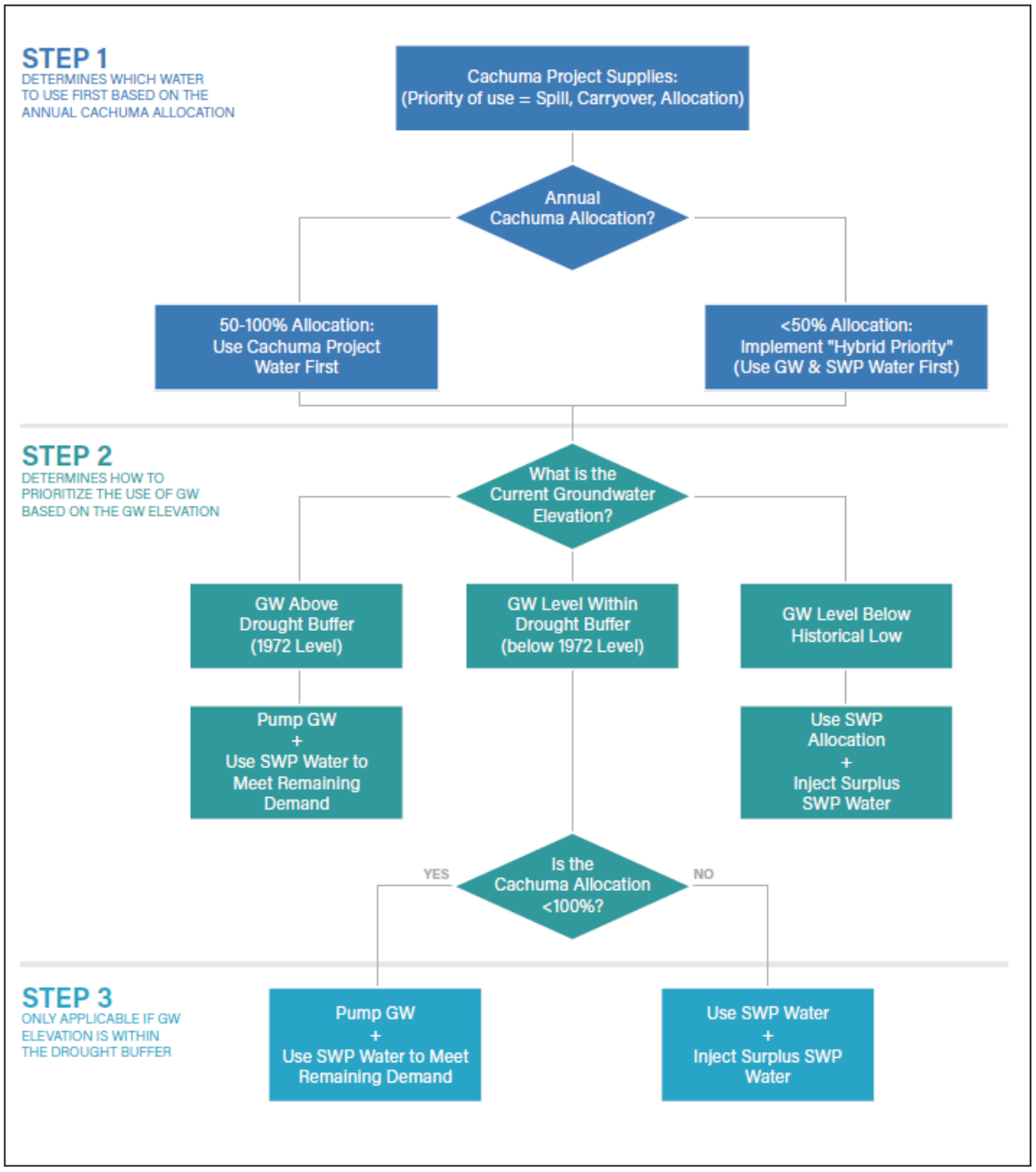
The recommended Hybrid Priority strategy with SWP injection is shown visually in the flowchart in Figure 7-1, and described below in priority order:

1. Recycled water is used to meet recycled water demand. Recycled water is not shown on the flowchart. The remaining steps are for raw/potable demand.
2. Cachuma water sources are used first until their entitlement is exhausted for the year, in the following order, consistent with the COMB rules: (1) spill water; (2) carryover water; and (3) annual Cachuma entitlement.
3. However, if there is a local drought such that Cachuma deliveries are reduced below 50 percent, then groundwater is pumped beginning early in the water year as a supplement to Cachuma water if groundwater levels are above the historically low level. This extends the availability of Cachuma water later into the water year so that less SWP water is needed to meet peak demand during higher-demand months. This approach also allows longer pumping of the limited-capacity groundwater wells.
4. Determine the average spring groundwater elevations from the Index Wells. Use the following logic sequence to ensure operations in accordance with the SAFE Ordinance:
    a. If groundwater elevations are higher than -26.2 ft msl (1972 groundwater elevation), pump groundwater at capacity. Then supplement with Cachuma and SWP water, as needed to fully meet demand.
    b. If groundwater elevations are lower than -84.6 ft msl (historically low elevation), use SWP water to help meet demand.
    c. If groundwater elevations are between -26.2 ft and -84.6 ft msl, use the following logic sequence:
        i. If Cachuma deliveries are at 100 percent, use Cachuma and SWP water to meet demand.
        ii. If Cachuma deliveries have been reduced, use groundwater first at its capacity, supplemented by Cachuma and SWP water to meet demand.

5. Utilize supplement water purchased from the SWPP and/or implement appropriate demand reduction measures set forth in the Drought Preparedness and Water Shortage Contingency Plan. It is noted that considerable lead time may be required to secure supplemental water and/or implement demand reduction measures.

Unused SWP Allocation is injected into the Goleta Groundwater Basin if groundwater levels are below -26.2 ft msl and as allowed by the District's injection permit. SWP Allocation remaining after injection is used to increase GWD's portion of its stored water in San Luis Reservoir up to a limit of 2,000 AF (not shown in Figure 7-1).

Figure 7-1. Hierarchy of Water Supply Use in the Recommended Hybrid Priority Strategy with SWP Injection



NOTES

All water supplies are used progressively down from the top of the diagram until they are depleted or until capacities are equaled.

Decision points where groundwater elevations or Cachuma deliveries need to be assessed. Groundwater elevations are the average Spring elevations in the Index Wells in the Goleta groundwater basin (GWD, 2016). Any remaining SWP increases GWD's portion of the CCWA storage in San Luis Reservoir up to 6,000 acre-feet (not shown). Supplemental SWP Allocation purchases should be pursued during droughts, as needed to address extraordinary supply shortfalls (not shown).

FIGURE 7-1

Hierarchy of water supply use in the recommended Hybrid Priority strategy with SWP injection

Goleta Water Supply Management Plan

GSI Water Solutions, Inc.

Y:\0528_Goleta_WD\Source_Figures\011_Water_Supply_Mgmt_Plan

8 Limitations of the Water Supply Management Plan

This WSMP Update is based on knowledge of the water supply sources as they are now understood (including the projection to 2040 of State Water conditions). Several factors that could affect the conclusions in this study:

1. If there were an emergency within the State Water project such as failure of Delta levees or system dams, pumping plant explosion, risk to San Luis Reservoir as a result of potential seismic vulnerabilities, or damage to aqueducts from earthquakes or other disasters, deliveries could be reduced or curtailed for a period of time.
2. A local earthquake could disable the Tecolote Tunnel for a period of time, leaving groundwater pumping and recycled water as the remaining sources of water.
3. Reduced water availability associated with endangered species could further affect either State Water or Cachuma deliveries.
4. A contaminant release or new or stricter drinking water standards could reduce the ability to pump a portion of the groundwater basin.
5. Climate change is likely to produce future conditions that are dramatically different than past conditions.
6. Regional decisions regarding CCWA pipeline capacity or COMB water delivery operations could affect delivery reliability and GWD costs.
7. Continuing study of stormwater catchment and other local sources could lead to strategy modifications.

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APPENDIX A

Model Results

Scenario Results

Current Demand							
	Current #1a (GW Priority)	**Current #1b (State Priority)**	**Current #1c (Hybrid Priority)**				
Cachuma Trigger	**50%**	**50%**	**30%**	**50%**	**70%**	**90%**	**100%**
% of Years Addtl Conservation	1%	12%	1%	1%	1%	2%	5%
% of Years Addtl Conservation >20%	1%	0%	1%	1%	1%	1%	2%
Maximum Year Addtl Conservation	20%	9%	20%	20%	20%	20%	20%
Cachuma Deliveries (AFY)	8,641	8,656	8,641	8,641	8,641	8,532	8,448
Avg Groundwater Pumped (AFY)	1,382	614	944	1,382	1,382	1,428	1,403
Avg State Water (AFY)	385	1,055	797	385	385	443	483
Recycled Water (AFY)	799	799	799	799	799	799	799
Purchase of Drought Supplies (AFY)	7	66	34	7	7	0	18
Annual Cost	$ 19,965,066	$ 20,183,464	$ 20,094,853	$ 19,980,255	$ 19,980,255	$ 19,988,884	$ 20,023,599
Cost ($/AF)	$ 1,780	$ 1,804	$ 1,792	$ 1,782	$ 1,782	$ 1,784	$ 1,795

	Current #1d (Hybrid Add Well Capacity)		
Additional Well Capacity	**10%**	**20%**	**30%**
Cachuma Trigger	50%	50%	50%
% of Years Addtl Conservation	1%	2%	5%
% of Years Addtl Conservation >20%	1%	0%	2%
Maximum Year Addtl Conservation	20%	11%	25%
Cachuma Deliveries (AFY)	8,641	8,641	8,641
Avg Groundwater Pumped (AFY)	1,468	1,373	1,147
Avg State Water (AFY)	302	361	549
Recycled Water (AFY)	799	799	799
Purchase of Drought Supplies (AFY)	4	42	30
Annual Cost	$ 21,140,969	$ 22,396,119	$ 23,572,955
Cost ($/AF)	$ 1,885	$ 1,997	$ 2,111

Future Supply/Demand

	Future #2a (Hybrid)	Future #2b (Cachuma Yield 6,832)	Future #2c (Cachuma Yield 7,631)	Future #2d (Cachuma Yield 6,832)	Future #2d (Cachuma Yield 6,832)	Future #2d (Cachuma Yield 6,832)
Increase Pump Capac	0%	0%	0%	**10%**	**20%**	**30%**
Cachuma Trigger	**50%**	**50%**	**50%**	**50%**	**50%**	**50%**
% of Years Addtl Conservation	2%	17%	17%	17%	17%	18%
% of Years Addtl Conservation >20%	1%	2%	1%	2%	2%	4%
Maximum Year Addtl Conservation	35%	42%	40%	42%	42%	42%
Cachuma Deliveries (AFY)	8,970	6,873	7,563	6,873	6,873	6,873
Avg Groundwater Pumped (AFY)	986	954	965	1,065	1,184	1,227
Avg State Water (AFY)	1,802	2,882	2,660	2,853	2,789	2,732
Recycled Water (AFY)	797	797	797	797	797	797
Purchase of Drought Supplies (AFY)	188	656	529	573	519	523
Purchase Local Water (AFY)	188	515	280	515	515	456
Annual Cost	$ 20,907,213	$ 22,011,406	$ 21,759,697	$ 23,042,511	$ 24,118,390	$ 25,291,361
Cost ($/AF)	$ 1,617	$ 1,736	$ 1,701	$ 1,818	$ 1,902	$ 2,006

APPENDIX B

SAFE Water Supplies Ordinance

FULL TEXT OF MEASURE J94
GOLETA WATER DISTRICT

AN AMENDMENT TO THE SAFE WATER SUPPLIES ORDINANCE

THE PEOPLE OF THE GOLETA WATER DISTRICT, COUNTY OF SANTA BARBARA, STATE OF CALIFORNIA, DO ORDAIN AND ENACT THE FOLLOWING ORDINANCE WHICH SHALL BE AN AMENDMENT TO THE SAFE WATER SUPPLIES ORDINANCE:

RECITALS:
WHEREAS, the voters of the Goleta Water District ("District") enacted the SAFE Water Supplies Ordinance ("SAFE") in June 1991 authorizing the participation by the District in the State Water Project and providing for the bond financing to develop the Project Facilities necessary for delivery of that water to the District; and

WHEREAS, the District is now a member of the Central Coast Water Authority, the members of which are cooperating collectively to develop the Project Facilities which are now under construction; and

WHEREAS, SAFE provides for the creation of a Drought Buffer of water stored in the Goleta groundwater basin to protect against future drought emergencies and a Water Supply Distribution Plan to protect the District's water supplies against new demands until deliveries from the State Water Project are available; and

WHEREAS, this proposed amendment to SAFE maintains all the provisions regarding the protection of water supplies provided by the Drought Buffer and the Water Supply Distribution Plan; and

WHEREAS, pursuant to provisions of the judgment in the lawsuit known as Wright v. Goleta Water District, the District is required to develop a Water Plan to provide the necessary water supplies to achieve a balance between supply and demand for water within the District. The District's Water Plan is based on continuing to use the maximum amount of water available from the Cachuma Project; prudent management of the Goleta groundwater basin; use of the newly constructed wastewater reclamation project to replace existing use of potable water for turf irrigation; a continuing water conservation planning effort; participation in the State Water Project; and the necessary level of commitment to a desalinated seawater project. As a result of the long-term water supply deficit in the District, the District has been operating under a water connection moratorium for over twenty years. Once fully implemented the District's Water Plan should provide adequate supplies to meet long-term water demand in the District; and

WHEREAS, the forty year water service contract with the United States Bureau of Reclamation for delivery of water from the Cachuma Project will expire in May 1995. Negotiations are currently under way to renew that contract. The Bureau of Reclamation has required that the Cachuma Project be subjected to an environmental review process which is now being undertaken. It appears likely that the District's yield from the Cachuma Project after contract renewal will be less than the current yield as a result of the dedication of water for environmental enhancement purposes on the lower Santa Ynez River; and

WHEREAS, the Southern California Water Company is a Santa Barbara County water purveyor which currently holds rights to an entitlement to 3,000 acre feet per year of water from the State Water Project and has given notice of its intent to sell 2,500 acre feet of that entitlement. The Goleta Water District has identified itself as a potential purchaser of the entitlement. It is the intent of this Ordinance to authorize the acquisition and use of that entitlement; and

WHEREAS, the District estimates the annual cost of the Southern California Water Company entitlement to be $500 per acre foot of water delivered to the District. The entitlement acquisition is intended to reduce the long-term costs of water to the District and its customers in that alternative supplies that would be available, and necessary to meet the District's long-term demand would be more expensive than the water available from Southern California Water Company. The District's cost analysis of the acquisition is available at the District office.

NOW, THEREFORE, THE FOLLOWING ORDINANCE IS ENACTED INTO LAW:

1. The District is authorized to acquire an additional entitlement to the State Water Project in an amount of up to 2,500 acre feet per year, which is currently available from the Southern California Water Company. This entitlement will supplement the 4,500 acre feet per year authorized by the voters in originally adopting the SAFE Water Supplies Ordinance. This authorization shall provide for the payment of all costs of the acquisition and use of any additional entitlement acquired. Due to the controversy concerning the physical ability of the State Water Project to deliver its full contractual commitments, the District shall plan for the delivery of 3,800 acre feet per year of water as the amount of firm average long-term yield. The District's total State Water Project entitlement includes the basic entitlement of 4,500 acre feet per year, the District's share of the drought buffer held by the Central Coast Water Authority and the entitlement acquired pursuant to this authorization. Any excess water actually delivered over 3,800 acre feet per year shall be stored in the Goleta groundwater Central basin until the basin is replenished to its 1972 level, for use during drought conditions.

2. Enactment of this Ordinance shall comply with all applicable law, including the California Environmental Quality Act.

3. If adopted, this Ordinance shall be an amendment to the SAFE Water Supplies Ordinance adopted by the electorate in June, 1991, which amended and superseded the Responsible Water Policy Ordinance,

originally adopted by the electorate in 1973. Paragraph 1 of this Ordinance shall amend and fully supersede paragraph 6 of the SAFE Water Supplies Ordinance. All other provisions of the SAFE Ordinance shall remain in full force and effect. If adopted, this Ordinance may not be modified except pursuant to a vote of the electorate of the District.

4. This Ordinance shall be liberally construed and applied in order to fully promote its underlying purposes. If any word, sentence, paragraph or section of this Ordinance is determined to be unenforceable by a court of law, it is the intention of the District that the remainder of the Ordinance shall be enforced.

FULL TEXT OF MEASURE H91
GOLETA WATER DISTRICT
Ordinance 91-01
SAFE WATER SUPPLIES ORDINANCE

THE PEOPLE OF THE GOLETA WATER DISTRICT, COUNTY OF SANTA BARBARA, STATE OF CALIFORNIA, DO ORDAIN AND ENACT THE FOLLOWING ORDINANCE WHICH SHALL BE KNOWN AS THE *SAFE WATER SUPPLIES ORDINANCE*:

RECITALS:

Whereas, the Goleta Water District ("District") faces a significant shortage of water to meet current long-term water demands of its customers as determined by the State Department of Water Resources and the Santa Barbara County Flood Control and Water Conservation District in their 1985 Santa Barbara County Water Project Alternatives study; and

Whereas, a drought emergency was declared in Santa Barbara County in 1990 following four years of below normal precipitation within Santa Barbara County and, in the future, the District will continue to be subject to recurring drought cycles which will threaten the ability of the District to meet the health and safety needs of its customers unless new and diversified, long term water projects are developed; and

Whereas, the District relies exclusively on local water supplies to meet its current water demand, which supplies originate entirely within Santa Barbara County and which supplies are all subject to the same climatic conditions; and

Whereas, in the absence of a system limiting the District's authority to provide new and/or additional water service connections without first mandating groundwater storage of water in wet years for use in dry years (a "drought buffer program") District customers may face severe water shortage in the future; and

Whereas on October 1, 1990 the Board of Directors of the Goleta Water District adopted a Water Supply Management Plan which includes use of water supplies from both a desalting plant and the State of Water Project; and;

Whereas, the District is a party to an agreement with the Santa Barbara County Flood Control and Water Conservation District entitled "Water Supply Retention Agreement" dated December 11, 1984 which it executed on June 28, 1986 (the "WSRA") entitling the District to 4,500 acre feet per year from the State Water Project, and has executed amendments thereto; and

Whereas, the District is also a party to a "Contract for Preliminary Studies for Financial Feasibility, Preliminary Design and Environmental Review Under State Water Supply Contract" (the "Design and EIR Agreement") dated June 2, 1986 but did not identify itself as a proposed participant in the preliminary studies in response to the "Notice of Intent to Request Preliminary Studies" for the Coastal Branch and the Mission Hills Extension of the California Aqueduct given by the city of Santa Maria on or about May 24, 1986; and

Whereas, the WSRA and its amendments and the Design and EIR Agreement contain the ways and means to provide for a long term solution to the existing drought emergency and to the ongoing water shortage within the County of Santa Barbara; and

Whereas, the District has a duty to provide a permanent, reliable water supply to its residents.

NOW, THEREFORE, THE FOLLOWING ORDINANCE IS ENACTED INTO LAW:

I Drought Buffer

1. In each year, commencing in the first year the State Water Project makes deliveries to the District, the District shall, after providing service to its existing customers, commit at least 2,000 acre feet of its water supply (the "Annual Storage Contribution") to the Goleta Central Basin either by direct injection or by reduction in groundwater pumping. The water so stored in the Central Basin shall constitute the District's "Drought Buffer".

2. The Drought Buffer may be pumped and distributed by the District only to existing customers and only in the event that a drought on the South Coast causes a reduction in the District's annual deliveries from Lake Cachuma. The Drought Buffer cannot, under any circumstances, be used by the District as a supplemental water supply to serve new or additional demands for water within the District.

3. Unless and until the Central Basin water level rises to 100% of its 1972 levels, the District shall be required to make its Annual Buffer Commitment. Thereafter, for so long as the District maintains the Central Basin at or above 1972 levels, the District may utilize the yield of the Central Basin to lower the cost of water service to existing customers.

II Water Supply Distribution Plan

4. The District shall be forbidden from providing new or additional potable water service connections to any property not previously served by the District until all of the following conditions are met:

a. District is receiving 100% of its deliveries normally allowed from the Cachuma Project;

b. The District has met its legal obligations required by the judgment in Wright v Goleta Water District;

c. Water rationing by the District is eliminated;

d. The District has met its obligation to make its Annual Storage Commitment to the Drought Buffer.

5. For each year in which the conditions of paragraph 4, have been met, the District shall be authorized to release 1% of its total potable water supply to new or additional service connections and if such new releases are authorized, the District shall permanently increase the size of the Annual Storage Commitment made to the Drought Buffer by 2/3 of the amount of any release for new or additional uses so that safe water supplies in times of drought shall not be endangered by any new or additional demands.

III State Water Supply

6. Due to controversy concerning the physical ability of the State Water Project to deliver its full contractual commitments, District shall plan for delivery of only 2,500 acre feet per year as the amount of the firm new yield from the State Water Project. Any excess water actually delivered shall be stored in the Goleta Groundwater basin for use in drought.

7. The District shall immediately either (a) give Notice of its Intention to Request Construction of

Described Project Facilities under the State Water Contract, as provided for in Section 5(a)(1) of the WSRA or (b) respond to any such notice previously given by any other Contractor as provided for in Section 5(a)(2) of the WSRA that it wishes to participate in the described project.

8. The Project Facilities to be constructed pursuant to the Notice of Intention shall be the Mission Hills and Santa Ynez Extensions of the Coastal Branch of the California Aqueduct and required water treatment facilities and other appurtenant facilities (herein the "Project Facilities").

9. The District agrees, pursuant to section Section 5(a)(2) of the WSRA, that the time for determination of participation and sizing of the Project Facilities may be any date on or after September 1, 1992 agreeable to the other participants.

10. The District shall, in the shortest time lawfully possible, exercise all of its rights and fulfill all of its obligations under the WSRA, including the payment of any monies required thereunder.

11. The District shall file a Late Request to Amend, pursuant to Secton 3(f) of the Design and EIR Agreement, and agrees to pay its proportionate share of all costs required by said Section 3(f) and any amounts required under Section 3(g) of said Design and EIR Agreement.

12. The District, or the Santa Barbara Water Purveyors Agency, or any other joint powers agency of which the District is a member or may become a member for such purposes, may issue revenue bonds ("bonds") from time to time in an amount not to exceed Forty-Two Million Dollars ($42,000,000.00) to provide funds to finance the District's pro rata share of the costs and expenses under the WSRA and the Design and EIR Agreement. Said bonds shall be used for the purposes of constructing the Project Facilities, including without limitation, any and all necessary facilities required for the delivery of State Project Water pursuant to the WSRA to the District through the Coastal Branch of the California Aqueduct, including any and all expenses incidental thereto or connected therewith, and shall include, without limitation, the cost of acquiring rights of way, the cost of constructing and/or acquiring all buildings, equipment and related personal and real property required to complete the Project Facilities, and the engineering, environmental review, inspection, legal and fiscal agent's fees, costs incurred by the District or joint powers agency in connection with the issuance and sale of such bonds, and reserve fund and bond interest estimated to accrue during the construction period and for a period of not to exceed twelve (12) months after completion of construction, such bonds to be payable from the District's water revenues, to bear interest at a rate or rates not to exceed the legal maximum from time to time, and to mature in not more than forty (40) years from the date of issuance.

13. This Ordinance shall be submitted to a vote of the people of the District in compliance with the requirements of Section 5(a)(4)(1) of the WSRA and pursuant to Elections Code Section 5201.

14. All actions taken pursuant to this Ordinance shall be in compliance with all local, state and federal environmental protection laws. Nothing in the Ordinance shall be construed to require such compliance prior to the election provided for herein.

15. This Ordinance shall be liberally construed and applied in order to fully promote its underlying purposes. If any word, sentence, paragraph or section of this Ordinance is determined to be unenforceable by a court law, it is the intention of the District that the remainder of the Ordinance shall be enforced.

16. If adopted, this ordinance shall be an amendment to the Responsible Water Policy Ordinance adopted by the people in May, 1973, and may not be modified except pursuant to the vote of the electorate of the District. To the extent that the provisions of this ordinance conflict with that ordinance or any prior ordinance or measure previously enacted by the District or the voters of the District, the provisions of this ordinance shall control. To the extent that the provisions of this Ordinance conflict with any other ordinance or measure adopted at the same election, the ordinance or measure receiving the highest number of affirmative votes shall control.

17. Nothing herein is intended to affect the rights of any parties nor the obligations of the District pursuant to the judgment in the action know as Wright v Goleta Water District, Santa Barbara Superior Court Case No. SM57969.

18. This ordinance shall take effect immediately upon being approved by a majority vote of the votes cast at the election.