# FINAL

# URBAN WATER MANAGEMENT PLAN

# GOLETA WATER DISTRICT

## December 20, 2005

**Goleta Water District**
**4699 Hollister Avenue**
**Goleta, California 93110**

*Prepared with the Assistance of:*

*URS Corporation*
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*Goleta, California 93117*

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Prepared for:

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# 1.0 INTRODUCTION

California Water Code §10620 requires urban water suppliers, providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet, to prepare an Urban Water Management Plan (UWMP) every five years in years ending in "5" and "0." The UWMP must be filed with the Department of Water Resources and with any city or county within which the supplier provides water supplies. The Goleta Water District (District) supplies approximately 15,000 acre-feet (AF) of water to 80,000 customers annually and is therefore subject to this requirement. The District prepared its first UWMP in 2001 for the year 2000. This UWMP represents an update of the earlier plan, and will be filed with the Department of Water Resources by December 31, 2005.

The UWMP represents a long-range planning document for water supply which can be used by cities and counties in the service area during environmental review of development projects and updates of their General Plans. The UWMP is also the foundation and source document for any Water Supply Assessments (pursuant to Senate Bill 221) and a Written Verification of Water Supply (pursuant to Senate Bill 610) prepared by the District in response to requests by Santa Barbara County and/or the City of Goleta for land development projects in the District's service area.

The District issued a Draft UWMP for public review on November 12, 2005. Several letters of comment were received during the comment period, which were considered by the District when preparing the Final UWMP.

# 2.0 DESCRIPTION OF SERVICE AREA

The District is a County Water District operating pursuant to the provisions of California Water Code, §§ 30,000, et seq. It was formed in 1944 to take advantage of the water supply to be developed by the Federal Cachuma Project on the Santa Ynez River. The District initially relied on local groundwater until the Cachuma Project began making deliveries in 1955. Since that time, the Cachuma Project has been, and continues to be, the District's primary water supply source. As more fully described below, the District also delivers water from the State Water Project, recycled water, and groundwater.

The District is located in the South Coastal portion of Santa Barbara County with its western border adjacent to the El Capitan State Park, its northern border along the foothills of the Santa Ynez mountains and the Los Padres National Forest, the City of Santa Barbara to the east, and the Pacific Ocean to the south. The District's service area encompasses approximately 29,000 acres, and provides water service to approximately 80,000 customers. The District's boundaries are shown on Figure 1.

The District includes the City of Goleta, University of California, and Santa Barbara Airport (City of Santa Barbara property); the remainder of the District is located in the unincorporated County of Santa Barbara. La Cumbre Mutual Water Company and El Capitan Mutual Water Company are located within the District's service area; however, these private water companies have their own water supply, water distribution facilities, and customers.

## Climate

The service area has a Mediterranean coastal climate. Summers are mild and dry, and winters are cool with an annual average precipitation of approximately 18 inches. The area is subject to wide variations in annual precipitation. The area only received 5.6 inches of rain in 1990, the driest year during the 1987 to 1991 drought. The highest recorded rainfall occurred in 1983 when total rainfall in Goleta was 40.7 inches. A summary of precipitation, temperature, and evapotranspiration data for the District service area is presented in Table 1.

**TABLE 1**
**KEY WEATHER DATA FOR DISTRICT**

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ETo | 2.07 | 2.49 | 3.91 | 5.08 | 5.68 | 5.71 | 5.42 | 5.41 | 4.15 | 3.18 | 2.81 | 2.17 | 48.1 |
| Average Precipitation (in) | 3.41 | 3.44 | 2.85 | 1.07 | 0.21 | 0.04 | 0.03 | 0.06 | 0.27 | 0.42 | 1.72 | 2.39 | 15.91 |
| Average Temp. (F) | 51.9 | 53.8 | 55.2 | 57.5 | 59.7 | 62.5 | 65.4 | 66.3 | 65.5 | 61.9 | 56.8 | 52.6 | 59.1 |

Temperature and rainfall data from: National Weather Service – www.wrcc.dri.edu. Santa Barbara FAA Airport weather station No. 047905). Period of Record: 1941-2005. Evapotranspiration (ETo ) data from CIMIS website (http://wwwcimis.water.ca.gov/cimis).

The key climatic factors that affect the District's water supply management are the substantial year to year variation in precipitation and evapotranspiration. Variation in the former affects runoff conditions in the Santa Ynez River watershed, which directly affects the District's supply from the Cachuma Project. Variation in evapotranspiration can result in years with very high water use from landscaping, outdoor

residential uses, and agricultural irrigation. This variation in supply and demand is a key factor that is considered in the District's water supply management planning.

A topic of growing concern for water planners and managers is global warming and the potential impacts it could have on California's future water supplies. DWR's Draft California Water Plan Update 2005 contains an assessment of potential impacts. The Plan indicated that global warming could affect the State Water Project supply (which is one source of water for the District) by creating higher variability and extremes in hydrologic conditions that exceed the current SWP facility capabilities. There may be changes in Sierra snowpack patterns, hydrologic patterns, sea level, rainfall intensity and statewide water demand if global warming increases through time.

## Facilities

The District's water distribution system includes over 200 miles of pipelines ranging in size from two inches to 42 inches in diameter. The District's water supply from the Cachuma Project and the State Water Project is treated through the District's Corona Del Mar Water Treatment Plant. This plant provides coagulation and flocculation, filtration, and disinfection treatment and has a nominal treatment capacity of 24 million gallons per day. The District maintains eight reservoirs ranging in individual capacity from 0.3 million gallons to over 6 million gallons, with a total combined capacity of approximately 20.2 million gallons.

## Demographic Factors

The Goleta Water District was formed by a vote of the people within the District on December 17, 1944. The District was established as a legal entity to represent the Goleta Valley and to contract with the Santa Barbara County Water Agency and the Bureau of Reclamation to participate in the Cachuma Project. The Santa Barbara County Water Agency was formed in 1945 and soon thereafter contracted with the Bureau of Reclamation to develop the Cachuma Project, which included Bradbury Dam, Tecolote Tunnel, and the South Coast Conduit. The project was authorized by the Secretary of the Interior in 1948 and construction of the project began in 1950. The Cachuma Project began serving water to member agencies in 1956.

During the 1987 to 1992 drought, it became evident that Lake Cachuma would not be able to supply enough water in the event of a prolonged drought. In 1991, the District's customers voted to participate in the State Water Project (SWP). In 1968, the SWP built a canal known as the Coastal Branch Phase I to deliver water from the California Aqueduct to Kern County. The Central Coast Water Authority (CCWA) was formed in 1991 to construct, manage and operate the Santa Barbara County SWP facilities. The Coastal Branch Phase II was completed by DWR in 1997 with its terminus at Vandenberg Air Force Base. The CCWA built a pipeline extension from Vandenberg Air Force Base and various other treatment and distribution facilities to deliver water to Lake Cachuma. The CCWA facilities were completed in 1997.

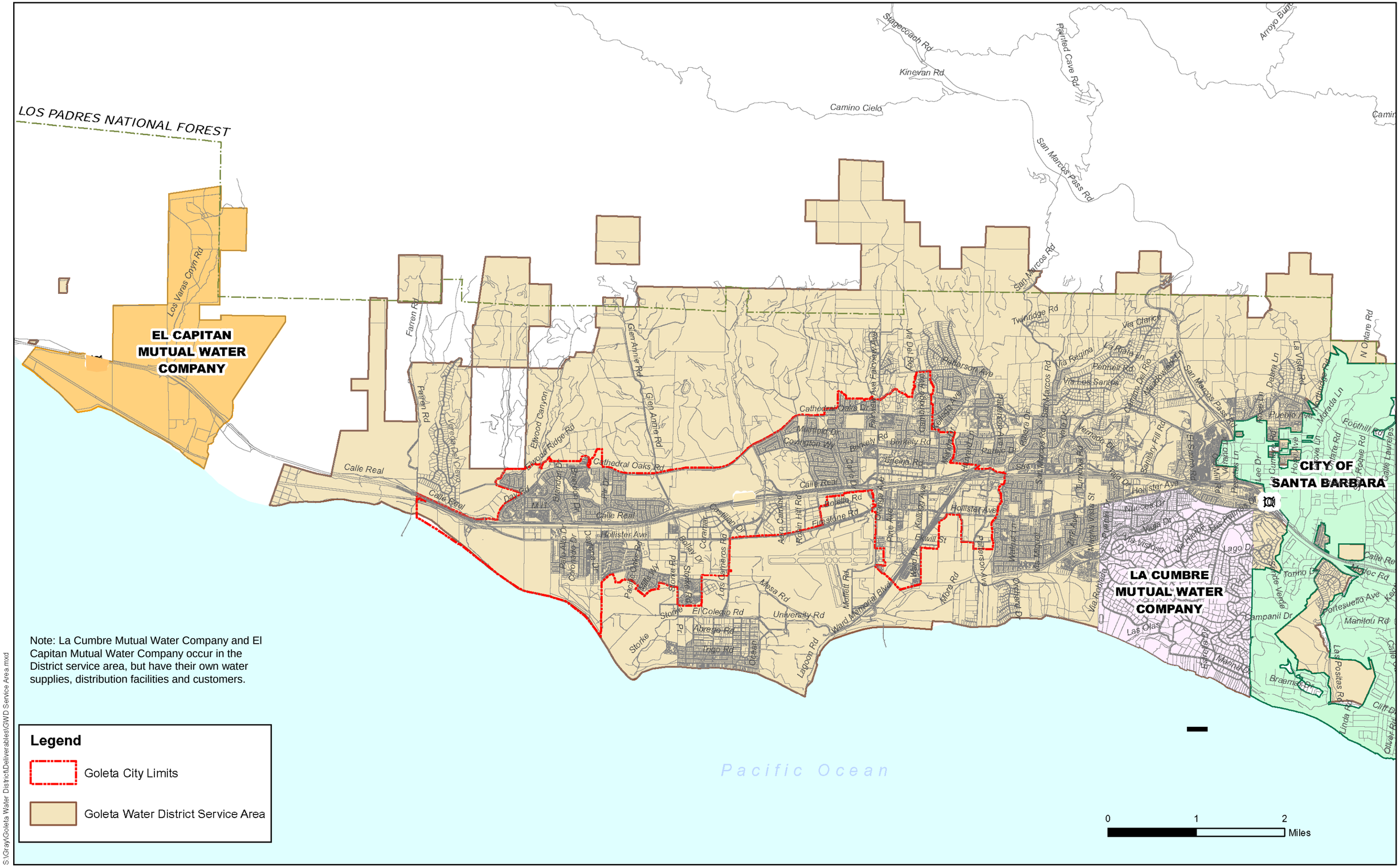



Figure 1. Goleta Water District Service Area

From 1990 to 2000, the population in the Goleta area has grown an average of 1.3% per year. The Santa Barbara County Association of Governments (SBCAG) projections indicate that the population in the Santa Barbara Unincorporated Census County Division will increase by 0.8 % per year from 2000 to 2030 (2002 Regional Growth Forecast). The projected population growth in the District service area based on the Regional Growth Forecast is presented in Table 2.

**TABLE 2**
**POPULATION PROJECTIONS IN THE DISTRICT**

| 2005 | 2010 | 2015 | 2020 | 2025 | 2030 |
|---|---|---|---|---|---|
| 80,000 | 83,200 | 86,538 | 89,989 | 93,588 | 97,332 |

* Data based on District's estimate of current resident population in the District service area, and a 0.8 % annual growth rate per SBCAG's 2002 Regional Growth Forecast.

The key demographic factors that the District must consider in current and future water supply management planning are changes in the District's population due to natural population growth and immigration/emigration, the development and adoption of the City of Goleta's General Plan and its effect on local population and economic growth rates; the development and adoption of the Isla Vista Master Plan; continued growth of the University of California student and faculty populations; possible re-zoning of agricultural and industrial/commercial parcels in the unincorporated area for affordable housing by Santa Barbara County; and recent increase in single family residential development. In addition, changes in agricultural crops, cultivation methods, and irrigation requirements in the District affects current and future water supply management planning.

# 3.0 WATER SOURCES

The District delivers water from the Cachuma Project, the State Water Project, groundwater from the Goleta North/Central Groundwater Basin, and recycled water. Each of the water supply sources are described below.

## 3.1 CACHUMA PROJECT

The majority of the District's water supply is from the Cachuma Project which the Federal Government through the Bureau of Reclamation constructed on the Santa Ynez River in the early 1950's. The District receives approximately 9,322 acre-feet per year (AFY) from the Cachuma Project. The Cachuma Project consists of Bradbury Dam, Tecolote Tunnel, South Coast Conduit, and various water conveyance facilities. The dam impounds water along the Santa Ynez River, approximately 45 miles from its outlet at the ocean. The reservoir had an original capacity of approximately 205,000 acre feet but has been reduced to approximately 190,000 acre feet as a result of siltation. This capacity amount does not include surcharge for the purposes of storage for fish releases (see below).

Water is diverted from Lake Cachuma to the South Coast through the Tecolote Tunnel, which extends approximately 6.4 miles through the Santa Ynez Mountains to the head works of the South Coast Conduit (SCC) at Glen Annie Reservoir. The SCC extends for a distance of approximately 24 miles along the South Coast from Goleta to Carpinteria, and includes four regulating reservoirs. The SCC delivers Cachuma Project raw water to the District at the Corona del Mar Treatment Plant where it is treated for domestic water use. A turnout at Glen Annie Reservoir supplies raw water that is chlorinated by District prior to delivery to agricultural customers in the Goleta West Zone, using the Goleta West Conduit.

Water is provided to the Cachuma Project Member Units for irrigation, domestic, and municipal and industrial water uses. The Member Units include the District, City of Santa Barbara, Montecito Water District, the Carpinteria Valley Water District, and the Santa Ynez River Water Conservation District Improvement District #1. The project is the principal water supply for Santa Barbara South Coast communities and portions of the Santa Ynez Valley. Since the drought of 1987-1991, the average annual deliveries from the Cachuma Project to the Member Units have been approximately 27,000 acre-feet per year (AFY). The amount of Cachuma Project water delivered to the Member Units varies from year to year, depending on winter runoff, lake storage, water demand, downstream releases for fish, and other water supply sources. The City of Santa Barbara and the District receive the largest quantity of water from the project.

The current total Cachuma Project operational yield is 25,714 AFY, based on a water shortage of up to 20% during dry years, and taking into account the requirements for downstream releases for fish, described below. The District's share of this yield is 36.25% or 9,322 AFY.

In 1997, the southern steelhead trout was listed as an endangered species, including the population along the lower Santa Ynez River. A Biological Opinion ("BO") was issued for Cachuma Project operations in September 2000. The BO concludes that operations of the Cachuma Project consistent with the BO would not jeopardize the continued existence of the southern steelhead. The BO includes mandatory terms and conditions that require the Bureau of Reclamation to implement reasonable and prudent measures to minimize take of the southern steelhead. The Cachuma Member Units, including the District, are implementing the requirements in the BO which include releases from Bradbury Dam to support fish

rearing and passage, various scientific studies, and several habitat improvement projects. The Cachuma Project Member Units surcharge (temporarily raise the water level) Cachuma Lake during spill years to store additional water to be use for releases from the dam for fish.

For several years, a water rights hearing regarding the Cachuma Project has been pending before the State Water Resources Control Board (State Board). The primary evidentiary hearings were held before the State Board in 2003 concerning whether the water rights permit for the Cachuma Project should be modified. A draft EIR was issued in the same year. The State Board is expected to complete a decision regarding the water rights permits and a final EIR in 2006. Historic water right disputes on the Santa Ynez River were resolved through a Settlement Agreement between the Cachuma Member Units and downstream Santa Ynez River water users during the course of the State Board hearings, and there are no water right disputes now pending. The two remaining key issues include the amount of water to be released to provide for this species downstream of the dam, and the need, if any, to provide passage through Cachuma Lake to the upstream watershed.

During spill years, the District and other Cachuma Project Member Units have the ability to take spill water from the Bureau of Reclamation, as available. The District has often taken spill water for direct use, for injection into the groundwater basin, or to defer groundwater pumping. The District does not include spill water in the estimate of the long-term water supply from the Cachuma Project (see Table 8 below) because spill water is not considered a reliable source for long-term water supply planning as it varies with climatic conditions and its availability is subject to factors such as District's ability to inject or use the spill water during the spill year.

## 3.2 STATE WATER PROJECT

In 1991, the residents in the District service area voted to purchase a project allotment of 4,500 AFY from the State Water Project (SWP). The SWP conveyance facilities to the Santa Ynez Valley and Cachuma Lake (where the SWP are conveyed through the Tecolote Tunnel) were completed in 1997 by the Central Coast Water Authority (CCWA). The CCWA is a California Joint Powers Agency formed by its nine public agency members, including the District. The CCWA was formed to construct the necessary facilities to deliver State Water Project water to its members, and now operates and maintains the facilities. All of the Cachuma Project Member Units are also members of CCWA. SWP water deliveries to Santa Barbara County, including the District, began in 1997. SWP water is commingled with Cachuma Project water and conveyed through the Tecolote Tunnel to the SCC where it is delivered to the Corona del Mar Water Treatment Plant.

The District receives SWP water through a Water Supply Agreement with the CCWA. The District's annual project allotment (also called "Table A Amount") is 4,500 AFY. Table A refers to the table in each SWP contract that lists the maximum amount of water an agency may request each year. The District also has a drought buffer amount of 450 AFY through CCWA. In 1994, the District customers voted to purchase an additional 2,500 AFY of SWP allotment to supplement the original allotment and the 450 AFY drought buffer. Hence, the District's total allotment is 7,450 AFY. Under the District's agreement with CCWA, the District's share of the SWP conveyance facilities that deliver SWP water to Cachuma Lake is only 4,500 AFY. The long-term average SWP delivery is about 77 percent due to shortages related to year to year variation in runoff in the Sacramento-San Joaquin Delta. Hence, the District's 7,450 AFY allotment significantly improves the reliability of the SWP to deliver the District's planned for 4,500 AFY supply.

## 3.3 RECYCLED WATER

In 1995, the District began making deliveries from a newly developed recycled water project developed in cooperation with the Goleta Sanitary District, a separate public agency. The recycled water project has a current treatment and distribution capacity of approximately 1,500 AFY. The District is currently delivering approximately 1,000 AFY to the University of California campus, several golf courses, and other irrigation users, most of whom were previously using District potable water for irrigation. The District anticipates that recycled water use will increase, particularly by the University of California, in future years. However, it is unlikely that recycled water production will increase over 1,500 AFY due to limits in the available market and the high cost of increasing treatment capacity.

## 3.4 GROUNDWATER

### 3.4.1 Overview

The District's right to produce groundwater from the local Goleta North/Central Basin has been adjudicated through a court judgment in 1989 entitled Wright et al v. Goleta Water District . The District has an adjudicated right to produce 2,350 AFY and any surplus water available. The Wright Judgment also provides the District with the right to defer producing its annual groundwater entitlement, and considers that water as the District's stored water for later use during dry years, droughts, and emergencies. The Wright Judgment also provides the District with the right to inject surface water supplies and claim that as the District's stored water, in addition to its annual entitlement. When the Cachuma Project spills, the District may receive "spill water" in addition to its annual entitlement without direct cost, and whenever Cachuma spills the District uses that water for injection. The spill in 2005 allowed the District to inject Cachuma Project water. At this time, the District does not anticipate the need to regularly produce groundwater for at least several years. Emergency and other operational situations could dictate producing groundwater on a short term basis. The District uses Cachuma Project water at the first priority source, and then State Water Project and recycled water; groundwater is only produced when necessary to meet demand when other sources are insufficient. The District now has rights to over 35,000 acre feet of stored groundwater in addition to its annual production.

### 3.4.2 Basin Description

The Goleta Groundwater Basin (GGWB) underlies the Goleta Coastal Plain (Figure 2). The basin is bounded on the north by bedrock of the Santa Ynez Mountains, and to the south by uplifted bedrock along the More Ranch Fault. Tertiary-age bedrock forms the western boundary. The eastern boundary consists of bedrock uplifted along the Modoc Fault. The basin is approximately 8 miles long and 3 miles wide. Basin groundwater rights were adjudicated in Wright Judgment. In the Judgment, the basin is subdivided into two subbasins: the North-Central Subbasin, and the West Subbasin. In much of the technical literature the basin is divided into three subbasins: the North, Central, and West subbasins. Because it retains some technical advantages, nomenclature used in this report follows the later nomenclature of three subbasins.

The GGWB is drained by the Cieneguitas, Atascadero, San Antonio, Maria Ygnacio, San Jose, Las Vegas, San Pedro, Carneros, and Tecolotito creeks. The lower reaches of these creeks are intermittent where they flow across permeable sediments of the North Subbasin. This is an active area of groundwater

recharge for the basin. Remaining creek flow runs off into the Pacific Ocean with relatively minor recharge of more fine-grained shallow sediments in the Central and West subbasins.

The majority of useable groundwater in storage in the GGWB is present within the Central Subbasin, which is about 4 miles long and 2 miles wide (Figure 2). The Central Subbasin is separated from the North Subbasin by a fault that appears to form a hydraulic impediment to groundwater flow. The boundary between the North and West subbasins is characterized by significant changes in water quality and hydraulic characteristics that may be related to an overall facies change and/or change in source rock material in underlying sediments.

### 3.4.3 Groundwater Occurrence

Water-bearing deposits of the GGWB consist of young alluvium of Quaternary and Holocene age, terrace deposits, older alluvium, and the Santa Barbara Formation of Pleistocene age (Figure 3). The Santa Barbara Formation is the primary water bearing unit, and is composed of sand, silt, and clay. The hydrostratigraphy of the Basin has been characterized during earlier District investigations, which resulted in identification of five principal hydrostratigraphic zones. Evidence of these zones is apparent in geologic and geophysical logs. From youngest to oldest, these zones are as follows (also see Figure 3):

- **Shallow Zone** – The shallow zones consists of unconsolidated alluvium ranging in thickness from 100 to 150 feet, being thickest in the southeast portion of the basin. Groundwater in the shallow zone is locally perched indicating vertical impedance to flow. The shallow zone is typically fine-grained and locally confines underlying units. This unit is not an important source of groundwater to wells.

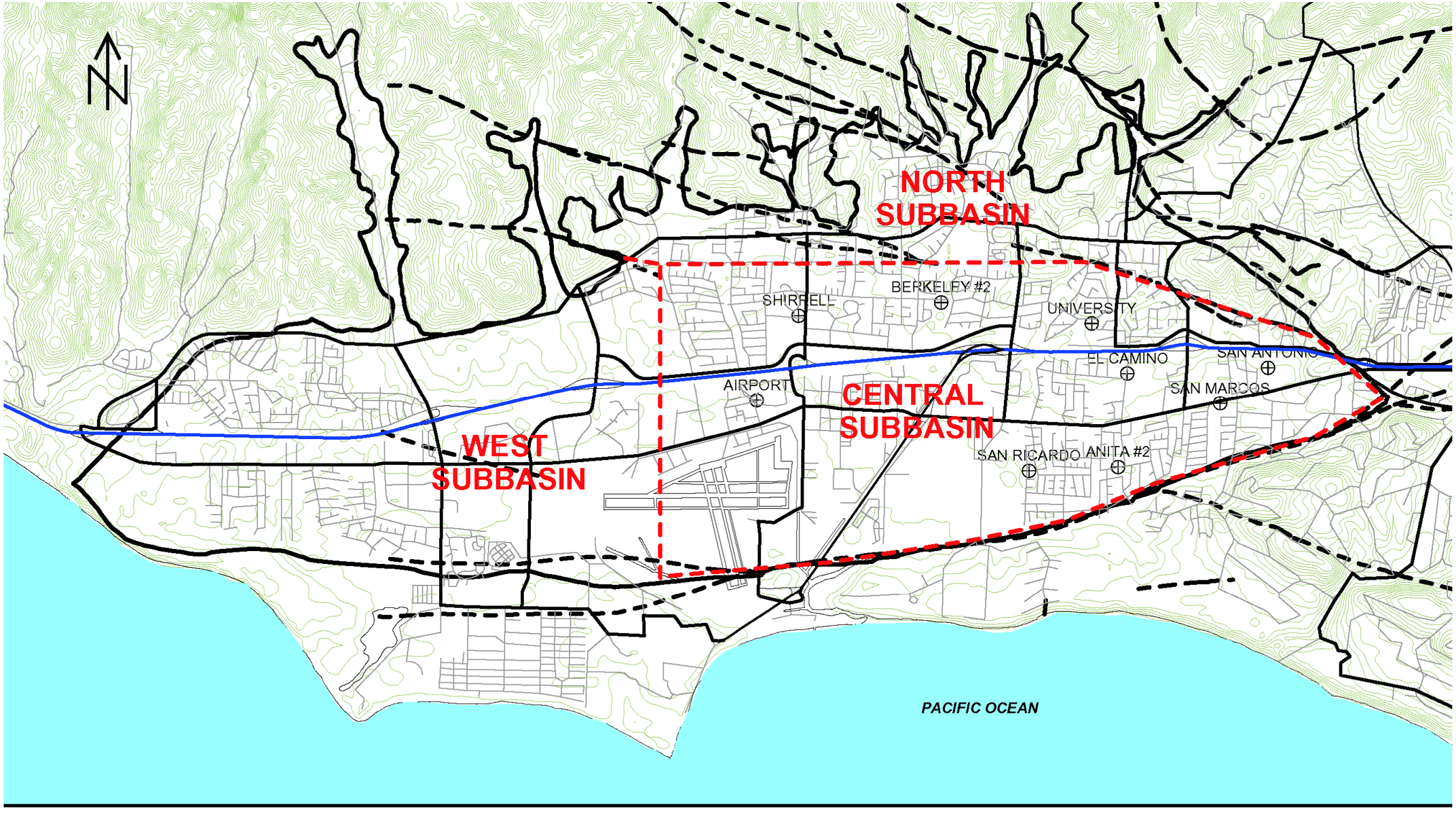
- **Upper Producing Zone** – The upper producing zone consists of alternating sequences of sands, silts, and sandy clays that attain a maximum thickness of 600 feet in the southern portion of the Central Subbasin. Private wells in the Central Subbasin are primarily screened in this zone.

- **Middle Zone** – The middle zone is an aquitard composed primarily of clay and clayey silt. This unit zone is typically about 200 to 250 feet thick.

- **Lower Producing Zone** – The lower producing zone is characterized by the presence of clean fine sands and silt. In the Central Subbasin it maintains a relatively constant thickness of about 200 feet. The electric log response of this zone is similar to that of the upper producing zone. Private wells tend not be completed in this zone. All major District wells are screened in this zone.

- **Deep Zone** – The deep zone, also known as the lower Santa Barbara Formation, is composed primarily of clay. Well logs indicate the zone may extend over 1,000 feet in thickness in the central subbasin. The deep zone is characterized by specific capacities of less than 1 gpm/ft and is not considered a significant source of water to wells.

Bedrock in the basin generally slopes from an elevation of about -200 feet mean sea level (msl) along the northern boundary of the basin to over -2,000 feet msl in the south central portion of the central Subbasin. The bedrock contact with the southern boundary is very abrupt, where it abuts the More Ranch Fault. District production wells are typically screened in the upper and lower producing zones and range in depth from 230 to 1,290 feet below ground surface (bgs).




Source: Dan Wendell, CH2M Hill

Figure 2. Goleta Groundwater Basin

B

B'

Shallow Zone

Upper Producing Zone

Middle Zone

Lower Producing Zone

Deep Zone

Elevation (feet msl)

600
400
200
0
-200
-400
-600
-800
-1,000
-1,200
-1,400
-1,600
-1,800
-2,000

0 2,000 4,000 6,000 8,000 10,000 12,000 14,000 16,000 18,000 20,000 22,000 24,000 26,000 28,000 30,000 32,000 34,000 36,000 38,000 40,000 42,000 44,000

Distance (feet)

State Well ID

Groundwater Elevation

Well Screen

Legend

| | | | | |
|---|---|---|---|---|
| GP | SP | ML | CL | Sea Shells |
| GW | SW | MH | CH | BR |
| GM | SM | FL | OH | |
| GC | SC | PT | OL | |

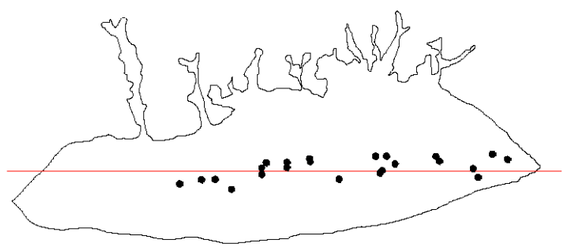


Figure 3. Cross Section of the Goleta Groundwater Basin

### 3.4.4 Water Levels

Hydrographs of wells in the Central Subbasin indicate that historically high water level periods were in the mid 1940s and early 1970s, and 2004. Historic low water levels during this period were in 1990. Water levels during this period were below sea level for much of the basin. Groundwater throughout the basin generally flows toward the Central Subbasin from the West and North subbasins due to a water level depression related to relatively high amounts of groundwater pumping. Water levels in the Central Subbasin are still below sea level over much of the area in 2004. The basin is protected from seawater intrusion by the presence of uplifted bedrock along the More Ranch Fault.

### 3.4.5 Storage

The storage capacity of a groundwater basin is calculated by estimating the total volume of drainable pore space between specified horizons. Drainable pore space ("specific yield") is typically on the order of 10 to 30 percent, with 10 to 20 percent being values that are commonly used. The USGS has calculated that specific yield in the shallow aquifers of the Central Valley of California (a highly studied area) is commonly about 10 percent. This is the same value that the US Geological Survey (USGS) used for unconfined aquifers for calibration of the numerical model of the Santa Barbara Groundwater Basin (USGS, 1986).

Storage capacity estimates are made using estimates of specific yield and the volume of alluvial sediments available for saturation and desaturation. When historical high and low water levels are used these calculations result in what is typically referred to as historical "working storage," "operational storage," or "useable storage." Using this approach, and based on the volumetric difference between 2004 and 1990 water levels and estimates of specific yield of 10 to 20 percent, results in an estimate of about 35,000 to 70,000 acre-feet (AF) between these years (Table 3). These storage values are in general agreement with findings of the Santa Barbara County Technical Advisory Committee (see District Staff Report on Technical Advisory Committee Analysis, Water Supply and Demand in the Goleta Area, May 1989). This committee consisted of technical staff from Santa Barbara County and Goleta area water purveyors and was established to assess water supply and demand issues in the Goleta Valley area. During this work, the District calculated that there was about 45,000 acre-feet of "working storage" in the Goleta Groundwater Basin in 1987. The County calculated a value of 34,000 acre-feet. The estimated amount of water the District has stored in the basin since the early 1990s (about 40,000 AF; see Table 4) is in line with the estimate of working storage for this same period (35,000 to 70,000 AFY; see Table 3).

About 30,000 to 60,000 AF of the operational storage is present in the North-Central subbasins. Citing a feasibility study by the Toups Corporation (1974), the Department of Water Resources estimates "useable" groundwater storage of about 40,000 to 60,000 AF between 1941 and 1964.

**TABLE 3**
**USEABLE STORAGE IN THE GOLETA GROUNDWATER BASIN (AF)**

| Subbasin | Specific Yield (acre-feet) | | |
|---|---|---|---|
| | 10% | 20% | 30% |
| North | 5,000 | 9,000 | 14,000 |
| Central | 24,000 | 48,000 | 73,000 |
| West | 7,000 | 15,000 | 22,000 |
| Total | 36,000 | 72,000 | 109,000 |

### 3.4.6 Groundwater Production

The District currently has nine major production wells, all of which are located in the Central Subbasin. The District first began pumping groundwater from the basin in 1963 when it pumped a total of about 250 AF of water from the Gilbert Well, its first well in the basin. District groundwater production first exceeded 1,000 AF in 1970 when it pumped about 1,200 AF from the Gilbert and Barquero wells. By 1974, the District had installed five new wells in the basin and ramped its groundwater production up to 3,700 AF. District pumpage peaked in 1985 when it produced slightly more than 6,000 AF of groundwater from the basin. District pumping declined sharply in 1991, and has been essentially zero since 1993. Since 1991, the District has met demand solely through use of surface water from the Cachuma reservoir, State Water Project water since 1997, and recycled water beginning in 1995.

### 3.4.7 Production Rights

The 1989 settlement of the Wright Judgment resulted in adjudication of production and storage rights for the GGWB. The Wright Judgment entitles the District to produce 2,350 AFY of groundwater (Table 4; see Appendix B). The Wright Judgment also allows the District to store water in the basin for future use. During years when the District's surface water supplies are adequate to meet demand, the District "banks" its entitlement water for future use. The District has injected surplus Cachuma spill water on numerous occasions. These actions have resulted in the District banking more than 12,000 AF of water in the basin since 2000 and over 35,000 AF of water stored in total (see Table 4). It is the District's opinion based on available information on the groundwater basin characteristics that the banked amount can be feasibly produced when needed.

**TABLE 4**
**ACCRUED DISTRICT GROUNDWATER PUMPING RIGHTS**
**FOR THE GOLETA GROUNDWATER BASIN (THROUGH 2004)**

| Right | Pumping Right (acre-feet) |
|---|---|
| Annual Pumpage Right | 2,350 |
| Deferred Pumpage (2,350 AFY for 1992-1999) | 18,800 |
| Injected Water (Cachuma spills 1992-1999) | 6,164 |
| Deferred Pumpage (2,350 AFY for 2000-2004) | 11,750 |
| Injected Water (Cachuma spills 2000-2004) | 715 |
| Total Accrued Right in 2005= | 39,779 |

### 3.4.8 District Wells

The District has nine major production wells, all of which are located in the Central Subbasin (see Table 5). Of these nine wells, three have already been rehabilitated and are operational (Airport, San Antonio, and San Marcos) and three others are currently undergoing rehabilitation (Anita, El Camino, and University). Production capacities of District wells has historically ranged from about 200 gallons per minute (gpm) to 750 gpm, with a combined total instantaneous pumping capacity of about 3,260 gpm (see Table 4; historical flow estimates from District staff). The District has estimated that the six rehabilitated wells will have capacities of about 200 to 900 gpm, with a combined total instantaneous pumping capacity of about 3,480 gpm (see Table 5). In the near future, the District plans to bring all its primary production wells on line. These have a total capacity of about 4,360 gpm (Table 5). Assuming each of these wells operates 50 percent of the time, the District will have a total production capacity of about

3,500 AFY. The total production capacity is about 5,600 AFY if the wells operate 80 percent of the time (Table 5).

**TABLE 5**
**PRODUCTION CAPACITIES OF DISTRICT WELLS**

| Well Name | Approximate Average Historic Capacity (gpm) | Estimated Current Maximum Capacity (gpm) | Estimated Future Maximum Capacity (gpm) | Depth to Lowermost Well Screen (ft bgs) |
|---|---|---|---|---|
| Airport | 750 | 900 | 900 | 440 |
| Anita #2 | 440 | 400[1] | 400 | 680 |
| Berkeley #2 | 180 | 0 | 300 | 285 |
| El Camino | 180 | 400[1] | 400 | 792 |
| San Antonio | 230 | 750 | 750 | 696 |
| San Marcos | 500 | 530 | 530 | 1,064 |
| San Ricardo | 340 | 0 | 400 | 1,270 |
| Shirrell | 180 | 0 | 180 | 220 |
| University | 460 | 500[1] | 500 | 450 |
| Total | 3,260 gpm | 3,480 gpm | 4,360 gpm | - |
| 50% of total | 2,600 AFY | 2,800 AFY | 3,500 AFY | - |
| 80% of total | 4,207 AFY | 4,500 AFY | 5,600 AFY | - |

[1]After Winter 2006 rehabilitation.

Since the early 1990s, the District has only operated its wells for periodic injection of Cachuma Lake spill water (Tables 6 and 7). However, the District recently rehabilitated its wells and well facilities and specially retro-fit some of these wells for use as dual-purpose injection-extraction wells (commonly referred to as "Aquifer Storage and Recovery" or "ASR" wells) in order to maximize injection capacity. This will work towards maximizing the conjunctive use potential of the basin and Cachuma Reservoir.

**TABLE 6**
**AMOUNT OF GROUNDWATER PUMPED FROM THE GOLETA GROUNDWATER BASIN BY THE DISTRICT (2000 TO 2004) – AF**

| Basin Name | 2000 | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|---|
| Goleta Groundwater Basin | 0 | 5 | 3 | 0 | 0 |
| | | | | | |
| % of Total Water Supply | 0 | < 1 | < 1 | 0 | 0 |

**TABLE 7**
**AMOUNT OF WATER RECHARGED TO THE GOLETA GROUNDWATER BASIN BY THE DISTRICT (2000 TO 2004) – AF**

| Basin Name | 2000 | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|---|
| Goleta Groundwater Basin | 47 | 668 | 0 | 0 | 0 |
| | | | | | |
| % of Total Water Supply | < 1 | 4 | 0 | 0 | 0 |

## 3.5 SUMMARY OF WATER SUPPLY

A summary of the District's water supply sources is provided in Table 8 for the period 2005 – 2030 under normal or average years. The District does not anticipate any change in these sources over the next 25 years that would substantially reduce the current supply amounts.

**TABLE 8**
**WATER SUPPLY SOURCES AND AMOUNTS AVAILABLE DURING NORMAL YEARS**

| Water Supply Sources | Estimate of Actual Deliveries Expected in 2005 | Long-term Water Supply Amount | Available Water Supply in Future Years (Actual Deliveries May be Less, Esp. in Early Years) | | | | |
|---|---|---|---|---|---|---|---|
| | | | 2010 | 2015 | 2020 | 2025 | 2030 |
| Cachuma Project | 12,200 | 9,322 | 9,322 | 9,322 | 9,322 | 9,322 | 9,322 |
| State Water Project[(a)] | 2,100 | 4,500 | 4,500 | 4,500 | 4,500 | 4,500 | 4,500 |
| Groundwater[(b)] | 0 | 2,350 | 2,350 | 2,350 | 2,350 | 2,350 | 2,350 |
| Recycled | 1,000 | 1,500 | 1,200 | 1,500 | 1,500 | 1,500 | 1,500 |
| Total= | 15,300 | 17,672 | 17,372 | 17,672 | 17,672 | 17,672 | 17,672 |

These are the District's projected water supplies during normal runoff years. The basis of the water supply projections is described in this section of the report. At this time, the District's supplies for the period 2005-2030 do not include short-term transfers or exchanges, desalination, or increased recycled water.

(a) The District has a total SWP allotment of 7,450 AFY, which includes 450 AFY of CCWA drought buffer. The District's current annual conveyance allowance with CCWA is only 4,500 AFY. The additional allotment increases the reliability of receiving up to 4,500 AFY.
(b) The District has the adjudicated right to produce up to 2,350 AFY as well as any banked groundwater. Hence, more than 2,350 AFY may be available if the District has stored surplus Cachuma Project or SWP water in the groundwater basin. To date, over 35,000 AF has been stored in the basin.

A summary of recent water production from these supply sources is presented in Table 9. Cachuma Project water deliveries have been higher than the District's entitlement due to the availability of surplus spill water. SWP water deliveries (which are less than the District's full allotment of 4.500 AFY) have been sufficient to meet current demand, in combination with the Cachuma Project water production. There has been no need to pump groundwater to meet current water demands.

**TABLE 9**
**WATER PRODUCTION FROM SUPPLY SOURCES DURING THE PAST FIVE YEARS**

| Calendar Year | State Water Project (AFY) | Cachuma Project (AFY) | Groundwater Production (AFY) | Recycled Water (AFY) | Total (AFY) |
|---|---|---|---|---|---|
| 2000 | 2,615 | 10,108 | 0 | 1,001 | 13,724 |
| 2001 | 2,019 | 10,504 | 5 | 815 | 13,343 |
| 2002 | 4,678 | 9,001 | 3 | 1,057 | 14,739 |
| 2003 | 2,425 | 10,232 | 0 | 945 | 13,602 |
| 2004 | 4,143 | 9,470 | 0 | 1,029 | 14,642 |

(a) Data is based on actual production, not deliveries or sales. Unaccounted for losses are not included in the above values.

## 3.6 WHOLESALE WATER SUPPLIER PROJECTIONS

Water Code Section 10631(k) states that the UWMP shall contain the following:

> *Urban water suppliers that rely upon a wholesale agency for a source of water, shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water -year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).*

The District has two "wholesale" water suppliers: Cachuma Project (Bureau of Reclamation) and SWP (CCWA). The District's estimate of its future water demands from these suppliers is provided in Table 10.

**TABLE 10**
**PROJECTIONS OF THE DISTRICT'S FUTURE WATER DEMANDS FROM WHOLESALE SUPPLIERS (AFY)**

| Wholesaler Source | 2010 | 2015 | 2020 | 2025 | 2030 |
|---|---|---|---|---|---|
| Cachuma Project (Bureau of Reclamation) | 9,322 | 9,322 | 9,322 | 9,322 | 9,322 |
| State Water Project (CCWA) | 4,500 | 4,500 | 4,500 | 4,500 | 4,500 |

The District's understanding of the future available water from these suppliers, based on information provided to the District, is summarized in Table 11.

**TABLE 11**
**PROJECTED FUTURE AVAILABLE WATER FROM THE DISTRICT'S WHOLESALE SUPPLIERS (AFY)**

| Wholesaler Source | Current Supplies | Projected Supplies | | | | |
|---|---|---|---|---|---|---|
| | | 2010 | 2015 | 2020 | 2025 | 2030 |
| Cachuma Project (Bureau of Reclamation) | 9,322 | 9,322 | 9,322 | 9,322 | 9,322 | 9,322 |
| State Water Project (CCWA) (based on 77% average annual delivery, May 2005 DWR Working Draft Reliability Study) | 4,500 | 4,500 | 4,500 | 4,500 | 4,500 | 4,500 |

The District's understanding of the average annual reliability of water from its wholesale suppliers during single and multiple dry years, based on information provided to the District, is presented in Table 12.

The Department of Water Resources (DWR) is preparing an update to the SWP Delivery Reliability Report issued in 2003. Portions of the 2005 Delivery Reliability Report are available in draft form. DWR has been asked to develop estimates of SWP delivery reliability with the increased Delta export limit (8,500 cfs) proposed in the South Delta Improvement Program (SDIP). The environmental and public review required by CEQA and NEPA has not been completed for the SDIP. It is possible the proposed export operation will be modified in response to this review.

The excerpts from Working Draft of 2005 State Water Project Delivery Reliability Report indicate that in a single dry year deliveries could be as low as 4%, and in a 6-year drought deliveries could be 36%. CCWA has determined that for Santa Barbara SWP participants, using existing supplies, that the single dry year deliveries would range between 17 to 19% for the single dry year, and between 37 - 40% for the multiple dry year scenario. Using planned supplies, the figures are 19 - 40% for the single dry year, and 40 – 87% for the multiple dry year scenario.

Until the internal working drafts are finalized, all CEQA/NEPA work is completed, and DWR is ready to publish the 2005 Reliability Report in final format, the District is using previously published data indicating that single dry year deliveries will be 20%, and in a 6-year drought deliveries would range between 23 - 70% as actually experienced in the 1987-1992 drought (Table 12).

**TABLE 12**
**RELIABILITY OF THE**
**DISTRICT'S WHOLESALE SUPPLIERS (% OF NORMAL YEAR SUPPLIES)**

| Wholesaler Source | Single Dry Year | Multiple Dry Years | | | | | |
|---|---|---|---|---|---|---|---|
| | | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| Cachuma Project (Bureau of Reclamation) – worst case six-year drought 1946-1951 | 74% | 100% | 100% | 100% | 74% | 74% | 74% |
| State Water Project (CCWA) – worst case six-year drought, 1987-1992 | 20% | 70% | 23% | 70% | 27% | 24% | 29% |

Should the 4% figure ultimately be accepted, then the District would need to consider a combination of an increased number of groundwater wells, and/or increased water conservation/rationing efforts, and/or participation in the State Dry Year Water Program, and/or participation alone or in cooperation with others in one of the several groundwater banks (i.e., Kern County Water Agency) that are now operational, in order to meet single dry year demand. Should the 37% 6-year drought figure ultimately be accepted, no water planning action would need to be taken since this scenario is not as critical as the 1987-1992 actual historical event which is used by the District in is water planning.

# 4.0 WATER SUPPLY RELIABILITY

## 4.1 RELIABILITY ESTIMATES

The District's water supply is affected by climatic conditions which can result in shortages in supply during periods with low rainfall and runoff. Shortages can occur for different supply sources depending upon the extent and location of the reduced rainfall and runoff. Low rainfall years in northern California can affect the SWP deliveries to the District. Similarly, low runoff in the Santa Ynez River watershed will reduce supplies from the Cachuma Project. The reliability of the District's water supply is described in this section by estimating the District's water supply during normal years, a single critically dry year, and a series of dry years. These conditions are defined below:

- **Normal Years** - For purposes of this assessment, normal years are those years when runoff conditions are considered average or above average, and surface water supplies in both northern California (source of SWP water) and Santa Barbara County (runoff into Cachuma Lake) are sufficient for the District to receive its regular entitlement from the Cachuma Project of 9,322 AFY and 4,500 AFY from the State Water Project (which is 60% of the District's allotment). In normal years, the District would also produce recycled water as necessary, up to its maximum capacity of 1,500 AFY. Finally, groundwater would be produced in an average year only if other supplies were insufficient to meet demand. For this analysis, the District's full 2,350 AFY groundwater entitlement would be available in a normal year.

- **Critical Dry Year** - The critical dry year is defined as the year with the lowest runoff in the watersheds that affect the District's surface water supplies. While this condition is considered extreme for water supply planning, is should be noted that a single critical dry year may or may not have any impact on the District's water supply for that year. In some cases, a very dry year may be a single event in a series of many normal and wet years. Historically, the driest years do not necessarily occur in the middle of a multi-year drought. The following assumptions were used to develop the critical dry year conditions for the District's water supply.

  The driest year of record in northern California (1977) was used for calculating the SWP water deliveries to the District, which would be 20% of the District's full entitlement. The critical dry year for the Cachuma Project is 1951 which was the driest year of record on the Santa Ynez River. Based on computer simulation modeling, Cachuma Project deliveries to the District during this year would have been 74% of the District's full project allotment. This year also represented the last year of a 6-year drought period (1946 to 1951), and as such, the deliveries from the Cachuma Project were less than deliveries if the critical dry year occurred after a normal or wet year. Normal year groundwater production during the critical dry year would not be reduced, as groundwater supplies would not be immediately affected by a single dry year, and because the District has sufficient banked groundwater to meet demands in single and multiple dry years. It is assumed that the District would not reduce production of recycled water in a single dry year.

- **Multiple Dry Years** - Multiple dry years are defined as a sequence of six years with the lowest combined total runoff over the period of record in the watersheds affecting the District's surface water supplies. For SWP water deliveries, the multiple dry year scenario is defined by the Department of Water Resources as the period 1987-1992 inclusive. Under this six year scenario, SWP water deliveries to the District would be 23% to 70% of the District's allotment.

The multiple dry year scenario for Cachuma Lake was developed by the Santa Barbara County Flood Control & Water Conservation District's Santa Ynez River Hydrology Model. This model uses hydrologic data for the period of 1917 through 1993 to estimate reservoir water levels and system yields to the Cachuma Project Member Units. The worst-case multiple dry year scenario on the Santa Ynez River occurred during the six year period 1946-1951 inclusive. Under these conditions, the model predicts that the District would receive 74 to 100% of its Cachuma Project allotment. As is the case for the critical dry year, water to meet demand during the multiple dry year scenarios would be met with banked groundwater from the conjunctive use program, which currently has over 35,000 acre feet of banked groundwater.

The projections of water supplies under normal, single dry year, and multiple dry year conditions are presented in Table 13.

**TABLE 13**
**PROJECTIONS OF AVAILABLE WATER SUPPLIES**
**IN NORMAL, CRITICAL, AND MULTIPLE DRY YEARS**

| | Available Supply in AFY (actual production would be less to match demand) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Normal Year | Critical Dry Year[a] | Multiple Dry Years (a) | | | | | |
| | | | Year l | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| Cachuma Project | 9,322 | 6,898[a] | 9,322 | 9,322 | 9,322 | 6,898 | 6,898 | 6,898 |
| *Lake Cachuma Deliveries (% of normal of normal year supply)* | -- | *74%* | *100%* | *100%* | *100%* | *74%* | *74%* | *74%* |
| State Water Supply[b] | 4,500 | 1,490[a] | 4,500 | 1,714 | 4,183 | 2,012 | 1,788 | 2,161 |
| *State Water Deliveries (% of normal year supply)* | | *20%* | *70%* | *23%* | *70%* | *27%* | *24%* | *29%* |
| Groundwater (annual legal entitlement) [c] | 2,350 | 2,350 | 2,350 | 2,350 | 2,350 | 2,350 | 2,350 | 2,350 |
| Banked Groundwater[d] | [stored groundwater if needed] | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 |
| Recycled Water (maximum production) | 1,500 | 1,500 | 1,500 | 1,500 | 1,500 | 1,500 | 1,500 | 1,500 |
| TOTAL= | 17,672 | 15,486 | 20,921 | 18,135 | 20,604 | 16,009 | 15,784 | 16,158 |

(a) Critical dry year defined as driest year during the SWP history (1977), and the driest year from the 6-year drought of record (1946-51) along the Santa Ynez River.
(b) The District's total SWP allotment and CCWA drought buffer supply is 7,450 AFY. Shortages are calculated using this amount. SWP shortages for multiple dry years are based on worst 6-year drought of record 1987-1992 inclusive. Actual deliveries generally cannot exceed 4,500 AFY.
(c) The Court determined the District's average annual entitlement to be 2,350 AFY. Groundwater is only used after

Cachuma Project and SWP water are fully utilized. The District's maximum pumping capability will be 5,600 AFY.
(d) The Court determined storage that may be pumped in addition to the District's annual pumping entitlement. Banked groundwater is not considered an annual supply source and is currently not required to meet current annual demands in normal years. It is available in extraordinary circumstances such a drought. Banked groundwater is generated by injected Cachuma Project and/or SWP water, use of SWP water to meet demand in-lieu of pumping, and natural recharge in excess of demand during wet cycles due to surplus Cachuma Project water to meet demand. The number of years that banked groundwater can be pumped depends on stored amounts. To date, over 35,000 acre-feet have been stored in the Goleta groundwater basin for future uses during dry years.

The District's base year assumptions for the different water year types are presented in Table 14.

**TABLE 14**
**BASIS OF WATER YEAR TYPE FOR WATER SUPPLY PROJECTIONS**

| Water Year Type | SWP | Cachuma Project |
|---|---|---|
| Normal Year | 2004 | 2004 |
| Single Dry Year | 1977 | 1951 |
| Multiple Dry Years | 1987-1992 (6 years) | 1946-1951 (6 years) |

## 4.2 SUMMARY OF FACTORS AFFECTING RELIABILITY

Water Code Section 10631(c) requires that the District describe the reliability of its water supplies, and any vulnerability to seasonal or climatic shortages. Two of the District's water sources are subject to year to year variation in production, and are also vulnerable to shortages – Cachuma Project and State Water Project. The factors that affect their reliability and vulnerability to shortages are legal, environmental, and climatic, as summarized in Table 15. The District has considered the variation in supply from these sources by using long-term average annual water production projections for both sources that take into account dry years. Hence, the District's water supply planning has addressed the inherent issues of reliability and vulnerability in these water supplies. Shortages in these two water supply sources would be offset by water conservation and use of banked groundwater.

## TABLE 15
## FACTORS AFFECTING RELIABILITY OF WATER SUPPLY

| Water Source | Legal | Environmental | Water Quality | Climatic |
|---|---|---|---|---|
| Cachuma Project | Current and future water production is subject to ongoing jurisdiction of the State Water Board over water rights permits issued to the Bureau of Reclamation, and ongoing compliance with federal Endangered Species Act | Diversion and storage under water rights must comply with environmental laws and regulations to protect public trust resources and endangered species. Possible new endangered species or resource issues in the future could affect water supply. | No major factors affecting reliability. Water quality from this source is relatively consistent and not vulnerable to major changes | Reliability of this source is dependent on climatic conditions. Project is vulnerable to shortages due to low runoff years. |
| State Water Project | SWP is subject to a myriad of state and federal laws and regulations that affect the current and future water production from the Sacramento-San Joaquin Delta. Many of these laws and regulations could be affected by political factors. | Diversions from the Sacramento-San Joaquin Delta must comply with various environmental laws and regulations to protect public trust resources and endangered species. Possible new endangered species or resource issues in the future could affect water supply. | No major water quality factors affecting reliability. Ongoing concern about disinfection by products which is manageable. | Reliability of this source is dependent on climatic conditions. Project is vulnerable to shortages due to low runoff years. |
| Groundwater[(b)] | There are no legal uncertainties or factors that could reduce the reliability of this source, as the District's groundwater supply has been determined by adjudication. | Well facilities are generally resistant to damage from earthquakes making local groundwater one of the more reliable sources of water during these events. | No major water quality factors affecting reliability. Groundwater contamination is not considered a significant threat in the basin. | In general, climatic variation would not have a significant effect on this source because the District has stored groundwater to use in multiple dry years. |
| Recycled | No legal factors would affect the reliability of this source. There is excess production capacity and untapped markets at this time under current regulations for recycled water use. Future regulations are not expected to reduce allowable uses. | None. | Recycled water is treated to meet current standards. Future changes in treatment standards, while not anticipated, could affect the costs of producing recycled water. | None. Current and projected recycled water use is not expected to be substantially affected by dry year conditions. |

# 5.0 OPPORTUNITIES FOR EXCHANGES OR TRANSFERS

## 5.1 EXCHANGES OR TRANSFERS

The District has, on occasion, considered or completed the sale or purchase of water with other water purveyors. In all cases, the transactions involved short-term needs or opportunities. No long-term sales or purchases of water are being considered by the District. The District considers exchanges and transfers to be opportunities that will be considered when the need arises, and the circumstances and financial arrangements are favorable to the District.

The District would consider purchasing water on a short term basis from a willing seller in the event of a projected or actual water shortage. The District would consider selling unneeded water on a short term basis when projected or actual supplies exceed the District's demand and ability to inject groundwater. Completion of an exchange, transfer, purchase or sale of water involving an outside agency or party would require approval by the Board of Directors. The District actually initiated the process to purchase available water from rice farmers in the Central Valley last year. That transaction became unnecessary with this winter's rains and Cachuma filling and spilling.

The District has two categories of water exchange or transfers to supplement water supply, as described below.

**Exchanges or Transfers With Cachuma Project Member Units -** The District has the ability to purchase water from other Cachuma Project Member Units in the event of a need, or to sell unneeded water to other Cachuma Member Units. The Cachuma Member Units include the District, Carpinteria Valley Water District, Montecito Water District, City of Santa Barbara, and Santa Ynez River Water Conservation District, Improvement District No. 1. The type of transaction would occur when there is a willing seller and buyer. It can occur without the approval of the Bureau of Reclamation. The Cachuma Member Units can readily transfer water to one another because all of the Member Units have water stored in Cachuma Lake. In the past, the District has engaged in transactions with other Cachuma Project Member Units involving Cachuma Project water.

**Exchanges or Transfers With Other SWP Contractors -** The District can purchase SWP water from other SWP contractors in the state under the Department of Water Resources' (DWR's) Turnback Pool Program in which SWP contractors can sell water at anytime to other SWP contractors, provided the buyer has the ability to convey the water in addition to the buyer's existing SWP deliveries. This type of transaction is coordinated by the Central Coast Water Authority (CCWA) on behalf of the local SWP contractors. Each year, DWR notifies CCWA of the anticipated SWP deliveries to its members, including any SWP water for sale by other SWP contractors. At that time, the District can purchase the additional water, provided the SWP and CCWA conveyance facilities can accommodate the additional deliveries. To date, the District has not purchased any additional SWP water through this program. The purchase of SWP water from other contractors will remain a potential short-term source for the District in the event of a prolonged southern California drought combined with normal to wet year conditions in northern California in which excess SWP water may be available.

It should be noted that the District can offer to sell a portion of its SWP water deliveries in any given year to other SWP contractors as a short-term transaction. The District can only sell up to the amount of SWP water that is available to the District in the particular year. The sale is subject to approval by CCWA. The

CCWA contractors can also sell and exchange water amongst themselves. The District has in the past sold water to other CCWA contractors.

DWR also administers the "Dry Year Program" in which DWR will deliver water from agricultural users in the Central Valley when their fields are idled in dry years. The agricultural users will sell unused water from their DWR contracts (not part of the SWP project), and DWR will convey the water through the SWP system if there is available capacity.

## 5.2 INTERCONNECTIONS

The District maintains five potable water interconnections with the City of Santa Barbara. One of the interconnections, Modoc, supplies the District's customers in the City of Santa Barbara's La Vista 440 pressure zone. The other four interconnections are available for emergency use. Should the District lose a transmission main such as the 42-inch lateral, or a local supply source such as the wells, the emergency interconnections can be used to supply the District with water. The District and the City share Lake Cachuma as a major water supply source. If the Lake Cachuma supply is interrupted, both agencies will have a water shortage emergency. In this case, the interconnections will likely not be available.

## 5.3 WATER WHEELING AGREEMENTS

The District is a party to three Agreements entered into pursuant to the requirements of Water Code §§ 1810 et. seq. The Water Code requires that public agencies with excess capacity in their distribution system, make that excess capacity available to parties holding a water entitlement who need to use that excess capacity for delivery of that water. The Agreements provide for use of the District's treatment and distribution facilities by the three parties, who pay the reasonable treatment and conveyance costs to the District for use of the facilities. The three parties to those Agreements are Santa Barbara Research Center, Camino Real LLC, and Morehart Land Company.

The Santa Barbara Research Center is a business entity with operations in the Goleta service area. Santa Barbara Research Center holds rights to 50 acre feet per year of State Water Project allotment that is delivered to the District facilities in the same manner as the District's State Water Project allotment.

The Morehart Land Company holds 200 acre feet per year of State Water Project allotment. Pursuant to the terms of the Water Conveyance Agreement, a connection to the District's Goleta West Conduit facilities has been completed for delivery of that State Water Project water to Morehart. Currently only a small amount of that water is delivered. A land use application for a development project that proposes to use that allotment, is currently pending before the County of Santa Barbara.

Camino Real, LLC, holds rights to 100 acre feet per year of Cachuma Project water. That water is delivered to the District, treated and then delivered to the Camino Real property, referred to as the Camino Real Marketplace, the major shopping center in the City of Goleta. To the extent that the Camino Real Marketplace does not need the entire 100 acre feet per year, the District is entitled under the terms of the Agreement to use that water.

These Water Conveyance Agreements have no impact on the District's long-term water supply or demand. Each of the Agreements specifically state that the District has no obligation to deliver water in excess of that which each of the three parties is entitled to and receives through their agreements with others.

# 6.0 PAST, CURRENT AND FUTURE WATER USE BY SECTORS

## 6.1 HISTORIC AND CURRENT WATER USE

The District provides water to a variety of municipal, industrial, and agricultural users. Historic annual treated and untreated water deliveries (sales) show variation from year to year due to climatic factors. For example, water deliveries during the drought years of 1989 – 1992 were greatly reduced due to a combination of reduced demands, and mandatory reductions by the District. Water usage since 1993 has slowly increased to near pre-drought levels due to a combination of increased population and changes in land and use practices by District residents.

Recent water deliveries during the period 1999-2004 are presented in Table 16 by water use sector. These data were derived from District sales records. They also include unaccounted for losses, which were estimated to be 6 to 8 percent of the District's total water production based on a recent system audit (JBS Associates, 2005). These losses include unavoidable leakages, meter inaccuracy, unmetered connections, unbilled water use, and record keeping errors. Total average annual water use during the past six years in the District has been 14,318 AFY.

**TABLE 16**
**RECENT WATER SALES/DELIVERIES (ACRE-FEET PER YEAR), 1999-2004**

| Water Use Sectors (per Water Code) | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | Average |
|---|---|---|---|---|---|---|---|
| Single family residential | 4,533 | 4,690 | 4,425 | 4,842 | 4,597 | 4,974 | 4,677 |
| Multiple family residential | 2,277 | 2,302 | 2,090 | 2,088 | 2,066 | 2,110 | 2,155 |
| Commercial | 1,875 | 1,927 | 1,746 | 1,819 | 1,734 | 1,874 | 1,829 |
| Industrial* | 208 | 214 | 194 | 202 | 193 | 208 | 203 |
| Institutional/governmental | 536 | 508 | 564 | 571 | 562 | 606 | 558 |
| Landscape | 316 | 348 | 302 | 310 | 275 | 327 | 313 |
| Agriculture | 2,495 | 2,348 | 2,091 | 2,889 | 2,444 | 2,953 | 2,537 |
| Subtotal= | 12,240 | 12,338 | 11,413 | 12,720 | 11,871 | 13,053 | 12,272 |
| | | | | | | | |
| *Additional Water Uses:* | | | | | | | |
| Recycled water | 928 | 1,003 | 839 | 1,083 | 968 | 1,051 | 979 |
| Unaccounted for losses at 8% | 1,064 | 1,073 | 992 | 1,106 | 1,032 | 1,135 | 1,067 |
| | | | | | | | |
| **TOTAL=** | 14,232 | 14,414 | 13,244 | 14,909 | 13,871 | 15,239 | 14,318 |

The number of accounts in the District during recent years is shown in Table 17.

**TABLE 17**
**NUMBER OF ACCOUNTS, 2005**

| Types of Accounts | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|---|---|---|---|---|---|---|---|
| Single Family Residence | 12,380 | 12,667 | 12,894 | 13,023 | 13,076 | 13,078 | 13,109 |
| Multiple Family Residential | 1,159 | 1,164 | 1,171 | 1,167 | 1,278 | 1,530 | 1,550 |
| Commercial, including SB Airport | 986 | 1,054 | 1,203 | 1,010 | 1,024 | 1,019 | 1,027 |
| UCSB | 5 | 5 | 5 | 5 | 7 | 7 | 7 |
| Agriculture | 207 | 204 | 168 | 155 | 155 | 158 | 162 |
| Recreation (Park & Landscape Irrigation) | 67 | 73 | 90 | 111 | 130 | 143 | 153 |
| Recycled Water, including UCSB | 23 | 23 | 28 | 29 | 31 | 30 | 31 |
| **TOTAL=** | 14,827 | 15,190 | 15,559 | 15,500 | 15,701 | 15,965 | 16,039 |

## 6.2 PROJECTED WATER USE

Predicting future water use is very difficult, particularly over a 20-year period, because there are many factors that influence water demand, including economic conditions, population growth, land use policies and political factors, and water costs. Hence, the District has used several different methods to project future water use by sector in order to increase the confidence in the projections. The following methods to project future water use by sector for the years 2010, 2015, 2020, 2025, and 2030 were used:

1. Use prior District water use projections
2. Apply a regional population growth rate to predict future residential water demand
3. Use recent historic water use growth rates as a predictor of future water demand
4. Develop water use projections using data from land use jurisdictions in the District service area – City of Goleta, University of California, Santa Barbara Airport (City of Santa Barbara), and Santa Barbara County (Isla Vista and other unincorporated areas).

The calculations and assumptions for each method are presented in Appendix A. Each method of projecting future water use has inherent limitations and potential errors. To reduce the uncertainty in these predictions, the average estimated total annual water use derived from each method was calculated to provide a final estimate of future water use in the District from 2010 to 2030, as shown in Table 18.

**TABLE 18**
**ESTIMATED FUTURE WATER USE (AFY), 2005-2030**

| Current (average of 1999-2004) | 2010 | 2015 | 2020 | 2025 | 2030 |
|---|---|---|---|---|---|
| 14,318 | 14,813 | 15,368 | 15,890 | 16,476 | 17,010 |

Source: Table A-18 from Appendix A.

# 7.0 WATER CONSERVATION, INCLUDING DEMAND MANAGEMENT MEASURES

The District is a member of the California Urban Water Conservation Council (CUWCC) and signed the Memorandum of Understanding on December 23, 1994. As a signatory, the District implements all of the cost effective Best Management Practices (BMPs) set forth in the MOU and is on track according to the schedule of implementation. A summary of each BMP implemented as a demand management measure is provided below.

- BMP 1: WATER SURVEY PROGRAMS FOR SINGLE-FAMILY RESIDENTIAL AND MULTI-FAMILY RESIDENTIAL CUSTOMERS. The District currently offers residential water surveys to its customers free of charge and is on track to meet the required number of audits within the next two years.

- BMP 2: RESIDENTIAL PLUMBING RETROFIT. The Goleta Water District gave free low flow showerheads to customers during the drought from 1988-1992. In 1992, low flow showerheads became mandatory. As part of the residential water surveys, the Goleta Water District measures the flow of each showerhead. According to those results, the percent of households in Goleta Water District with low flow showerheads is 83%. In addition, the Goleta Water District provides a free 1.7 gallon per minute showerhead at each residential water survey where a high flow showerhead is discovered.

- BMP 3: SYSTEM WATER AUDITS, LEAK DETECTION AND REPAIR. Each year, the Goleta Water District completes a pre-screening audit of our water system. In 2004, the prescreening audit estimated 5% unaccounted for water losses. Even though it is not required for UAF of less 10% or less, in January of 2005, JBS Associates, Inc. completed a Water Distribution System Audit for the Goleta Water District. In the study, the District unaccounted for water loss was found to be between 6% to 8% of total production, thus confirming the system pre-screening system audit findings. Because the system losses are less than 10%, the District does not implement a system leak detection program at this time.

- BMP 4: METERING WITH COMMODITY RATES FOR ALL NEW CONNECTIONS AND RETROFIT OF EXISTING CONNECTIONS . Every service connection within the Goleta Water District is metered and billed by volume-of-use. Therefore, the implementation of this BMP is complete.

- BMP 5: LARGE LANDSCAPE CONSERVATION PROGRAMS AND INCENTIVES. The District currently offers landscape surveys to large landscape customers. In addition, the District is in the beginning stages of developing water budgets for these customers in coordination with the Santa Barbara County Water Agency. The water budgets are expected to be sent to customers by 2006.

- BMP 6: HIGH-EFFICIENCY CLOTHES WASHING MACHINE FINANCIAL INCENTIVE PROGRAMS. The District currently has an Exemption filed with the Council for BMP 6 as it is not cost effective to implement. Even though it is not cost effective, District currently offers a $100 rebate to CII customers who purchase a qualifying washing machine.

- BMP 7: PUBLIC INFORMATION PROGRAMS. The Goleta Water District currently maintains an active public information program to promote and educate customers about water conservation. District staff provides conservation materials at several public events throughout the year such as the Lemon Festival, Earth Day, and the Sustainable Landscape Fair.

- BMP 8: SCHOOL EDUCATION PROGRAMS. The District currently implements a school education program in conjunction with the Santa Barbara County Water Agency. Approximately 25-30 classroom presentations are given each year to a total of about 600-700 students. To view a list of the presentations, visit www.sbwater.org.

- BMP 9: CONSERVATION PROGRAMS FOR COMMERCIAL, INDUSTRIAL, AND INSTITUTIONAL (CII) ACCOUNTS. The District is in the process of re-ranking our customers as Commercial, Industrial, and Institutional according to use. In addition, the District offers water use surveys to all of our customers. CII customers can also qualify to receive CII rebates for qualifying ULFTs, ULF urinals, zero water urinals and high efficiency washing machines.

- BMP 10: WHOLESALE AGENCY ASSISTANCE PROGRAMS (Revised March 10, 2004) District does is not a wholesale water provider. Therefore, BMP 10 is not applicable to the District.

- BMP 11: CONSERVATION PRICING. The District currently implements conservation pricing in that all water is sold at a uniform volumetric rate. Some members of the District's Citizen's Rate Committee have commented that the existing rate structure was water conserving. To improve upon this BMP, the District is currently conducting a rate study to determine if it would be feasible to implement an increasing block volumetric rate in the future.

- BMP 12: CONSERVATION COORDINATOR. The District has implemented this BMP by designating Misty Gonzales as the full-time Conservation Coordinator for District.

- BMP 13: WATER WASTE PROHIBITION. The Goleta Water District code 6.20.070 prohibits the waste of district water and thus has implemented this BMP.

- BMP 14: RESIDENTIAL ULFT REPLACEMENT PROGRAMS. During the drought from 1988-1992, the Goleta Water District implemented a $2 million ULFT rebate and distribution program and has completed implementation for this BMP.

The BMP Activity Reports for 2001-2004 are included in Appendix C-1. The Coverage Reports for 2003-2004 are presented in Appendix C-2. A copy of the CUWCC Coverage Calculator for the District is included in Appendix C-3.

Appendix C-4 contains three separate Exemption Requests filed by the Goleta Water District. In December of 2002, it was demonstrated that BMP 6, High Efficiency Washing Machine Rebate Program, and BMP 9, Conservation Programs for CII Accounts, were not cost effective to implement within the Goleta Water District from the water supplier perspective with or without cost sharing. Again in December of 2004, an Exemption Request was filed demonstrating that BMP 6 was again not cost effective to implement from the water supplier perspective with or without cost sharing. It should be noted that Goleta Water District is currently implementing a CII rebate program (under BMP 9) even though such a program has been proven to be cost-ineffective.

Currently, BMP 6, High Efficiency Clothes Washers, is the only BMP that District is currently exempt from implementing. Appendix C-4 contains the Exemption Request that was submitted to the CUWCC.

# 8.0 FUTURE WATER SUPPLY PROJECTS

As shown in Section 13, the District's water supply will meet the expected demand over the next 20 years. As such, the District is not planning to develop new water supply projects. The District will continue to implement its conjunctive use program in which surplus surface water from the Cachuma Project and SWP will be stored in the local groundwater basin for use during dry years.

The District has an on-going 20 year Capital Improvement program which is reviewed on an annual basis and identifies the water system improvements required to ensure reliability during normal operations by replacing old facilities and correcting existing system deficiencies; emergency scenarios that could affect water deliveries; and system improvements to improve service during emergencies. The following improvements are scheduled:

## 8.1 IMPROVEMENTS FOR SYSTEM RELIABILITY DURING NORMAL OPERATIONS

**Near Term through Year 2010**

- Upgrades and replacement of Corona Del Mar Water Treatment Plant facilities.
- Rehabilitation of San Marcos, San Antonio, Airport, El Camino, Anita and University wells to conduct conjunctive use operations and meet emergency demands.
- Annual water main replacement of pipeline identified in priority of replacement need.
- Groundwater modeling of Goleta Groundwater Basin to improve and maximize conjunctive use of groundwater and surface water supplies.
- Repair of Goleta West Conduit transmission main for reliable flow to west agricultural area of the District.
- Interior coating of Corona Del Mar Reservoir to eliminate leakage.

**Long Term through Year 2030**

- New wells in accordance with analysis of groundwater modeling to optimize use of groundwater basin.
- A 3 million gallon reservoir to add storage and reduce deficiencies in eastern portion of District.
- Ellwood Reservoir, a 2 million gallon reservoir to add and improve storage for fire fighting, emergency and supply operation in the lower Ellwood pressure zone.
- Meter installation downstream of District reservoirs to improve accuracy in measurement of water supply efficiencies.
- Pipeline in Kellogg Drive south of freeway to improve distribution flows to old town Goleta area.
- One million gallon storage tank and Hollister booster pump improvements to improve supply of recycled water to golf courses and landscape users.

## 8.2 IMPROVEMENTS FOR SYSTEM RELIABILITY DURING EMERGENCIES

The District has determined that the most effective way to improve reliability during a drought or other emergency water shortage is to expand the District's conjunctive use program. The District is rehabilitating six wells within the Central Basin to increase the total well extraction capacity to 5.2 mgd. This would provide a total of nine operational wells, and should provide enough water supply capacity to avoid an expansion of the Corona Del Mar WTP. In order to meet emergency and drought conditions, two new wells should be constructed, and the Glen Annie Reservoir Pump Station should be rehabilitated. The proposed system reliability improvements for emergency needs are as follows:

- Rehabilitate and/or replace the San Ricardo well
- Rehabilitate and/or replace the Shirrell well
- Rehabilitate and /or replace the Berkeley well
- Construct two new wells to meet an emergency or drought condition
- Rehabilitate the Glen Annie Reservoir Pump Station to deliver water from Glen Annie Reservoir to the Corona Del Mar WTP for use during times of emergency or drought
- To improve the District's ability to distribute water should a transmission main fail, a 24-inch diameter bypass pipeline and pressure reducing station along Cathedral Oaks Road could be built to provide service between the 230, Ellwood and Corona pressure zones

# 9.0 DEVELOPMENT OF DESALINATED WATER

As shown in Section 13, the District's water supply will meet the expected demand over the next 20 years. As such, the District is not planning to develop new water supply projects, including desalinated water. The District participated in the financing of the City of Santa Barbara's desalination plant during the 1987-1992 drought. The drought ended before the plant was needed. Although the City of Santa Barbara's desalination plant remains decommissioned and available for future droughts, the District no longer has any financial or institutional arrangements with the City of Santa Barbara for desalinated water in the future.

In the 1980s, the District studied potential desalinated water opportunities, but these opportunities were determined to be financially infeasible in light of other sources of supplemental water supplies. While the District does not foresee a need for desalinated water in the next 20 years, it will continue to re-evaluate the feasibility of this supplemental water source over time.

# 10.0 URBAN WATER SHORTAGE CONTINGENCY PLAN

The District's current Water Shortage Contingency Plan is summarized in this section.

## 10.1 STAGES OF ACTION

The stages of action for the District are based on water demand reduction goals, priority of use and health and safety requirements.

### Rationing Stages and Reduction Goals

The District has developed a four-stage water rationing plan to implement during a declared water shortage emergency. The plan includes voluntary and mandatory rationing depending on the causes, severity and anticipated duration of the supply shortage. Table 19 presents the District's water rationing stages and reduction goals.

**TABLE 19**
**WATER RATIONING STAGES AND REDUCTION GOALS**

| Stage | Supply Shortage Condition | Customer Reduction Demand Goal | Type of Rationing Program |
|---|---|---|---|
| I | Up to 15% | 15% | Voluntary |
| II | 15% -25% | 25% | Mandatory |
| III | 25% - 35% | 35% | Mandatory |
| IV | 35% - 50% | 50% or greater | Mandatory |

### Priority by Use

Priorities for use of available potable water during shortages are based on the District's experience during the 1987 through 1992 drought and legal requirements set forth in the California Water Code, Sections 350-358. Water allocations are established for all customers according to the following ranking system (listed from highest to lowest priority):

- Minimum health and safety allocations for interior residential needs (includes single-family residential, multifamily residential, hospitals and convalescent facilities, retirement and mobile home communities, student housing, fire fighting and public safety)
- Commercial, industrial, institutional/ governmental operations (where water is used for manufacturing and for minimum health and safety allocations for employees and visitors), to maintain jobs and economic base of the community (not for landscape uses)
- Permanent agriculture (orchards, vineyards, and other commercial agriculture which would require at least five years to return to production)
- Annual agriculture (floriculture, strawberries, other truck crops)
- Existing landscaping
- New customers, proposed projects without permits when a shortage is declared

## Health and Safety Requirements

Table 20 presents per capita health and safety water requirements based on estimates of interior residential water use in the United States. In Stage I shortages, customers may adjust either interior or outdoor water use (or both) in order to meet the voluntary water reduction goal. However, under Stage II, Stage III and Stage IV mandatory rationing programs, the District has established a health and safety allotment of approximately 68 gallons per capita per day (gpcd) or 33 hundred cubic feet (HCF) per person per year. This amount of water is sufficient for essential interior water with no habit or plumbing fixture changes. If customers wish to change water use habits or plumbing fixtures, 68 gpcd is sufficient to provide for limited non-essential (e.g., outdoor) uses.

**TABLE 20**
**PER CAPITA HEALTH AND SAFETY WATER QUANTITY CALCULATIONS**

| | Non-Conserving Fixtures | | Habit Changes | | Conserving Fixtures | |
|---|---|---|---|---|---|---|
| Toilets | *5* flushes x 5.5 gal/flush | 27.5 | 3 flushes x 5.5 gal/flush | 16.5 | *5* flushes x 1 ,6 gal/flush | 8.0 |
| Shower | 5 min x 4.0 gpm | 20.0 | 4 min x 3.0 gpm | 12.0 | 5 min x 2.0 | 10.0 |
| Washer | 12.5 gpcd | 12.5 | 11.5 gpcd | 11.5 | 11.5 gpcd | 11.5 |
| Kitchen Other | 4 gpcd | 4.0 | 4 gpcd | 4.0 | 4 gpcd | 4.0 |
| Total, gpcd | 4 gpcd | 4.0 | 4 gpcd | 4.0 | 4 gpcd | 4.0 |
| | | 68.0 | | 48.0 | | 37.5 |
| Total, HCF per capita per year | | 33.0 | | 23.0 | | 18.0 |

Note: (1) These estimates are consistent with estimates developed by the California Department of Water Resources

## Water Shortage Stages and Triggering Mechanisms

As the water purveyor, the District must provide the minimum health and safety water needs of the community at all times. The water shortage response is designed to provide a minimum of 50 percent of normal supply during a severe or extended water shortage. The rationing program triggering levels shown in Table 21 were established to ensure that this goal is met.

Rationing stages may be triggered by a shortage in one water source or a combination of sources. If it appears that it may be a dry year, the District may contact its agricultural customers in March, so that they can minimize potential financial impacts.

The District's potable water sources are groundwater, local surface water and State Water. Rationing stages may be triggered by a supply shortage or by contamination in one source or a combination of sources. Specific criteria for triggering the District's rationing stages are also shown in Table 20.

## TABLE 21
## WATER SHORTAGE STAGES AND TRIGGERING MECHANISMS

| Supply Parameter | Water Supply Condition (percent reduction of supply) | | | |
|---|---|---|---|---|
| | Stage 1(Up to 15%) | Stage II (15% -25%) | Stage III (25% - 35%) | Stage IV (35% - 50%) |
| Current Supply | Total supply is 85% - 90% of normal. And Below normal year is declared. Or | Total supply is 75% - 85% of normal. And Below normal year is declared. Or | Total supply is 65% - 75% of normal Or Fifth consecutive below normal year is declared. Or | Total supply is less than 65% of normal. Or Sixth consecutive below normal year is declared. Or |
| Future Supply | Projected supply is insufficient to provide 80% of normal deliveries for the next two years. Or | Projected supply is insufficient to provide 75% of normal deliveries for the next two years. Or | Projected supply is insufficient to provide 65% of normal deliveries for the next two years. Or | Projected supply is insufficient to provide 50% of normal deliveries for the next two years. Or |
| Groundwater | No groundwater pumping undertaken. Or | First year of excess groundwater taken, must be "replaced" consistent with the District's groundwater conjunctive use program. Or | Second year of excess groundwater taken, must be "replaced" consistent with the District's groundwater conjunctive use program. Or | No excess groundwater pumping available. Or Reduced groundwater pumping due to replenishment of previously pumped groundwater. |
| Water Quality | Contamination of 10% of water supply (exceeds primary drinking water standards). | Contamination of 20% of water supply (exceeds primary drinking water standards). | Contamination of 30% of water supply (exceeds primary drinking water standards). | Or |
| Disaster Loss | | | | Disaster loss such as failure of the Tecolote Tunnel |

### Water Allotment Methods

During the 1987 to 1992 drought, the District adopted Ordinance 91-3, which established methods to determine customer water allocations during the 1987 to 1992 drought. In the future, if necessary, similar allocation methods may be adopted and implemented as summarized in Table 22.

**TABLE 22**
**WATER ALLOTMENT METHODS**

| Customer Type | Allotment Method |
|---|---|
| Single Family | Hybrid of Per-capita and Percentage Reduction |
| Multifamily | Hybrid of Per-capita and Percentage Reduction |
| Commercial | Percentage Reduction |
| Industrial | Percentage Reduction |
| Government/Institutional | Percentage Reduction |
| Agricultural-Permanent | Percentage Reduction - vary by efficiency |
| Agricultural-Annual | Percentage Reduction - vary by efficiency |
| Recreational | Percentage Reduction - vary by efficiency |
| New Customers | Per-capita (no allocation for new landscaping during a declared water shortage.) |

Based on current and projected customer demand, water is allocated to each customer type by priority and rationing stage during a declared water shortage.

Individual customer allotments are based on the past five years of water use records. This gives the District a more accurate view of the usual water needs of each customer and provides additional flexibility in determining allotments and reviewing appeals. However, no allotment may be greater than the amount used in the most recent year of the five-year base period.

During the 1987 to 1992 drought, the District classified each customer and calculated each customer's allotment according to the methods outlined in Ordinance 91-3. The allotment reflected seasonal patterns. Each customer was notified of his or her classification and allotment by mail before the effective date of the Water Shortage Emergency. New customers were notified at the time the application for service was made.

In a disaster, prior notice of allotment may not be possible; notice will be provided by other means. Any customer may appeal the District's classification on the basis of use or the allotment on the basis of incorrect calculation.

## 10.2 MINIMUM WATER SUPPLY FOR THE NEXT THREE YEARS

Water Code Section 10632 (b) requires that the UWMP include an estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply. The Goleta Water District has four sources of water: Lake Cachuma, State Water Project, groundwater and recycled water. The driest three-year sequence for with the greatest effect on the District supply would be the period 1989 to 1992 when there was a state wide drought. The estimated

water supply for the next three years, assuming dry year conditions from 1989-1992, is provided below in Table 23.

**TABLE 23**
**MINIMUM WATER SUPPLY DURING A THREE-YEAR DRY PERIOD**
**IN THE IMMEDIATE FUTURE**

| Supply Source | Available Supply in AFY (actual production may be less to match demand) | | | |
|---|---|---|---|---|
| | Normal Year | 2006* | 2007* | 2008* |
| Cachuma Project | 9,322 | 6,898 | 6,898 | 6,898 |
| *Lake Cachuma Deliveries (% of normal of normal year supply)* | -- | *74%* | *74%* | *74%* |
| State Water Supply | 4,500 | 2,012 | 1,788 | 2,161 |
| *State Water Deliveries (% of normal year supply)* | | *27%* | *24%* | *29%* |
| Groundwater (annual legal entitlement) | 2,350 | 2,350 | 2,350 | 2,350 |
| Banked Groundwater | [stored groundwater if needed] | 3,250 | 3,250 | 3,250 |
| Recycled Water* | 1,000 | 1,000 | 1,000 | 1,000 |
| TOTAL= | 17,172 | 15,510 | 15,284 | 15,659 |

* Data from Years 4-6 of the six year dry year period shown in Table 13, with the exception that the recycled water production is 1,000 AFY because capacity is not expected to reach 1,500 AFY by 2008.

## 10.3 PREPARATION FOR CATASTROPHIC WATER SUPPLY INTERRUPTION

The District has four main sources of water - Lake Cachuma, the State Water Project, groundwater, and recycled water. These sources provide the District with a highly reliable water supply that is sufficient to meet demands. However, this reliability is not guaranteed and water supply shortages or interruptions can occur. The Contingency Plan was developed to ensure that the District is adequately prepared should such an emergency water shortage or other situation occur.

In the event of a water supply shortage or interruption, the District's Board of Directors has the power to declare a water shortage emergency and implement the appropriate measures to offset the supply shortage. Depending on the severity of the shortage, the District may implement voluntary or mandatory water rationing and/or increase well production.

Development of temporary supplemental water supplies can also increase system reliability during a water shortage emergency. Possible supplemental supplies include banked groundwater and temporary water purchases from other Cachuma Project Member Units, or participants in the SWP.

## 10.4 PROHIBITIONS, PENALTIES, AND CONSUMPTION REDUCTION METHODS

### Mandatory Prohibitions on Water Wasting

Ordinance 91-3 included prohibitions on various wasteful water uses such as lawn watering during mid-day hours, washing sidewalks and driveways with potable water, and allowing plumbing leaks to go uncorrected more than 8 hours after customer notification.

### Excessive Use Penalties

Any customer violating the regulations and restrictions on water use that are in effect receives a written warning for the first violation. Upon a second violation, the customer receives a written warning and the District may install a flow-restrictor in the service. If a flow-restrictor is installed, the violator pays the cost of the installation and removal. Any willful violation occurring subsequent to the issuance of the second written warning constitutes a misdemeanor and may be referred to the Santa Barbara County District Attorney's office for prosecution. If water service is disconnected, it will be restored only upon payment of the turn-on charge fixed by the Board of Directors.

### Consumption Reduction Methods

Table 24 provides examples of consumption reduction methods and the stage when the method becomes effective.

**TABLE 24**
**CONSUMPTION REDUCTION METHODS**

| Examples of Consumption Reduction Methods | Stage When Method Takes Effect |
|---|---|
| Demand reduction program | All Stages |
| Restrict for only priority uses | All Stages |
| Use prohibitions | AH Stages |
| Water shortage pricing | All Stages |
| Incentives to reduce water consumption | All Stages |
| Education program | All Stages |
| Voluntary rationing | Stage 1 |
| Restrict new service connections | Stages II, III, IV |
| Plumbing fixture replacement | Stages II, III, IV |
| Mandatory rationing | Stages II, III, IV |
| Percentage reduction by customer type | Stages II, 111,1V |
| Reduce pressure in water lines | Stages III, IV |
| Per capita allotment by customer type | Stage IV |
| Flow restriction | Stage IV |

## 10.5 ANALYSIS OF REVENUE IMPACTS OF REDUCED SALES DURING SHORTAGES

When consumption reduction methods are implemented during Stages I, II, II and IV, the District will implement an accompanying rate change. For example, a call for 15% voluntary reduction in Stage I would necessitate a temporary adjustment. The rate adjustment would be implemented in a such a manner

that users who achieve the called for reduction would not have increased water bills. This temporary rate adjustment, combined with possible use of District reserves, would mitigate the financial impact of reduced sales and revenues. In addition, the rate adjustment would send a "price signal" to water users during water shortage conditions. Water costs would not increase for water users that achieve the called for reductions.

## 10.6 WATER SHORTAGE CONTINGENCY ORDINANCE/RESOLUTION

The District issued a moratorium on new service connections in 1972 due to inadequate water supplies to serve a large amount of new development. The moratorium remained in effect until 1997. Between 1979 and 1992, the District instituted a number of water use restrictions. In 1989, the District declared a drought emergency and a water rationing program was put in place until February 1992. The District adopted Ordinance 90-2 in 1990, which established water shortage emergency regulations. Ordinance 90-2 was superseded by Ordinance 91-3 in 1991. Based on these past experiences, the District may adopt similar ordinances in the future should another water shortage emergency arise.

## 10.7 USE MONITORING

Under normal water supply conditions, potable water production figures are recorded daily. The District includes monthly water production totals as part of their monthly report to the State Department of Health Services. During a drought or water shortage emergency, the Operations Manager monitors production figures more closely to ensure that reduction goals are being met.

# 11.0 RECYCLED WATER PLAN

The District, working in partnership with the Goleta Sanitary District (GSD) completed a recycled water project study in 1999. This study built upon prior studies and investigations of the Goleta reclamation system to assess existing reclamation treatment and distribution system facilities and to further the means of enhancing the reclamation program. Such enhancements may include additional recycled water markets, recycled water demand management, (time of use management) increased and diversified supply sources and infrastructure improvements.

## 11.1 RECYCLED SYSTEM DESCRIPTION

Recycled water service within Goleta began in 1994 in response to the drought conditions of the early 1990s and the Wright suit settlement. The existing reclamation system includes a wastewater treatment plant (WWTP) owned and operated by GSD. This treatment plant can produce up to 3 million gallons per day (mgd) of tertiary effluent for recycling. The WWTP is permitted to treat an average annual influent flow rate of 7.64 mgd, although the plant is constructed to handle a peak dry weather flow of 9.7 mgd. Major treatment processes at the plant include primary sedimentation, secondary treatment by a trickling filter/solids contact process, secondary sedimentation, plant effluent chlorination/dechlorination, and tertiary filtration for water reclamation.

A portion of the WWTP's secondary effluent is directed to the tertiary treatment process for filtration and subsequent reuse. The remaining treated effluent is discharged to the Pacific Ocean through an ocean outfall. Tertiary effluent from the plant enters a 3.4 million gallon storage reservoir. From the reservoir, a 500 horsepower pump station delivers the water to the recycled water distribution system. A second booster pump station delivers water to a higher pressure zone that extends to the west of the reclamation system, that is, west of Glen Annie Road. Approximately 40,000 feet of pipeline ranging in diameter from 2 to 18 inches deliver water to 16 existing customers.

Average annual recycled water production ranged from 839 to 1,083 AFY from 1999 – 2004, as shown in Table 25.

**TABLE 25**
**RECENT RECYCLED WATER DELIVERIES (ACRE-FEET PER YEAR), 1999-2004**

| 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | Average |
|---|---|---|---|---|---|---|
| 928 | 1,003 | 839 | 1,083 | 968 | 1,051 | 979 |

## 11.2 ENCOURAGING RECYCLED WATER USE

The District currently serves recycled water to 19 customers with a total existing reclaimed water demand of about 1,000 AFY. A survey of potential recycled water markets was conducted between April and July 1999. This survey identified twenty-eight potential customers within the current recycled water system boundaries, many of which are now under contract to receive recycled water. The potential markets consist of 136 irrigated acres with an estimated annual water use of 280 AFY. The market survey

addressed the potential for providing recycled water service to golf courses; landscaped areas, agricultural areas, and commercial use.

## Golf Course Landscape Irrigation

The District provides service to, or is under contract to provide service to, four golf courses within the reclamation program study area. One additional golf course (Twin Lakes) occurs within the study area which could be served by the District. The property is owned by the City of Santa Barbara.

## Landscape Irrigation

Twenty-seven potential landscape irrigation markets were identified within the 1999 study area. Landscape irrigation represents the largest market for recycled water, including such uses as the irrigation of parks, playgrounds, landscaped areas along freeways, green belts, schools, open spaces, and for irrigated landscaped cut and fill slopes. Since the 1999 study, seven additional users are now receiving recycled water. Major public open space and parks that are candidates for future recycled water include:

- Camino Corto County Open Space – County of Santa Barbara
- Lake Los Carneros - City of Goleta
- Highway 101 landscaping at Winchester Canyon Rd. - Caltrans
- Santa Barbara Airport landscaping – City of Santa Barbara
- Evergreen Open Space – County of Santa Barbara

## Agriculture

There currently exists a large agricultural market throughout the study area, for which a portion could potentially utilize recycled water. Previous studies identified agricultural markets located near the San Pedro Canyon, Carneros Canyon, and Glen Annie Canyon areas with a reported acreage of 1,497. Currently, agricultural markets generally use raw and/or potable water as their water source. A source of recycled water for irrigation supply would offer the advantage of providing a dependable supply of water to the growers in the area, even during extended periods of drought.

While there is a high agricultural water use in the District, there are obstacles to converting to recycled water for irrigation. The first challenge is that the use of recycled water in fields and orchards where workers could be exposed must comply with applicable water quality and public health regulations. The second obstacle is that many crops are sensitive to the high concentration of dissolved minerals in recycled water. For example, for avocado growers, it would be necessary to irrigate their crops with a combination of recycled and potable water, or to provide periodic flushing with potable water to leach salts that may cause leaf burn.

There are three critical constituent concentration levels in recycled water that determine the ability of agriculture crops to utilize recycled water. These are total dissolved solids (TDS), boron, and percent sodium. For golf course and landscape irrigation, the TDS content is the most critical parameter in determining the suitability of recycled water for irrigation. High TDS content may limit its usefulness significantly for irrigation use. For example, avocado and citrus trees are not tolerant of high concentrations of TDS and routine use may reduce the production yield of these crops.

Conversations with the County of Santa Barbara Agricultural Department indicate that the agricultural community in and around the Goleta Valley consists predominately of avocado and citrus groves, with

moderate ornamental flower growers and vegetable production. Avocados are extremely sensitive to TDS concentration, requiring limits below 800 mg/L. The WWTP currently does not provide the quality of recycled water required for avocado grove irrigation (average TDS levels of 1250 mg/L), and would require enhanced treatment such as reverse osmosis in order for this market to be a feasible user. Citrus production is not as sensitive to TDS concentrations as avocado groves, however the water quality for use in this market is questionable at the present time. As a result, these markets have been not been included in the listing of potential customers at this time.

## Current Uses versus Prior Projections

Recycled water use has remained relatively constant (about 1,000A AFY) since 2000. In the District's 2001 UWMP, recycled water use was projected to increase to about 1,390 AFY by 2005 based on deliveries to customers with existing contracts for recycled water deliveries. The recycled water deliveries in 2004 were 1,051 AF and are projected to be the same in 2005. The reason that recycled water deliveries has not increased as predicted in 2001 is that not all customers who have contracted for recycled water have started taking it.

The District estimates future recycled water use to increase over time as shown below in Table 26. The District believes that recycled water production will not likely increase over 1,500 AFY by 2030 due to limits in the available market and the high cost of increasing treatment capacity.

**TABLE 26**
**ESTIMATED FUTURE RECYCLED WATER PRODUCTION (AFY)**

| Current (average of 1999-2004) | 2010 | 2015 | 2020 | 2025 | 2030 |
|---|---|---|---|---|---|
| 979 | 1,200 | 1,500 | 1,500 | 1,500 | 1,500 |

# 12.0 WATER QUALITY IMPACTS ON RELIABILITY

## 12.1 SURFACE WATER

The District's Corona del Mar WTP processes raw surface water from Lake Cachuma. The raw water contains microbiological and particulate matter that does not meet federal and state primary and secondary drinking water regulations. The treatment plant is required by these regulations to remove these substances via coagulation, sedimentation, filtration and disinfection via chlorination. Chlorination provides a disinfectant residual that is required by federal and state regulations and helps maintain a safe drinking water supply throughout the distribution system. This multi-barrier treatment process has proven sufficient to meet federal and state primary and secondary drinking water regulations. Future upgrades will enable the treatment plant to more effectively reduce the amount of particulate matter in the water and thus continue to meet state and federal regulations in the future, as well as insure an adequate supply of quality water to the public. Hence, the quality of water from the Cachuma Project and the SWP water conveyed through Cachuma Lake is not considered an impediment to water supply reliability.

## 12.2 GROUNDWATER

The District's wells extract water from the Central Sub-Basin and the East Sub-Basin. The basin water contains iron, manganese and hydrogen sulfide that do not meet federal and state secondary drinking water regulations. The wells are required by these regulations to remove these dissolved substances by utilizing filtration and oxidation via chlorination. Chlorination also provides a disinfectant residual that is required by federal and state regulations and helps maintain a safe drinking water supply throughout the distribution system. This treatment process has proven sufficient to meet federal and state primary and secondary drinking water regulations. Future upgrades will activate more wells to active status and enable the wells to buttress the water supply. Hence, the quality of groundwater is not considered an impediment to water supply reliability.

# 13.0 WATER SERVICE RELIABILITY

The reliability of the District's water service during a normal year, a critically dry year, and a series of dry years is evaluated below. The available water supply during each of these scenarios is compared to the anticipated demand to identify potential shortages in deliveries. This analysis was conducted for the years 2010, 2015, 2020, 2025, and 2030.

## 13.1 NORMAL YEAR RELIABILITY

Under a normal year over the period 2005-2030, the District estimates that it will have sufficient supplies to meet demands. The District's available supply is 17,672 AFY, as described in Section 3.0. The normal year demands over the next 25 years will not exceed this amount, as shown in Table 27.

**TABLE 27**
**NORMAL YEAR SUPPLY AND DEMAND (AFY)**

| | Current | 2010 | 2015 | 2020 | 2025 | 2030 |
|---|---|---|---|---|---|---|
| Supply (total available)* [Table 8] | 17,672 | 17,372 | 17,672 | 17,672 | 17,672 | 17,672 |
| % of Normal Year Supply | 100 | 100 | 100 | 100 | 100 | 100 |
| | | | | | | |
| Demand [Table 18] | 14,318 | 14,813 | 15,368 | 15,890 | 16,476 | 17,010 |
| % of Normal Year Demand | 100 | 100 | 100 | 100 | 100 | 100 |
| | | | | | | |
| Surplus** | 3,354 | 2,559 | 2,304 | 1,782 | 1,196 | 662 |
| | | | | | | |
| Surplus as % of supply | 18% | 16% | 13% | 10% | 7% | 4% |
| Surplus as % of demand | 23% | 19% | 15% | 11% | 7% | 4% |

* Total available water supplies are shown, but the District will only produce the amount necessary to meet demand.
** The surplus represents the amount of water that the District would not need to produce, which in most instances would be groundwater.

## 13.2 CRITICALLY DRY YEAR RELIABILITY

The critically dry year supply and demand quantities are shown in Table 28. Water supplies in a critically dry year will meet normal year demands until the year 2020. In that year, and years after, the District will implement demand reduction measures to reduce demands to meet the available supplies in a critically dry year. The maximum demand reduction would be 9% in one year to meet a water supply shortage. If the District increases its groundwater pumping capacity by the year 2020, the predicted shortages may be avoided by producing groundwater at more than the soon-to-be maximum rate of 5,600 AFY, utilizing the District's annual legal entitlement and banked groundwater.

**TABLE 28**
**CRITICALLY DRY YEAR SUPPLY AND DEMAND (AFY)**

| | 2010 | 2015 | 2020 | 2025 | 2030 |
|---|---|---|---|---|---|
| Available Supply [includes banked groundwater]* [Table 13] | 15,486 | 15,486 | 15,486 | 15,486 | 15,486 |
| % of Normal Year Supply | 88 | 88 | 88 | 88 | 88 |
| | | | | | |
| Demand** [Table 18] | 14,813 | 15,368 | 15,486 | 15,486 | 15,486 |
| % of Normal Year Demand | 100 | 100 | 97 | 94 | 91 |
| | | | | | |
| Shortage (Supply Minus Demand) | 0 | 0 | 0 | 0 | 0 |
| | | | | | |
| Shortage as % of dry year supply | 0% | 0% | 0% | 0% | 0% |
| Shortage as % of normal year demand | 0% | 0% | 0% | 0% | 0% |

* Supply includes use of the District's annual groundwater entitlement (2,350 AFY) plus banked groundwater up to the District's 5,600 AFY pumping capacity.
**Assumes that demand will be reduced in 2020, 2025, and 2030 through voluntary demand reduction measures to meet available supplies.

## 13.3 MULTIPLE DRY YEAR RELIABILITY

For this analysis, the District used the water supply estimates for the six year dry period shown in Table 13. The total annual water supply available to the District during each of those dry years ranged from 15,784 AF to 20,921 AF. Water from the SWP and Cachuma Project are greatly reduced and highly variable during this period. However, the District would be able to maximize production in these years by producing groundwater at up to 5,600 AFY.

For the multiple dry year analysis, the District assumed six year dry periods that would end in 2010, 2015, 2020, 2025, or 2030. The estimated future demand in those years was used based on the demand projections in Table 18. Demand is greater in dry year periods at the later years compared to the earlier years.

The multiple dry year supply and demand estimates are shown in Table 29. The District estimates that it will have sufficient supplies to meet the annual demands in a 6-year dry period that occurs during the years 2005-2030. The District does not anticipate any reduction in water deliveries during a six consecutive dry years because the District can utilize banked groundwater (which is now over 35,000 AF) to make up any shortages in surface supplies.

## TABLE 29
## MULTIPLE DRY YEAR SUPPLY AND DEMAND

| | 6 Year Dry Period Ending in Specified Year | | | | |
|---|---|---|---|---|---|
| | 2010 | 2015 | 2020 | 2025 | 2030 |
| Average annual supply for 6 year dry period [includes banked groundwater] – AFY [based on Table 13] | 17,935 | 17,935 | 17,935 | 17,935 | 17,935 |
| % of Normal Year Supply | ~100 | ~100 | ~100 | ~100 | ~100 |
| | | | | | |
| Average annual demand during 6 year dry period – AFY [Table 18] | 14,813 | 15,368 | 15,890 | 16,476 | 17,010 |
| % of Normal Year Demand | 100 | 100 | 100 | 100 | 100 |
| | | | | | |
| Average annual shortage (Supply Minus Demand) – AFY | 0 | 0 | 0 | 0 | 0 |
| Total groundwater use during 6 year dry period to meet demand and prevent shortages - AF | 15,278 | 18,470 | 21,466 | 24,844 | 28,052 |
| | | | | | |
| Residual shortage as % of supply | 0% | 0% | 0% | 0% | 0% |
| Residual shortage as % of demand | 0% | 0% | 0% | 0% | 0% |

# 14.0 AGENCY COORDINATION

The District's consultant preparing this plan met with the staffs of the following agencies during the preparation of the Plan: City of Goleta, University of California, Santa Barbara Airport (City of Santa Barbara), and Santa Barbara County Planning & Development. The District submitted the draft UWMP to these same agencies, as well as to other agencies and parties listed in Table 30 for review and comment.

**TABLE 30**
**SUMMARY OF AGENCY COORDINATION**

| | Participated in Developing Plan | Commented on the Draft Plan | Attended Public Meeting | Was Contacted for Assistance | Was Sent a Copy of the Draft Plan | Was Sent a Notice of Draft UWMP | Not Involved/ No Information |
|---|---|---|---|---|---|---|---|
| ***Other Local Water Suppliers and Water Management Agencies*** | | | | | | | |
| City of Santa Barbara | | | | X | X | X | |
| Montecito Water District | | | | | | X | |
| Carpinteria Valley Water District | | | | | | X | |
| Santa Ynez River WCD ID#1 | | | | | | X | |
| Central Coast Water Authority | | | | X | X | X | |
| La Cumbre Mutual Water Company | | X | X | | X | X | |
| SB County Water Agency | | | | X | X | X | |
| ***Other Public Agencies*** | | | | | | | |
| City of Goleta | | | | X | X | X | |
| County of SB, Planning Dept. | | | | X | X | X | |
| Calif. Coastal Commission | | | | | X | X | |
| Univ. of California | | X | | X | X | X | |

# 15.0 PUBLIC PARTICIPATION

It is the District's policy to encourage public participation when adopting plans such as the UWMP. Therefore, the District issued the Draft UWMP for public comment on November 12, 2005. The District conducted a public hearing on November 22, 2005 to receive verbal and written comments on the draft document. Notices for the public hearing were placed in the local newspaper and were posted at the District's offices and on its website (www.goletawater.com).

Copies of the Draft UWMP were distributed to the County of Santa Barbara, City of Goleta, Santa Barbara Airport, University of California, and other interested agencies and public entities. Written comments on the Draft UWMP were received until November 28, 2005. During this review period, the Draft UWMP was available at the District's offices during normal business hours and on the District's website. Written comments were received from the following parties: University of California, Ms. Cecilia Brown, and the La Cumbre Mutual Water Company.

The District carefully considered the comments from the public meetings and written comment letters when preparing the Final UWMP. In some instances, the District has revised the plan in light of the comments, while in other instances, the District determined that it was not necessary or appropriate to revise the plan in response to a comment.

# 16.0 REFERENCES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