CAMBRIA COMMUNITY SERVICES DISTRICT

URBAN WATER MANAGEMENT PLAN

Tammy A. Rudock
General Manager

Robert C. Gresens
District Engineer

BOARD OF DIRECTORS

Greg Sanders, President
Donald Villeneuve, Vice President
Ilan Funke-Bilu
Peter Chaldecott
Joan Cobin

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CHAPTER 1 - INTRODUCTION

1.1 Purpose of Plan

This plan is in response to the Urban Water Management Planning Act, Water Code Sections 10610 through 10656 that was made effective on January 1, 1984. The State Legislature has subsequently amended the Act, with the most recent amendments occurring in 2004 (Senate Bill 318, Alpert, *Desalinated Water*). Prior amendments to the Act have also linked state financial assistance to the completion of an Urban Water Management Plan, as well as requiring additional content within the plan. Therefore, this update to the Cambria Community Services District's Urban Water Management Plan includes additional discussion on groundwater supplies, a groundwater management plan, and the availability of future supply projects, including desalinated seawater.

1.2 Preparation and Adoption of Plan

This plan was prepared by the Cambria Community Services District (District) and corresponds to those guidelines developed by the California Department of Water Resources, and as presented in State Water Code Sections 10610 through 10656. For the reader's convenience, Appendix A provides a cross reference between specific provisions of the Urban Water Management Plan Act, as outlined by the Water Code, and sections of this report. A copy of the relevant California Water Code Sections, as amended through 2004, also follows the cross reference in Appendix A.

It is the District's policy to encourage public participation when adopting plans such as the Urban Water Management Plan. Therefore, a public review draft version of this plan was presented during a December 16, 2004 Board meeting of the Cambria Community Services District. An announcement on final plan adoption was advertised in the local newspaper on March 5, 2005. A public hearing occurred on March 15, 2005 for the purpose of obtaining public comments and input. The Board of Directors of the Cambria Community Services District initially adopted the 2005 update on March 15, 2005 by Resolution No. 12-2005 (See Appendix B). Since then, the California Department of Water Resources provided additional review comments associated with the Demand Management Measures identified in the March 2005 plan. This most recent update addresses those earlier comments and better matches a format followed by the DWR during its review. As a result, the District re-advertised the adoption of this update on December 5, 2005. A public hearing was subsequently held on December 15, 2005 adopting this most current update. A copy of Resolution 70-2005 adopting this most recent revision to the 2005 Plan can also be found in Appendix B.

1.3 Coordination of Plan

The Cambria Community Services District provides water service to the unincorporated town of Cambria within San Luis Obispo County. Review of the growth and build-out portions of this plan were reviewed with County Planning staff during development of

this Plan. Most recently, the CCSD has provided extensive input to the County during public hearings conducted by the Planning Commission on a May 2005 report entitled "Cambria and San Simeon Acres Community Plans of the North Coast Area Plan." During its November 10, 2005 meeting, the County Planning Commission recommended the May 2005 report and its draft EIR to the Board of Supervisors for their final approval.

In addition to the May 2005 County Plan, much of the information contained within this plan is based on water master planning reports that have been provided to County Planning, and was the subject of numerous public meetings, many of which were televised on the local public access channel. The District's water master planning documents are also posted on its web site for public review. The County and District have also held numerous meetings on the subject of build out in Cambria. Recent coordination efforts have included sharing detailed land use records and related geographic information system mapping.

The District's service area is also within the Coastal zone and subject to the Local Coastal Program that was first developed by the County and certified by the California Coastal Commission in 1988. As part of a periodic review of the Local Coastal Program, the Coastal Commission adopted recommendations that were presented to the County in 2001. Included among these recommendations, was recommendation 2.16 calling for a reduction of the build-out potential in Cambria. To date, the District has made a substantial effort towards meeting the intent of the following Coastal Commission Recommendation 2.16.

> *Coastal Commission Recommendation 2.16:*
>
> *"The LCP needs to be amended to address long-term development potential in Cambria. The County should work to expand the TDC Program by identifying other sensitive areas that would benefit from transfer of potential development to more suitable locations. Expansion should include Special Project Area #2, as well as watershed areas, other scenic corridors and other small lot tracts in undeveloped areas that support significant coastal resources, particularly contiguous blocks of sensitive pine forest habitat. More aggressive policy options should be considered as well, including development of an Assessment District to retire lots, create open space and promote forest protection. Other mechanisms should be evaluated such as the ability to use mitigation fees or erosion control fees to address long-term build out. Further attention could be focused on alternatives for reducing development potential on single and double lots and creating incentives for the minimum lot size of 7,000 square feet. As part of this process, the County should establish a task force charged with identifying management options and strategies for reducing build out in Cambria by a specific deadline."*

The most recent May 2005 Cambria Community plan was approved by the County's Planning Commission based on a decreased development plan alternative. This approximates 4,650 total residential housing units, which includes about 3,780 existing residential units, plus the District's outstanding service commitments. This value also

approximates an advisory ballot measure, which was approved in Cambria during August of 2000.

In addition to its long-range planning documents, the County has also developed a growth management ordinance and associated Resource Management System (RMS). The ordinance and annual RMS reporting process establish maximum allowable growth rates based on each individual community's ability to provide key resources (e.g., water, wastewater, roads, schools, and air quality). Annual review by the County Board of Supervisors results in a final determination on maximum allowable growth rates for each community. By ordinance, the countywide maximum target growth rate has been set at 2.3 percent annually. Because of limited water supply, the County lowered Cambria's maximum allowable growth rate to 1 percent for the year 2000. The District also Declared a Water Code 350 emergency during November 2001 that has remained in effect since. Since then, there has been no issuance of an intent-to-serve letter by the District for future water connections. Cambria's water supply has been rated as being at Service Category Level III by the County's RMS. This is further defined as "When the existing water demand equals or exceeds the dependable supply."

In view of the State's desire to reduce build-out potential in Cambria, the District has developed a phased build-out reduction plan in parallel with its Water Master Planning efforts. Recommendations from the phased build-out reduction plan will be incorporated as mitigation measures into the District's Program-Level Environmental Impact Report on its water master plan. The District and its consultants are currently completing both of these efforts. Because of the goal to reduce build-out potential, this Urban Water Management Plan may be atypical of other plans with regard to how future demand and supply is projected. For example, preliminary work on the build-out reduction plan indicated approximately 1,500 future residential units could be eliminated from earlier County build-out estimates by limiting water service to no greater density than what is allowed for in existing deed restrictions and service agreements for particular areas. This finding resulted in the District adopting an ordinance (CCSD Ordinance No. 2-2005) that restricts water service to these areas at no greater density than allowed by existing deed restrictions and service agreements. Therefore, the adoption of District Ordinance 2-2005 is included as an adopted demand management measure within Chapter 8 of this plan.

Other elements of the phased build-out reduction plan may include the financing and acquisition of future development rights. For example, in 2000 the District coordinated the access of the East-West Ranch property. As a result, this area now provides the community with a permanent open space, recreational hiking trails, and pristine bluff trail views of the ocean. Consequently, the County's May 2005 planning document revises zoning for this 450-acre area from single-family residential, multi-family residential, and commercial-retail, to open space and recreation.

1.4 Service Area

The following discussion provides a brief summary on: the formation of the District; the local climate; issues associated with antiquated subdivisions within the service area; build-out estimates and related efforts to reduce future build-out potential; demographics; and, recent water master planning efforts.

1.4.1 Background of the Cambria Community Services District

Cambria is located along Highway 1 on the North Coast of San Luis Obispo County approximately 35 miles north of the City of San Luis Obispo. The Pacific Ocean to the west, the Santa Lucia Mountain Range to the east, and Big Sur to the north limit access to the area. Highway 46 connects into Highway 1 approximately four miles south of Cambria. To travel inland towards Paso Robles, the route along Highway 46 passes over a summit at 1,720 feet above sea level. The distance along Highway 46 from Highway 1 to inland Highway 101 is approximately 22 miles. Figure 1-1 shows the location of Cambria.

Figure 1-1
Location Map

The Cambria Community Services District provides water supply, wastewater collection and treatment, fire protection, garbage collection, and a limited amount of street lighting and recreation. When it was formed in 1977, the Cambria Community Services District became a successor to an earlier Cambria County Water District, which was formed in 1959. Prior to 1959, community water supply was provided by the Cambria Development Company, and earlier by the J.D. Campbell Water Company. The District currently serves a population of about 6,400 as well as a large number of visitors to the Central Coast. The District's service area covers approximately four (4) square miles

and is shown in more detail in Figure 2-3 of Chapter 2 (CCSD Water Distribution System & Pressure Zones). The relatively remote location of Cambria has resulted in the area relying solely upon local groundwater for its water supply.

1.4.2 Climate

Cambria is located along the central California coast between the Pacific Ocean and Santa Lucia mountain range. The average annual rainfall precipitation is approximately 20 inches. The area experiences a dry summer season from about May through September. The coastal influence usually drives fog into the lower elevations during the summer months, keeping the area relatively cool while inland areas are warm. The area is considered to be within the State of California's CIMIS "Evapotranspiration" Zone 1 (a.k.a., "Coastal Plains Heavy Fog Belt"). Variations in climates, or microclimates, also occur within Cambria depending upon elevation and distance from the shoreline.

During the summer months, the temperature variation from Cambria to inland Paso Robles, approximately 25 miles east, can be as much as 40 degrees Fahrenheit. The mountains to the east, combined with a prevailing west to east storm track results in higher rainfall amounts in the upper elevations outside of the District's service area.

Table 1-1 summarizes rainfall by month as well as evapotranspiration rates for the Cambria service area. Based on irrigation rates for turf grass, the average irrigation demand is about 2.63 feet per year. July is typically the highest irrigation demand month and usually contains the day in which the maximum daily demand occurs during the year.

1.4.3 Issues Associated with Antiquated Subdivisions

One of the more challenging issues in developing an understanding of the Cambria area and future water needs is in interpreting the various rules associated with development of its smaller-lot subdivisions. During the late 1920s, very small lots were laid out with little regard to modern standards associated with topographic, geologic, environmental, and other constraints. Since then, home sizes have also evolved into much larger residences than the small vacation cabins that were most likely anticipated. For example, many of the original Lodge Hill subdivision lots are about 1,750 square feet in area (about 25 feet wide and 70 feet deep). Today, homes of 2,500 to well over 3,500 square feet are commonly being built over two, three, or even five of the original subdivision lots.

To discourage high-density residential development, the County implemented a lot consolidation ordinance in 1966 that "consolidated" lots under common ownership that were contiguous. The ordinance set as a minimum, two consolidated lots as being one single building site. In order to qualify for a building permit, any lot that resulted from a post-1966 subdivision of consolidated property is required to be at least 3,500 square feet in area, and have at least 40 feet of frontage. The smaller lots (i.e., 1,750 square-feet) may still qualify as a building site if they were separately owned and not

contiguous with the same owner's other properties prior to the County's adoption of the 1966 ordinance.

Table 1-1
Annual Irrigation Demands

Month	Reference ET_o[(a)]	Crop Coefficient[(b)]	Average Precipitation (Inches)[(c)]	Average Irrigation Demand (Inches)[(d)]	Monthly Peaking Factor[(e)]
January	1.86	0.8	3.53	0.00	0.00
February	2.22	0.8	3.70	0.00	0.00
March	2.93	0.8	4.37	0.00	0.00
April	3.54	0.8	1.19	3.05	1.16
May	4.15	0.8	0.20	4.98	1.90
June	4.49	0.8	0.10	5.53	2.10
July	4.76	0.8	0.02	5.96	2.27
August	4.27	0.8	0.12	5.23	1.99
September	3.54	0.8	0.63	3.71	1.41
October	3.05	0.8	0.94	2.73	1.04
November	2.03	0.8	1.88	0.34	0.13
December	1.64	0.8	2.98	0.00	0.00
Annual Demand (Inches)				**31.53**	
Annual Demand (Feet)				**2.63**	

Notes:
(a) From 1998 USGS Report 98-4061, Yates & Von Konyenburg, Table 5, p.53.
(b) k_c value of 0.8 based on warm weather turf grass, see DWR Publication 113-3.
(c) Average of monthly values from WWTP gage, 1974 through 1992
(d) Irrigation Demand = $[k_c \times ET_0 - (P \times 0.75)] \times LR \times (1/IE)$.
(e) Divided monthly value by monthly average.

Analyzing potential development within the small lot subdivisions is complicated and poses unique challenges in determining build-out potential. For example, the County has not required merger of smaller lots as a condition to development. Therefore, in many cases, existing single-family homes have been constructed across property lines where an underlying lot line (or lines) was (or were) never eliminated via a Subdivision Map Act-defined lot merger. This leads to uncertainty over the actual potential build-out within Cambria due to concerns over existing homes being demolished and replaced with multiple housing units within the underlying lot lines. To offset this concern, the Cambria Fire Department reviews remodels and future projects for compliance with the fire code and related Uniform Building Code which requires fire-rated walls if structures are built within three feet of a property line, including any underlying property line (particularly within the antiquated subdivision areas). The requirement for a fire rated wall along an internal lot line would be lifted after a property was merged. The County has also implemented a voluntary lot merger program to further assist homeowners with the lot merger process.

1.4.4 Build-out Estimates and Efforts to Reduce Future Build-out

The District Board has requested its staff to develop a build-out reduction plan that can result in maximum of 4,650 residential housing units. Completion of a phased build-out reduction plan is in progress with the District as well as a continuing dialogue with County planners working on the May 2005 Cambria Community plan. Measures to further reduce build-out may include:

- A "zero-net increase" policy requiring the retirement of certain properties from future development as a condition for any future subdivision of land.
- Transfer of development credit programs, such as the one currently being administered within Cambria by the Land Conservancy of San Luis Obispo.
- A forest mitigation plan to offset the loss of Monterey Pine forest habitat due to any new development.
- Development and expansion upon fire code regulations to identify areas of high fire risk and associated performance standards that may apply.
- Acquisition of development rights through conservation easements, or fee-title purchasing.
- Financial incentives to merge multiple smaller lots into a single parcel.
- Measures to discourage development on steeper terrain, in environmentally sensitive habitat areas, and areas of very high fire risk.
- Ballot measures to finance property rights acquisitions.
- Grants and outside funding sources assist in financing acquisitions.
- Tax saving incentives to individuals donating property for permanent conservation.
- Referendums to establish minimum allowable lot sizes in specific areas.

1.4.4 Demographics

Based on the 2000 census, Cambria has a relatively high vacancy rate of 25-percent. This indicates the area's use as a vacation destination and the corresponding part-time occupancy of its vacation homes. Based on all the residential households, there was an average of 1.66 persons per household. When looking at the occupied residences, the average was 2.21 persons per household. The 25-percent vacancy is close to what was reported in earlier census reports. Many people have also chosen Cambria as a

retirement destination; this may further explain the relatively low number of persons per household.

Cambria has been under a moratorium on new connections since the District declared a Water Code 350 emergency in November 2001. The District's long-term plans call for the completion of a seawater desalination plant in order to provide additional reliability and drought protection for its existing customers and those on the District's water wait-list. Table 1-2 was developed based on the 2000 census data, a current estimate of 6,400 residents, the County's 2.3 percent maximum annual growth rate, and an estimate of four years for the completion of a desalination project.

Table 1-2: Population Projection

Year	2000	2005	2010	2015	2020	2025
Service Area Population						
A. Without any build-out reduction measure	6,232	6,400	6,547	7,335	8,218	9,207
B. With build-out reduction & 4,650 residences	6,232	6,400	6,547	7,335	7,719	7,719

1.5 Water Master Planning

The District embarked on a phased water master plan update, with the following documents being key references.

- June 2004, *Final Report, Assessment of Long-Term Water Supply Alternatives*, by Kennedy/Jenks Consultants, prepared for the Cambria Community Services District (See Appendix J to this report).
- July 2004, *Final Report, Task 3: Recycled Water Distribution System Master Plan*, by Kennedy/Jenks Consultants, prepared for the Cambria Community Services District (See Appendix K to this report).
- July 2004, *Final, Task 3 Report: Potable Water Distribution System Analysis*, by Kennedy/Jenks Consultants, prepared for the Cambria Community Services District.
- December 8, 2000, *Final Report, Baseline Water Supply Analysis*, by Kennedy/Jenks Consultants, prepared for the Cambria Community Services District (Appendix L to this report)

In addition to its water master planning reports, the District also commissioned a study of the District's existing water conservation practices. This resulted in the completion of the following report:

- January 20, 1999, *Water Conservation and Reuse Study*, Boyle Engineering Corporation.

Historically significant documents also include a San Simeon Creek Water Basin Management Program and Operations Manual that was completed in August 14, 1980 (See Appendix H to this report). In addition, the U.S. Geological Survey completed Report 98-4061entitled “Hydrogeology, Water Quality, Water Budgets, and Simulated Responses to Hydrologic Changes in Santa Rosa and San Simeon Creek Ground-Water Basins, San Luis Obispo County, California.” This later report included a quantitative water budget for each aquifer for April 1988 through March 1989, as well as models that simulated ground water flows under various scenarios.

CHAPTER 2 - WATER SOURCES

2.1 Overview of Water Sources

The District's potable water is supplied solely from groundwater wells in the San Simeon and Santa Rosa Creek aquifers (underflow of these streams). The California Department of Water Resources Bulletin No. 118 identifies these two sources as The San Simeon and Santa Rosa groundwater basins, numbers 3-35 and 3-36, respectively. Appendix C contains the Bulletin 118 summary description of each of these aquifers, neither of which is listed as being in overdraft status by the State. Figure 2-1 shows the historical water production for both the San Simeon and Santa Rosa well fields in Cambria. Key historical events that are noted on this figure include drought periods of 1975-1976, and 1988-1990. Table 2-1 summarizes the annual pumping from each aquifer for the period of 1988 through 2004.

Table 2-1

Production Summary
Annual Acre-Feet
1988 through 2004

Year	San Simeon	Santa Rosa	Total
1988	565.6	253.9	819.5
1989	622.4	174.6	797.0
1990	457.1	206.7	663.8
1991	404.9	150.8	555.7
1992	542.3	135.4	677.7
1993	690.5	0.9	691.4
1994	538.0	124.1	662.1
1995	675.9	1.9	677.8
1996	718.0	0.3	718.3
1997	678.5	107.3	785.8
1998	707.3	0.2	707.5
1999	774.1	0.5	774.6
2000	798.8	0.0	798.8
2001	745.3	52.7	797.9
2002	727.8	81.7	809.5
2003	708.8	84.1	792.9
2004	612.5	160.1	772.6

The Santa Rosa well field is Cambria's oldest supply source and was relegated to a back-up and augmentation role following start up of the San Simeon well field in 1979. In 1999 the Santa Rosa well field was shut down after the discovery of an MtBE plume. An emergency well SR-4 and associated treatment plant were subsequently installed further upstream from the existing Santa Rosa well field and placed into operation during August of 2001.

In November 2001, the District's Board of Directors declared a Water Code 350 emergency and ceased issuing additional connection permits until an adequate long-term supply project was completed. Current planning calls for a seawater desalination facility to provide drought protection, improve supply reliability, and to augment existing groundwater supplies. To date, no new connections are being issued and the District remains under a Water Code 350 declaration.

Due to the steep and varying topography of the service area, there are eight pressure zones within the District's distribution system. The area is served via a system of four groundwater wells; three-distribution system pumping stations; pressure reducing stations; and, four tank sites. Figures 2-2 and 2-3 show the hydraulic profile and layout of the Cambria water distribution system.

The District distributes a minor amount of recycled water from a well located near its wastewater treatment plant's percolation ponds off of San Simeon Creek. This water is provided for construction use and other non-potable applications, such as irrigation. Water Master planning for a recycled water distribution system calls for careful analysis of the existing aquifer and lagoon interface to determine the amount of recycled water that can be made available for future demands. The recycled water plan further describes a "no-net increase" approach towards the net withdrawal of water from the existing aquifers by converting certain existing potable water customers over to recycled water. Further discussion on the planned recycled water system can be found in Chapter 7. A full copy of the recycled water master plan is also included as Appendix K.

Historically, the District has used conservation as a means to extend its existing supplies. A plumbing retrofit program was initiated in 1988 that requires the installation of water efficient fixtures upon resale of a home. The District also promotes water conservation in local businesses and existing residences. In 1990, the program was expanded to require water-efficient fixtures on new construction. The 1990 program expansion also required builders to retrofit other existing buildings in order to receive a connection permit. In 2005 the District Board authorized membership into the California Urban Water Conservation Council (CUWCC). Membership in the Council provides further training and water conservation resources as well as access to a reporting system that is in closer alignment with the monitoring used by the State DWR.

The District has historically followed the CUWCC's Best Management Practices for Urban Water Conservation. For example, the District provides direct rebates to its customers for the installation of water-efficient washing machines and low-flow toilets. Businesses and homeowners are also provided incentives to convert existing regenerative water softeners to non-regenerative units. In addition, the District also provided restaurants with low-flow pre-rinse nozzles for their dishwashing operations. Chapter 8 further describes the District's demand management measures that are related to water conservation.

Figure 2-1: CCSD Well Production for 1975-2003

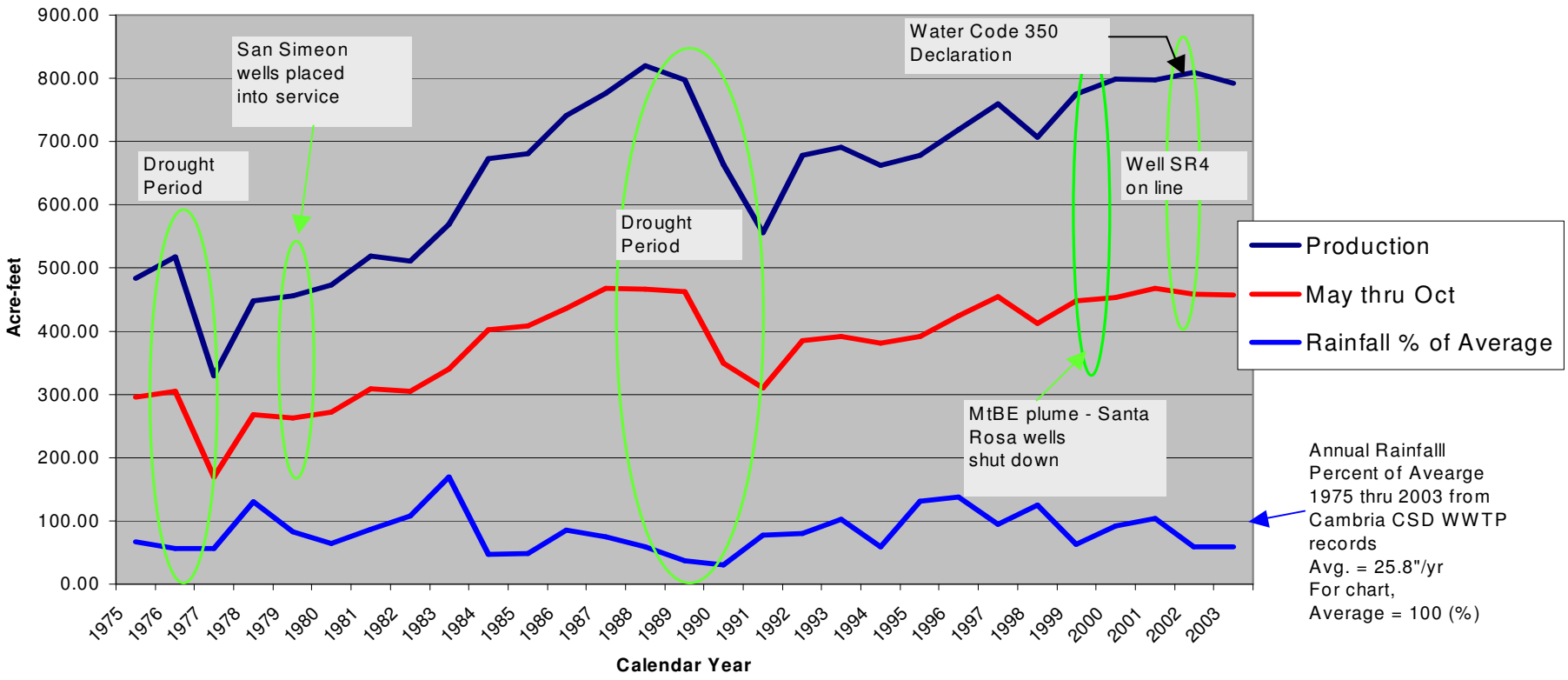


Figure 2-2: CCSD Hydraulic Profile

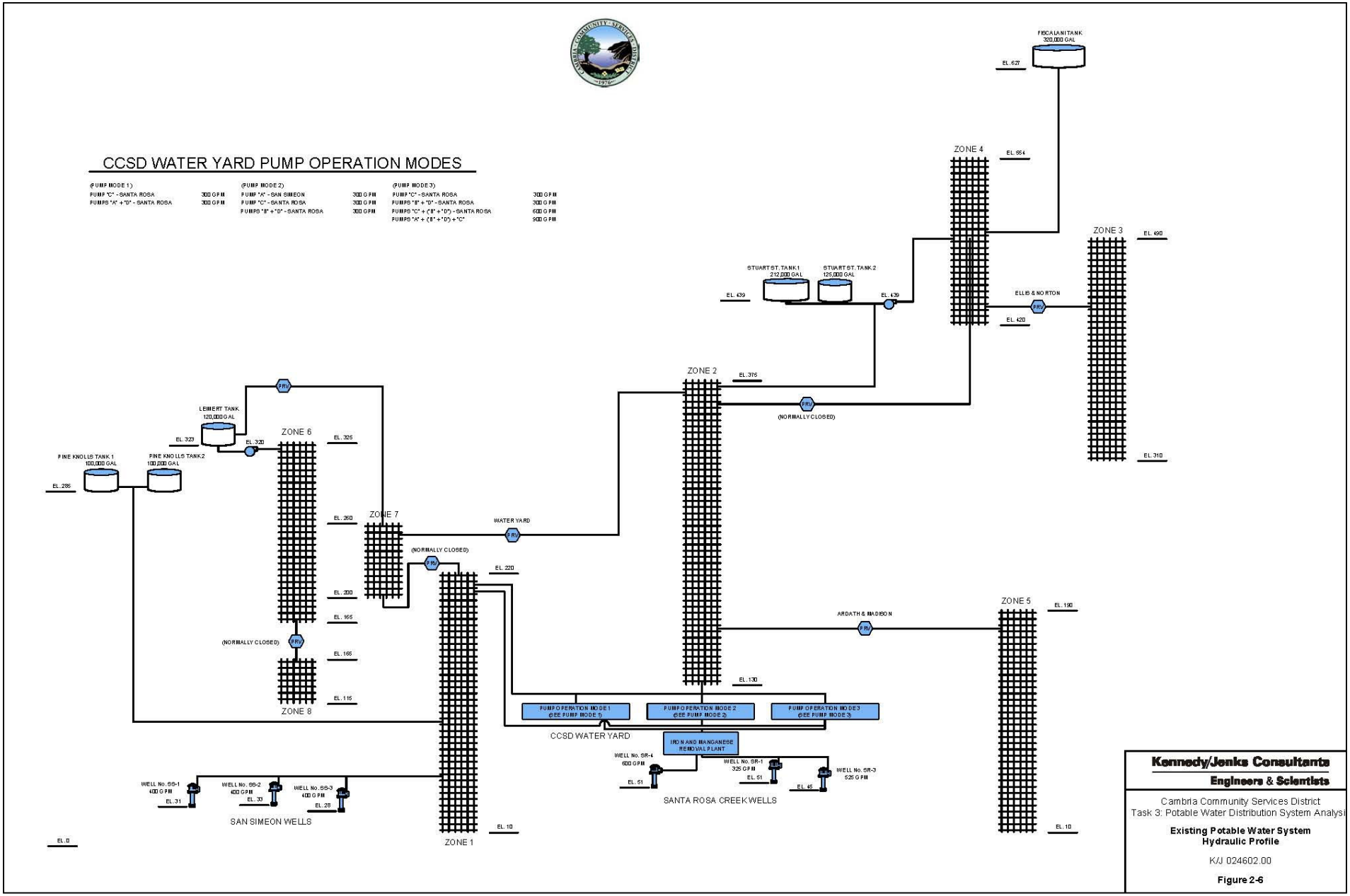
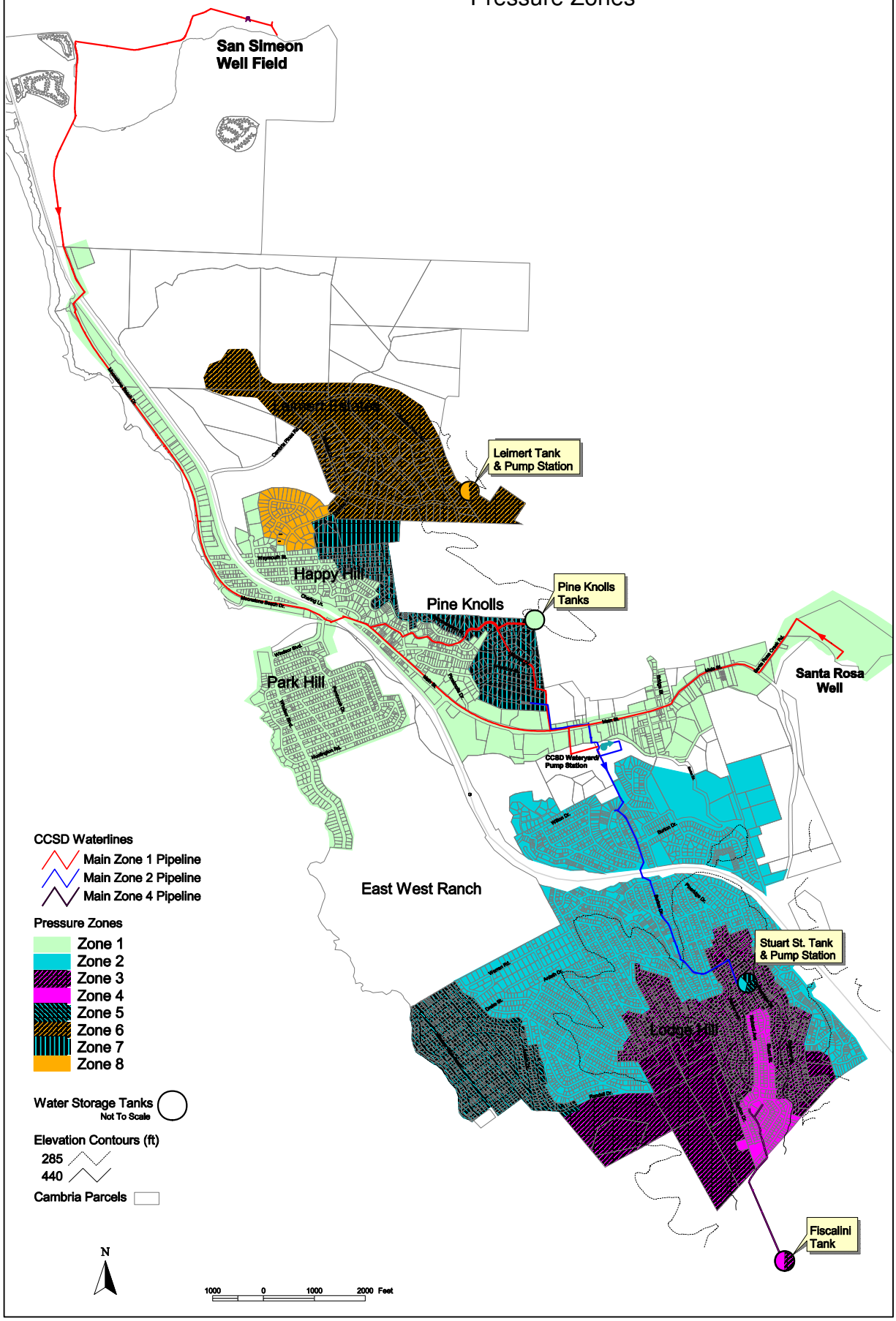


Figure 2-3: CCSD Water Distribution System & Pressure Zones



2.2 San Simeon Creek

The District's permit from the State Water Resources Control Board limits the District production from the San Simeon Creek basin. The water diverted from the San Simeon Creek basin is limited to the quantity, which can be beneficially used and shall not exceed 1,230 acre-feet per calendar year. The maximum amount diverted between cessation of stream flow at the Palmer Flats gauging Station until October 31st of each year shall not exceed 370 acre-feet and the rate of flow of diversion shall not exceed 2.5 cubic feet per second. The District's San Simeon Creek facilities are capable of producing 5.3 AF/day at a peak rate of 1200 gallons per minute (gpm), or 2.7 cubic feet per second (cfs). This is slightly more than the 2.5 cfs allowed by permit. The time when flow ceases at Palmer flats varies each year depending upon the amount and pattern of rainfall received during the rainy season (i.e., water year, defined as October 1 through September 30).

2.3 Santa Rosa Creek

The District has previously claimed "Pre-1914 Rights" with its extraction of Santa Rosa Creek basin water. The area's 1915 "Forrester Map," an unrecorded historical document, also indicates that development had occurred around the Santa Rosa Creek by the level of land subdivision within what is now a predominantly commercial area of Cambria. The District filed an appropriative water rights application with the State Water Resources Control Board and Decision/Order Number 1624 was adopted on April 20, 1989. This order limits the amount of water that the District can divert from the Santa Rosa creek basin to 518 acre feet per calendar year, with a maximum of 260 acre feet allowed to be diverted from May 1 through October 31 of each year. The maximum flow rate of the diversion cannot exceed 2.67 cubic feet per second.

In 1999, the District learned of an MtBE contamination plume that was spreading towards its Santa Rosa well field. As a result, its existing Santa Rosa well field was shut down and an emergency well and treatment plant were constructed further upstream. To date, the plume still exists and is being treated by pumping and trucking contaminated water to an out of county treatment plant. The District's new Santa Rosa Creek production well (SR-4) is approximately 500 to 600 gpm (i.e., 1.1 to 1.34 cubic feet per second). The new treatment plant and well are located behind the Coast Union High School on property the District is leasing from the school district. The treatment plant provides filtering, disinfection, as well as the removal of iron and manganese.

Capacity of the new well is limited by potential impacts to stream flow. During the summer months, operators monitor the creek to avoid influencing its flow. For example, if it appears that larger agricultural irrigators may be operating, the well is shut down. The well is also operated to avoid running in parallel with the High School's nearby irrigation well. During the most recent May through October 2004 dry season, the new facility produced approximately 150 acre-feet.

2.4 California Coastal Commission Development Permit Limitations

During May of 1981, the California Coastal Commission approved an amendment to existing developments permits that modified the annual number of water connections at 125 per year (Coastal permit number 428-10). Condition 4 of the CCC permit 428-10 limits the total combined production from both creeks to less than 1,230 AFY. Additionally, it calls for no more than 260 AF to be withdrawn from the Santa Rosa Creek between July 1 and November 20, and no more than 147 AF per month outside of this period. In addition to these conditions, the CCC has required that at least 20 percent of CCSD supply be made available for visitor serving purposes.

2.5 Historical Well Levels.

Figure 2-4 illustrates the District's historical well level pattern at its main San Simeon well field. Typically, the levels are quickly recharged following the start of the rainy season and maintain high levels throughout the winter months. The narrow and thin nature of the coastal aquifers results in a decreasing amount of storage as well levels drop during the summer months.

2.6 Hydraulic Barrier at San Simeon Creek

To slow the underflow of the San Simeon Creek aquifer to the ocean and to prevent seawater intrusion, wastewater treatment plant effluent is percolated into the lower reach of the San Simeon aquifer. This occurs just upstream from the confluence of Van Gordon Creek at a system of four percolation ponds on the north side of San Simeon Creek. The hydraulic mound that is formed slows the flow of the subterranean aquifer as it flows towards the ocean.

Operation of the hydraulic barrier is managed to prevent a reverse gradient towards the San Simeon well field, which is located further upstream. The District has a well within the percolation pond area that can be operated to pull down the hydraulic barrier as needed. Waste Discharge Order 01-100 issued by the California Regional Water Quality Control Board (enclosed as Appendix I) requires the maintenance of a positive hydraulic grade from the upstream potable well field to the percolation pond area.

2.7 Basin Inflows and Outflows

The United States Geological Survey (USGS) conducted a detailed study of the hydrogeology of the San Simeon and Santa Rosa groundwater basins that were later summarized in a 1998 report1. Although the report is dated 1998, its water budget table was based on an April 1988 through March 1989 time frame. Table 2-2 presents an update to the simulated annual water budget developed within the USGS report. In

[1] U.S. Geological Survey. 1998. Report 98-4061; Hydrogeology, Water Quality, Water Budgets, and Simulated Responses to Hydrologic Changes in Santa Rosa and San Simeon Creek Ground-Water Basins, San Luis Obispo County, California

developing this table, all inflows and outflows were assumed to remain the same as in the 1998 report except for a 1991 change in operation by District to its spray field system. In 1994, the District converted a spray field operation into a percolation pond operation. This change decreased losses due to evaporation, and increased inflows into the San Simeon Basin by approximately 60 AF. It is also worth noting that although the water year for the 1998 USGS report was based on 1988 through 1989 District pumping, the current annual District demand is slightly less than the same 800 acre-feet per year amount. In addition, neither aquifer has been adjudicated. Therefore, the conversion of non-irrigated agricultural areas to more intensively irrigated areas could impact the balance shown on Table 2-2.

Figure 2-4
San Simeon Creek Well Levels

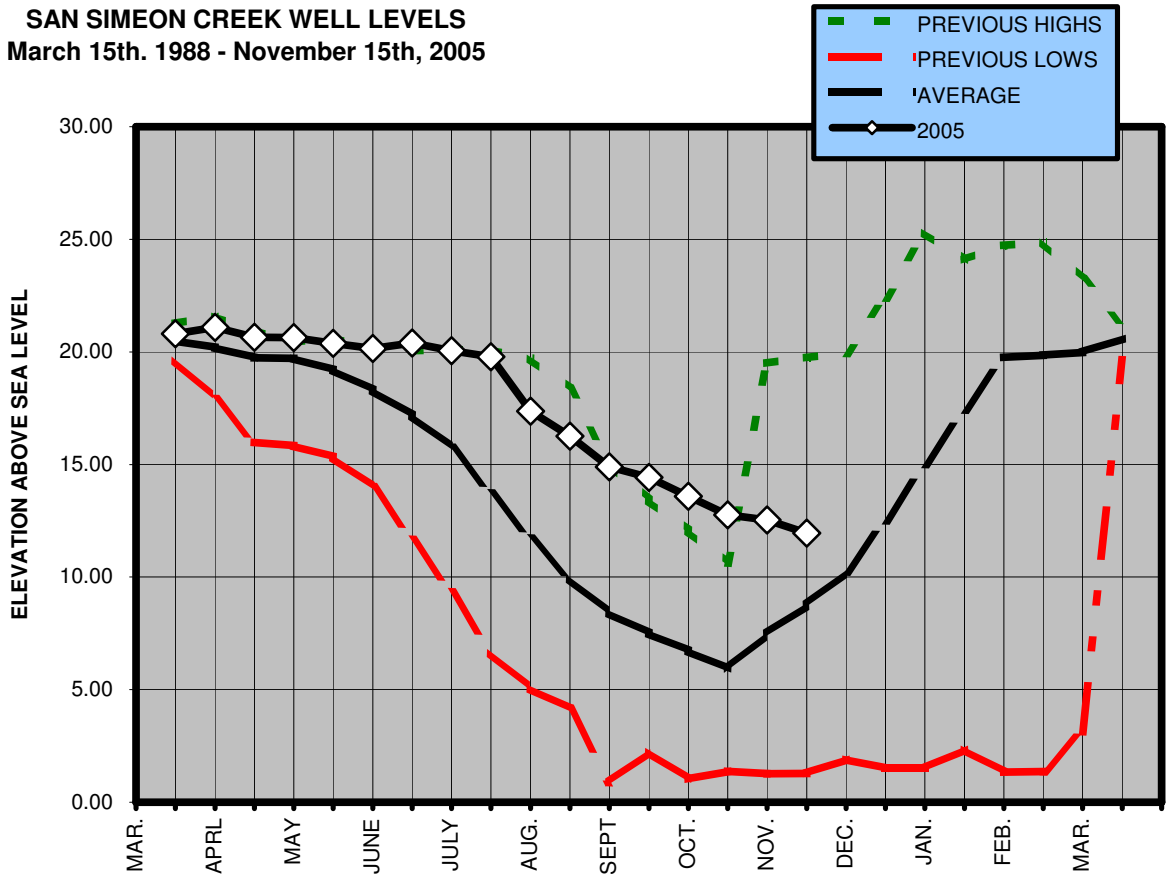


Table 2-2 - Estimated Annual Water Budget
Santa Rosa and San Simeon Ground-Water Basins

Budget Item	Santa Rosa Basin			San Simeon Basin		
	Inflow	Outflow	Net Flow	Inflow	Outflow	Net Flow
Rainfall Recharge	140	0	140	50	0	50
Creek Seepage	1,120	650	470	950	410	540
Subsurface Inflow & Outflow						
Onshore Boundaries	370	0	370	150	0	150
Ocean Boundary	0	60	-60	0	320	-320
Agricultural Water Use						
Pumpage	0	890	-570	0	450	-280
Irrigation-Return Flow	320	0		170	0	
Nonagricultural Water Use						
Municipal Pumpage	0	250		0	550	
Rural Pumpage	0	10		0	<10	
Wastewater Recharge						
Percolation Ponds	0	0		500	0	
Septic Tanks	10	0		<10	0	
Irrigation-Return Flow	10	0	-240	0	0	-50
Phreatophyte Transpiration	0	160	-160	0	30	-30
Total Net Flow			-50			60

2.8 Past Drought and Demand Management Practices

The service area has experienced droughts during 1975 through 1976, and 1988 through 1990. During the drought period of 1988 to 1990, the District repaired a substantial part of its distribution system with newer pipes. In the mid 1970s the leaky condition of the District's old water distribution system was so bad that water losses of as much as 40-percent occurred. During the 1990s, the District also implemented a retrofit program that required a two to one water savings for every new home connected. As part of the retrofit program, builders sought out and retrofitted existing homes with water saving fixtures in order to prove a water savings of at least twice that of the new home being connected.

In more recent times, the District struggled to meet demands following the shut down of its Santa Rosa well field in 1999 due to the discovery of an MtBE contamination plume. During the summer of 2001 a new emergency well SR-4 was placed into service along the Santa Rosa creek in an area further upstream from the MtBE plume. During the most recent dry season of 2004, the new well SR-4 and its associated treatment plant produced 150 acre-feet.

The District also has a tiered rate structure that provides a direct economic incentive to conserve water. Because 2003 and 2004 had low rainfall, the District also adopted drought surcharges during the summer season.

The District has also started an aggressive meter replacement program to reduce the unaccountable water. The District has historically averaged 10 to 15 percent of unaccountable water per year when comparing billed versus production totals. Much of this may be due to under-reporting by existing meters. In 2004 the District completed a pilot study for automatic-remote-read meters, and installed 133 replacement meters with this new technology. Approximately 3,800 replacement meters have been installed within the District since this time. Besides providing for more accurate readings, the new meters are capable of signaling an alert due to excessive water use, thus allowing more rapid response in notifying residents of a potential household plumbing leak. Similarly, the meters can detect whether or not a zero flow occurs at night, thus indicating whether leaking fixtures may be occurring within a residence. Further discussion on the District's demand management measures can be found in Chapter 8.

2.9 Water Conservation Measures

The District has implemented a wide variety of water conservation measures. These measures are described in Chapter 8.

2.10 Estimate of Future Supply

Table 2-3 provides an estimate of the planned future water supplies for Cambria. Because the summer dry season is the most critical time for the existing aquifers, supply for each year is shown for the winter and summer season. The 1,230 acre-feet groundwater total for each year is the maximum amount of diversion that is currently permitted to the District. For discussion purposes, a worse case summer dry-season groundwater scenario of 286 acre-feet is shown for year 2010. The 888 acre-feet total matches the estimated dry season demand with 4,650 residential connections. This total also allows for increasing the existing and future residential demand from 12 units (hundred cubic feet) per bi-monthly billing period to 18 units. Recycled water is shown in year 2015 through 2025 to illustrate how it can be used to reduce the reliance on desalination. To date, additional hydrologic study is needed to confirm whether 100 acre-feet per summer season can be diverted from the existing percolation pond area to non-potable irrigation customers.

Table 2-3 – Current and Projected Water Supplies

Year	2000		2005		2010		2015		2020		2025	
Water Supply Sources	winter	summer	winter	summer	winter	summer	winter	summer	winter	summer	winter	summer
Groundwater (1)	860	370	860	370	944	286	944	286	944	286	944	286
Recycled water (2)						0		100		100		100
Desalination (3)						602		502		502		502
Total	860	370	860	370	944	888	944	888	944	888	944	888

Notes: (1) For discussion purposes, the winter & summer totals equal 1230 afa, the total amount allowed by existing permits. Years 2000 and 2005 illustrate the maximum dry season diversion permited for the San Simeon aquifer. Years 2010, 2015, 2020, 2025 illustrate a worse case, critically dry season diversion of only 286 afa.

(2) Recycled water illustrates how it can be used to decrease the reliance on desalination during the dry season. To date, additional hydrologic modeling is needed to verify the amount of recycled water that can be diverted for non-potable irrigation during the summer season.

(3) The 602 afa shown for desalination during the summer season of 2010 allows meeting the maximum dry season demand with 4650 residential connections. This also assumes a quality of life improvement increase for existing and future residential connection demands (i.e., 12 ccf per bi-monthly to 18 ccf per bi-monthly).

CHAPTER 3 - RELIABILITY PLANNING

The current water rights diversion permits from the State Water Resource Control Board allow CCSD to pump a maximum of 1,118 AF during the wet season, and 630 AF during the dry season, from both the San Simeon and Santa Rosa Basins. However, the current California Coastal Commission Development permit further limits the total annual diversion from both creeks to no more that 1,230 AF. Additionally, the dry season start date, duration, and beginning groundwater levels, limit the actual availability of groundwater from both basins. Past work by the USGS also indicates the inflows and outflows of the two basin were in balance based on a 1988 to 1989 water year with a municipal demand of approximately 800 acre-feet per year.

The report entitled, "Baseline Water Supply Analysis," dated 2000 by Kennedy/Jenks Consultants (Appendix L) further developed a groundwater model based on historical data that projects basin response to increased levels of water demand. To interpret the model supply outputs, the following criteria were applied to determine whether water supplies appear to be adequate for the assumed water demand projections:

- The projected groundwater level at the end of the dry season in the San Simeon Basin is above the minimum groundwater level criteria for the specific hydrologic classification.
- There is at least an approximately 90 or 95 percent probability of occurrence that the groundwater level at the beginning of the dry season in the San Simeon basin is greater than the minimum groundwater level for the specified hydrologic classification.
- The projected draw down in the Santa Rosa Basin is less than 28 ft at the existing wells SR-1 and SR-3.
- The annual and dry season water rights limitations for each basin are not exceeded.
- From the model, it was determined that the current groundwater supply was marginal to inadequate to provide a 90 percent level of reliability for water demands in the year 1999 (3,796 connections) and was inadequate to provide a 95 percent reliability level for the same water demand.

It was further determined that the basins are not adequate to provide a 90 percent or 95 percent level of reliability for water demands greater than 10 percent of the 1999 demands (4,176 residential and commercial connections). Thus, the basins cannot reliably meet the increased demands of the waiting list and grandfathered connections (4,650 residential connections) without an additional water source.

According to the 2000 Baseline report, a total of 286 AF of groundwater from the San Simeon Basin and 201 AF from the Santa Rosa Basin would be available with 93 percent reliability during the dry season for a multi-dry year without causing adverse environmental impacts to the basins. However, since the Baseline report was completed in 2000, operation of well SR-4 has had periods of minimal operation during the dry season due to concerns over potential habitat impacts. Therefore, for purposes of long-range planning, dry season production is only assumed to be available from the San

Simeon aquifer, and limited to approximately 286-acre feet. Table 3-1 provides an estimate of the supply availability based on the SWRCB diversion permits, the CCC Development permit, and negligible use of the Santa Rosa aquifer during the dry season.

Table 3-1 – Estimate of Existing Supply Availability

Supply Availability	San Simeon (AFY)	Santa Rosa (AFY)	Total (AFY)
Annual[a]	1,230	518	1,230[c]
Dry Season[b]	286	201	286[d]
Wet Season	944	317	944[e]

Notes:
(a) Maximum annual availability as restricted by the SWRCB diversion permits.
(b) Dry season and wet season availability as determined from "Baseline Water Supply Analysis," 2000, by Kennedy/Jenks.
(c) 1,230 AF maximum annual amount allowed by CCC Development permit.
(d) The Santa Rosa supply is not expected to operate during the dry season and is expected to only operate as a supplemental source during the wet season. Thus is its not anticipated to increase the dry season supply availability.
(e) Difference between Annual and Dry Season availability, (1230 – 286 = 944 AF).

3.1 Desalination Facility Sizing and Enhancements to Increase Supply Reliability

Local Cambrians have a long history of shouldering water shortage emergencies and rate surcharges to curb demand. The typical residential water use in Cambria is approximately 0.161 acre-feet per year, or about 12 hundred cubic feet (ccf) per bi-monthly billing period. In planning for a future water supply, the District's Board expressed a desire to provide a quality of life increase to allow about 18 ccf per bi-monthly period (0.25 acre-feet per year) for a typical residential user. Therefore, sizing for the future desalination facility will assume a higher residential demand of approximately 0.25 acre-feet per residential connection. Based on this approach, a demand of about 888 acre-feet occurs during the dry season for the residential and commercial customers (with 4,650 residential connections and 20-percent set aside for visitor serving uses). Assuming a critically dry year with only 286 acre-feet available from the San Simeon Basin and no production from Santa Rosa, the desalination facility will need to provide approximately 602 acre-feet. From analysis of past dry seasons, the average duration of the dry season is 184 days. Therefore, the future desalination facility will be capable of producing a finished water output of 3.27 acre-feet per day, or 740 gallons per minute.

To provide an added level of reliability, the District's design consultant is also planning to make allowance for independent operation of the desalination facility without any blending of groundwater. This will be accomplished primarily through the use of a limestone rock filter as part of the post-treatment process. With this feature, the District will be better able to react to emergencies impacting either or both aquifers.

3.2 Frequency and Magnitude of Supply Deficiencies

Historic droughts of record since the District started to maintain records include the 1975 to 1976 drought, and the 1988 to 1990 drought. During development of the 2000 Baseline Water Supply Analysis report, the 1988 through 1990 drought period was used because it represented one of the driest periods on record, and was also supported by relatively complete hydrologic records. From review of past well levels at the San Simeon well field, the lowest groundwater basin levels occurred during the drought season of 1988 through 1990. This drought period ended following the arrival of the March 1991 "miracle" rains. Prior the March 1991 rains, the well field dropped to less than four feet during mid-January until mid-March, a period when the well field is typically recharged. In 1991, recharging of the well field did not occur until mid-March. Table 2-3 summarizes key data from this historic extended drought period.

Table 3-2
Summary of the 1988-1990 Drought Period

Year	Dry Season Demand Acre-feet			Rainfall inches	Dry Season Duration days	Duration with depth < 4 feet months	Months with < 4 feet above mean sea level at the San Simeon well field	
	SS	SR$^{\Delta}$	Total				Start	End
1988	399	245	644	15.15	271	4	Sep	Dec
1989	440	171	611	9.55	240	2	Sep	Oct
1990	369	225	594	7.89	338	2*	Nov	Dec
1991	-	-	-	19.96	216	2*	Jan	Mar

Notes:
* In January 1991, the San Simeon well field rose to 17.95 feet for a brief duration around the 1st of the month. However, levels quickly dropped to below four feet from the middle of January 1991 until the middle of March 1991. This preceded the "miracle" March rains of 1991.
$^{\Delta}$ Based on the historic location of the Santa Rosa well field before being shut down due to MtBE.

3.3 Projected Single Dry-Year Water Supply & Demand

From review of past records, the 2000 Baseline Water Supply Analysis report determined that 1990 represented one of the most severe single dry water years. Therefore, the 2000 report developed a single year supply and demand simulation based on the unusually long dry season of 1990. Based on this analysis, it was determined that a water demand reduction of at least 24 percent would be required in order to maintain a minimum water level of 3-feet above mean sea level at the San Simeon well field. From review of Table 3-2, a 24-percent reduction during 1990 would result in approximately 263 acre-feet of production from the San Simeon basin, and 161

acre-feet from the Santa Rosa basin. This past analysis, however, assumed the Santa Rosa well field was operable and at its historical physical location within the aquifer.

Following the discovery of an MtBE contamination plume in 1999, the operation of the District's historic Santa Rosa well field was halted, and a new temporary well SR-4 was installed further up-gradient in the aquifer. The operating history of this newer well is relatively short, and still being quantified. This well may also be closer the edge of the main storage aquifer, and may not have the same volume and storage characteristics when compared to the historic Santa Rosa well field location. During its first two years of operation, 2002 and 2003, well SR-4 was periodically shut down during the summer months due to concerns over potential habitat impacts as well as potential cumulative impacts from upstream riparian wells. During 2002 and 2003, temporary well SR-4 produced approximately 80 acre-feet. In 2004 production increased to approximately 150 acre-feet during the dry season. Because of its temporary location, potential habitat concerns, changed physical location within the aquifer, and potential impacts from upstream riparian wells, the use of well SR-4 was not relied upon in the single dry-year analysis for future years 2010, 2015, 2020, and 2025. To be conservative, records on the San Simeon basin were reviewed to determine the most probable groundwater level at the start of the dry season. From the 2000 Baseline report, this coincided with a beginning groundwater level of 15.27 feet above mean sea level and a 93-percent probability that levels would be at or above this value (93-percent is the highest probability determined within the 2000 report). This beginning dry season well level also corresponded to 286 acre-feet of supply being available from the San Simeon basin during a single dry-year scenario. Therefore, Table 3-3 used 286 acre-feet of dry season supply from the San Simeon aquifer in developing a single dry-year supply and demand analysis for years 2010, 2015, 2020, and 2025.

While reviewing Table 3-3, it should also be noted that the 1,230 acre-feet groundwater total for each year is the maximum amount of diversion that is currently permitted to the District. The 888 acre-feet total matches the estimated dry season demand with 4,650 residential connections. This total also allows for increasing the existing and future residential demand from 12 units (hundred cubic feet) per bi-monthly billing period to 18 units. Recycled water is shown in years 2015 and 2020 to illustrate how it can be used to reduce the reliance on desalination. To date, additional geo-hydrologic study is needed to confirm whether 100 acre-feet per summer season can be diverted from the existing percolation pond area to non-potable irrigation customers.

Table 3-3
Single Dry-Year Water Supply and Demand

Year	2005		2010		2015		2020		2025	
Water Supply Sources	winter	summer	winter	summer	winter	summer	winter	summer	winter	summer
Groundwater (1)	860	370	944	286	944	286	944	286	944	286
Recycled water (2)				0		100		100		0
Desalination (3)				484		477		502		602
Supply Subtotal	860	370	944	770	944	863	944	888	944	888
Water Demand	320	480	514	770	575	863	625	888	625	888
Difference	540	-110	430	0	369	0	319	0	319	0

Notes: (1) For discussion purposes, the winter & summer totals equal 1230 afa, the total amount allowed by existing permits. Year 2005 supply illustrates the maximum dry season diversion permited for the San Simeon aquifer @ 370 AF. to meet project summer demands in 2005, approximately 110 AF will need to be drawn from Santa Rosa. Years 2010, 2015, 2020, 2025 illustrate a worse case, single dry-season diversion of only 286 AF being available.

(2) Years 2015 & 2020 illustrate how recycled water can be used to decrease the reliance on desalination during the dry dry season. To date, additional hydrologic modeling is needed to verify the amount of recycled water that can be diverted for non-potable irrigation during the summer season.

(3) The 602 afa shown for desalination during the summer season of 2025 allows meeting the maximum dry season demand with 4650 residential connections. This also assumes a quality of life improvement increase for existing and future residential connection demands (i.e., 12 ccf per bi-monthly to 18 ccf per bi-monthly).

(4) Summer dry-season demand is estimated at approximately 60 percent of annual demand.

3.4 Projected Multiple Dry-Year Water Supply & Demand

The 2000 Baseline Water Supply Demand Analysis report determined that reductions in demand of 13, 26, and 24 percent would be required when analyzing the 1988, 1989, and 1990 multiple-year drought conditions. Table 3-4 projects a similar three-year drought occurring over the next three-year time frame by using the same reductions recommended within the 2000 Baseline report, as well as the same dry season durations and production values from the 1988 through 1990 drought. This table also assumes annual demand will be approximately 800 acre-feet year from 2006 through 2008, and no desalinated water is available. Were a similar multiple-year drought scenario to evolve, demand reductions of approximately 21, 28, and 49 percent would be required during 2006, 2007, and 2008 respectively. The 2008 drought year is the worse case primarily due to its extended 338-day dry season and low production.

Table 3-4
Multiple Dry-Year Drought
Projecting 1988-1990 Conditions to 2006 through 2008

Item	2006	2007	2008
Dry season duration, days (to match ’88-’90)	271	240	338
Dry season production, AF (matching ’88-’90)	644	611	594
Percent reduction required (%)	13	26	24
Net dry season production, AF	560	452	451
Reduced dry season production, AF/day	2.067	1.884	1.336
Estimated demand per year	800	800	800
Estimated dry season demand, AF	707	626	741
Estimated demand reduction needed, percent	20.7	27.8	39.1

If a similar three-year drought were to occur after the District’s desalination project were on line, the supply deficit would be made up by desalinated seawater. Table 3-5 develops a similar scenario for beginning in 2010 assuming the desalination project is on line by the end of 2008. From this analysis, no reduction is required for any of the three drought years due to the operation of the desalination plant. In the worse case year of 2012, the desalination plant is operated for approximately 243 days.

Table 3-5
Multiple Dry-Year Drought
Projecting 1988-1990 Conditions to 2010-2012

Item	2010	2011	2012
Dry season duration, days	271	240	338
Dry season production, AF	644	611	594
Percent reduction required (%) to match ’88-‘90	13	26	24
Net dry season production, AF	560	452	451
Reduced dry season production, AF/day	2.067	1.884	1.336
Estimated demand per year	1284	1315	1346
Estimated dry season demand/day	4.187	4.288	3.688
Estimated dry season demand, AF	1135	1029	1246
Dry season production needed from desalination	575	577	795
Demand available from desalinated water	575	577	795
Estimated days of desalination plant operation	175	176	243
Estimated demand reduction needed, percent	0	0	0

A similar projection approach was used in the development of Table 3-6. This table shows the maximum demand towards the end of the planning time frame of 2023 through 2025. At this time, the estimated annual demand is approximately 1514 acre-feet. To offset the shortage posed by a 1988 through 1990 drought condition, the number of days that the desalination plant operates is increased up to 291 days per year for the year 2025 condition.

Table 3-6
Multiple Dry-Year Drought
Projecting 1988-1990 Conditions to 2023-2025

Item	2023	2024	2025
Dry season duration, days	271	240	338
Dry season production, AF	644	611	594
Percent reduction required (%) to match '88-'90	13	26	24
Net dry season production, AF	560	452	451
Reduced dry season production, AF/day	2.067	1.884	1.336
Estimated demand per year	1514	1514	1514
Estimated dry season demand/day	4.937	4.937	4.148
Estimated dry season demand, AF	1338	1185	1402
Dry season production needed from desalination	778	733	951
Estimated days of desalination plant operation	238	224	291
Estimated demand reduction needed, percent	0	0	0

3.5 Proposed Recycled Water Use to Diversify Supply

The District completed a recycled water master plan in 2004 that focused on providing non-potable Title 22 water to larger irrigation customers. During 2004 the District also installed a recycled water-holding tank and fill station off of San Simeon Creek Road for users that haul non-potable water. This system uses water pulled from an extraction well at the wastewater percolation ponds.

The future use of a larger-scale recycled water system will further diversifies the water supply options during times of drought. However, further study is needed to assess whether any impacts will occur to the sensitive San Simeon Creek lagoon area from the diversion of recycled water that could increase the net outflow of water from the basin. The recycled water master plan therefore looked at a non-net increase approach, as well as seasonal storage. Further discussion on recycled water is contained in Chapter 7.

CHAPTER 4 - WATER USE PROVISIONS

For 2005, the District estimates it will have approximately 3,764 residential connections and 222 commercial connections. Residential connections are typically, single-family homes. Within the commercial category, the District serves primarily hotels, restaurants, schools, a cemetery, and local businesses. Approximately 25-percent of the District's billed meter readings are charged to commercial accounts, with the remaining 75-percent being billed to residential accounts.

It is believed that much of the unaccounted for water may actually be used and not metered due to the age and condition of existing water meters. Therefore, the District is in the process of replacing most of its existing meters with new automated, remote-read meters. This replacement program started during 2004 and is continuing. All of the new replacement residential meters should be in place by early 2006.

In 1995, the unaccounted for water amounted to 12.1 percent of the amount produced during the year. This value increased in 2004 to 12.6 percent. In Table 4-1 that follows, some progression in improvement is shown as more meter replacements are completed. It is believed this water will ultimately be accounted for under the residential and commercial categories. Table 4-1 also assumed the current level of consumption. Table 4-2 is similar, except it applies a higher per residential consumption (18 ccf/bi-monthly residential connection) after a new supply source goes into service.

Table 4-1
Current and Projected Use
(Assuming Current Unit Demands in Future)

	Year						
	1995	**2000**	**2005**	**2010**	**2015**	**2020**	**2025**
Water Use							
Production (acre-feet)	684	799	800	839	940	1009	1009
Metered (acre-feet)							
Residential	437	512	514	552	627	674	690
Commercial	145	167	171	184	209	225	230
Unaccounted (acre-feet)							
Total unaccounted	102	120	115	103	104	110	90
Less District operational use	19	19	19	19	19	19	19
Net unaccounted	83	101	96	84	85	91	71
Percent of production	12.1%	12.6%	12.0%	10.0%	9.0%	9.0%	7.0%

Table 4-2
Current and Projected Use
(Assuming future 18 ccf/bi-monthly for residential)

	Year						
	1995	**2000**	**2005**	**2010**	**2015**	**2020**	**2025**
Water Use							
Production (acre-feet)	684	799	800	1284	1438	1514	1514
Metered (acre-feet)							
Residential	437	512	514	852	967	1019	1042
Commercial	145	167	171	284	322	340	347
Unaccounted (acre-feet)							
Total unaccounted	102	120	115	147	148	155	125
Less District operational use	19	19	19	19	19	19	19
Net unaccounted	83	101	96	128	129	136	106
Percent of production	12.1%	12.6%	12.0%	10.0%	9.0%	9.0%	7.0%

CHAPTER 5 - SUPPLY AND DEMAND COMPARISON PROVISIONS

Figure 5-1 shows the estimated supply and demand for the District's water system based on the completion of a planned seawater desalination facility. In developing this figure, it was assumed that the new facility would take at least four years to complete. In addition, two demand curves are shown after the new plant is operational. The upper dashed line provides a range that shows the total demand if existing and future residential demands were to increase from the current 12 ccf/bi-monthly demand to a future 18 ccf/bi-monthly demand. The upper line shows approximately 1514 acre-feet per year demand with about 4,650 residential connections. Of this total demand, approximately 888 acre-feet occur during the dry summer season, and 625 acre-feet occur during the winter months. The lower demand line shows approximately 1009 acre-feet per year of demand using existing the existing residential demand.

For discussion purposes, the groundwater supply is shown for 800 acre-feet per year, which is where the District has historically operated over the most recent three to four years. This is conservatively low due the amount being shown for an annual period, including the winter rainy season. In normal years, there will be additional water available during the winter months when desalinated water will not be required. In addition, the District has a permitted maximum diversion capacity of up to 1230 acre-feet per year.

The District typically has 60 percent of its annual demand occurring from May through October. The desalination plant will provide approximately 602 acre-feet per year over the summer dry season (184 days per year average). This will be enough capacity for operating during a critically dry period with only 286 acre-feet being available from San Simeon Creek and no flow being made available from the Santa Rosa Creek. The operating period for the desalination plant can also be adjusted to match the actual precipitation pattern for the year.

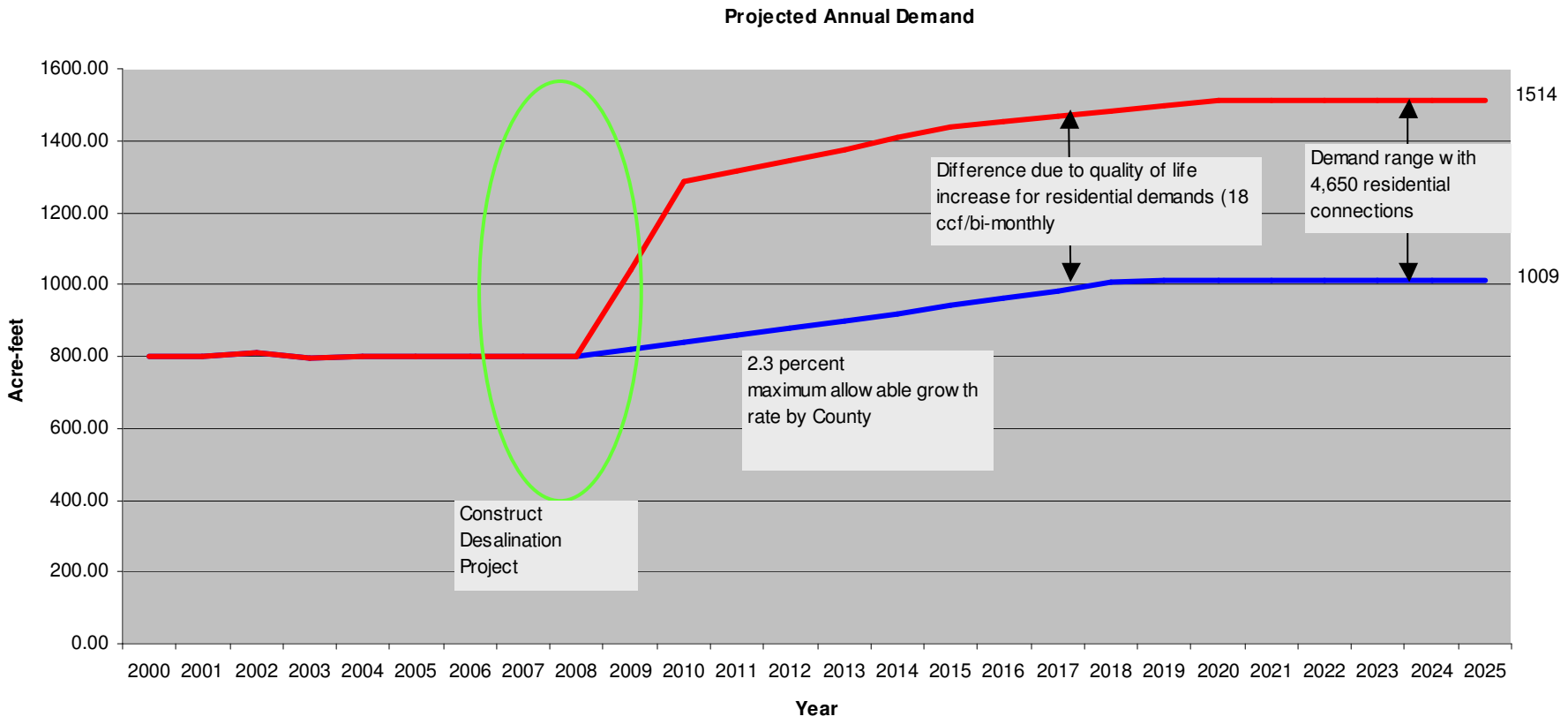


Figure 5-1: Projected Annual Demand

CHAPTER 6 - WATER SHORTAGE CONTINGENCY PLAN

The District has adopted several Ordinances, which assist in reducing the District's demand for water by preventing the waste of water, developing a water shortage contingency plan, and encouraging the installation of water-efficient fixtures. In October 2000, the District adopted Ordinance 3-2000, which implemented the current three-stage water shortage contingency plan. Stage 1 of this ordinance set a "drought watch" condition and allocates three units (three hundred cubic feet) per person per month as a maximum for its residential customers. The purpose of the Stage 1 conditions is to reduce demand by about 7-percent. Stage 2 of the ordinance sets a "water shortage condition" and places financial surcharges into effect for those exceeding their base use and also allows for shutting of service in some circumstances. The purpose of the stage 2 conditions is to reduce overall demand by 15-percent. Stage 3 establishes a "drought emergency" condition and lowers the maximum allowable use to two-units (two hundred cubic feet) per resident per month. Stage 3 also prohibits outdoor irrigation watering and includes surcharges and fines for overuse. Table 6-1 summarizes the District's water shortage contingency stages.

Table 6-1
Water Supply Shortage Stages and Conditions

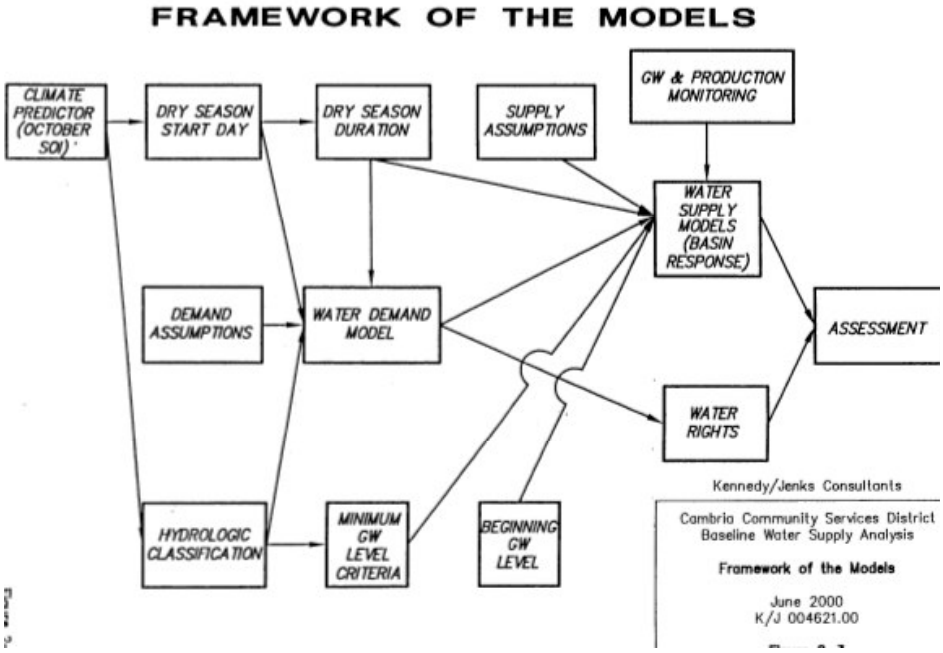
Water Rationing Stage	Customer Reduction Goal (percent)	Type of Rationing Program	Shortage Condition
1	7	Voluntary	*Drought Watch* Residential Use ≤ 3 units/person/month Comm. Use ≤ 5 units/EDU/month
2	15	Mandatory	*Water Shortage* Residential Use ≤3 units/person/month Comm. Use ≤ 5 units/EDU/month Surcharges applied for exceeding limits
3	50*	Mandatory	*Emergency Condition* Residential Use ≤ 2 units/person/month Comm. Use ≤ 3 units/EDU/month Surcharges applied for exceeding limits

* See discussion that follows.

The purpose of a Stage 3 water shortage declaration is to lower the demand for water to only allow for human consumption, sanitation, and fire protection. Because average indoor consumption is approximately 65 to 70 gallons per person per day, lowering the allowable consumption to 2 units per person per month (which equates to 50 gallons per person per day) requires curtailment of indoor water use. Because at least 60 percent of the demand on Cambria's system occurs in the dry season, an average consumption of approximately 7.2 units per month per residential connection occurs during the dry season. When compared to an average summer season demand of 7.2 units per household per month and 1.66 persons per residential connection average, the Stage 3 reduction results in a 54-percent decrease in demand.

The trigger points for each stage is determined from a hydrologic model developed as part of the December 8, 2000 Baseline Water Supply Analysis by Kennedy Jenks Engineers. The model predicts available supply based on an October Southern Oscillation Index (SOI) value, estimated dry season duration, existing plus estimated demands for the coming dry season, and aquifer well level. Figure 6-1 illustrates the overall model inputs and logic used in assessing groundwater supply. A full copy of the 2000 Baseline Water Supply Analysis is enclosed as Appendix L. A copy of the District's Ordinance 3-2000 enacting its water shortage contingency plan, as well as a codified version of the ordinance and model are included in Appendix E.

Figure 6-1
Groundwater Modeling Illustration



During October 2000, the District's Board also adopted Ordinance 4-2000 that permanently prohibited the waste of water. This ordinance further defined what

constituted a waste of water, and related enforcement actions. A copy of the original and codified Ordinance 4-2000 is included as Appendix D.

6.1 Water Pricing Structure

The District's pricing structure for water sales has been an increasing block structure for residential customers and basically a flat rate with a higher minimum for commercial accounts. At the beginning of fiscal year 1988-89 the District implemented an increasing block rate structure for all of its commercial accounts and this has had an immediate effect in reducing demand of several of the larger commercial water users. Table 6-2 summarizes the District's current ascending block water rate schedule.

Table 6-2
CCSD Increasing Block Water Rate

Units (ccf)	Cost per unit (Dollars)
0-6	$20.59 minimum (3.43/ccf)
7-15	+5.23 per unit
16-20	+5.34 per unit
21-30	+5.45 per unit
31-40	+5.57 per unit
41-50	+6.01 per unit
51-60	+6.24 per unit
61-70	+6.46 per unit
71-80	+6.68 per unit
Over 80 units	+6.79 per unit

The rate structure provides a direct economic incentive to conserve water and curb demands. For example, prior to the 2004 dry season, the area experienced 25-percent less rainfall than normal. Therefore, in addition to its increasing block rate structure, a drought surcharge was levied by the District to further curb dry season demand. Table 6-3 shows drought surcharge that was applied in 2004.

Table 6-3
2004 Residential and Commercial Drought Surcharges*

Use	Surcharge
0 – 12 units	No surcharge
13 – 20 units	25% surcharge
21 – 30 units	50% surcharge
31 – 40 units	100% surcharge
41 – 50 units	150% surcharge
51 – 60 units	300% surcharge
61+ units	450% surcharge

*Applied to water portion of bill

6.2 Prohibitions Against Water Waste

The District has codified past ordinances prohibiting the waste of water at all times. Specific code enforcement actions, including fines, can occur for: wasteful irrigation practices, watering landscaping between 10:00 a.m., and 6:00 p.m., washing of sidewalks, failure to shut off water following a break, serving restaurant customers water when it is not specifically requested, washing vehicles without using a hose shut off nozzle, and using potable water for dust control and compaction.

6.3 Fiscal Impacts of Water Shortage Declarations

The declaration of a drought emergency will reduce the District's income from water sales. The severity of the loss of income will increase as each water shortage stage in enacted. A Stage 3 declaration coupled with a moratorium on future connections has the most significant impact due to the loss of connection fees and retrofit-in-lieu fees in addition to the loss of income from an increased customer base. A 2000 fiscal impact analysis estimated the loss of connection fees from a moratorium as amounting to approximately $250,000 per year for water related connection fees, $160,000 per year for wastewater connection fees, and $291,000 per year for retrofit in-lieu fees. Since 2000, the District has relied upon a financial settlement it received over an MtBE contamination law suit in order to balance water and wastewater department debt service ratios on its existing bonds, and to avoid having to defer major projects.

6.4 Water Marketing Agreements

Following the discovery of MtBE groundwater contamination, and during the subsequent shut down of the Santa Rosa well field; a short-term agreement was entered into with an agricultural property owner to suspend irrigation. Such agreements may be possible with cooperative agricultural irrigators that may otherwise continue pumping during times of extended drought. The net savings of water into the basin would generally be the amount of water lost to evaporation and plant transpiration. Water gained into the basin though such arrangements would vary by crop and irrigation method, time of year, as well as physical location within the basin. Under such arrangements, the amount of irrigation water normally applied, less an amount of underflow return back into the basin, would yield a net savings of water that would otherwise be lost from the aquifer. Earlier modeling work completed as part of the 1998 USGS study also found that decreasing agricultural pumping closer to the coast was more effective at preventing potential seawater intrusion than similar decreases further inland. Although further water savings can occur from water marketing, such arrangements also have direct and indirect economic impacts that need to be considered on a case-by-case basis.

6.5 Emergency Use of High School Well

During the construction of the District's Santa Rosa Well SR-4, piping provisions were made to allow for a relatively simple connection into the nearby high school irrigation well by adding a pipe spool. However, the quality of the irrigation water would need to be tested before being considered for use during a major emergency. Additionally, the use of this water would also require disinfection and filtering at the Well SR-4 treatment plant.

6.6 Emergency Power Systems

The Cambria service area is prone to power failures, particularly during winter storms. Overhead power lines combined with a dense Monterey Pine forest result in numerous outages and downed power lines when trees and limbs fall during such events. Therefore, over the passage of time, the District has added emergency power generation to all of its pumping stations. The emergency generators also provide a valuable back up power supply during major seismic events.

CHAPTER 7 – LONG-TERM WATER SUPPLY PROJECTS

The following describes the District's plans for providing a seawater desalination project for meeting long-term potable water supply needs; and, a recycled water system for meeting non-potable irrigation water needs. Appendix J also contains a full copy of the District's "Assessment of Long-Term Water Supply Alternatives," report. This 2004 report details the evaluation of various supply alternatives as well as a recommended plan.

7.1 Seawater Desalination.

The District has retained Carollo Engineers to update an earlier 30-percent design effort on a proposed seawater desalination project. This project will provide approximately 602 acre-feet of product water (I.e., permeate) during the dry season. The updated design will take advantage of recent advances in the reverse osmosis technology to minimize energy use, including advances in energy recovery devices and membrane elements. The District is also working with the Army Corps of Engineers in obtaining funding appropriations through the Water Resource Development Act. It is also seeking State Proposition 50 funding. A key constraint on this project will be associated with its growth-inducing impacts. The new facility will be sized to serve no more than 4,650 existing and new residential connections (i.e., the existing customers plus the those on the CCSD wait list), which is in line with an August 2000 advisory ballot as well as the reduced development alternative recommended by the County Planning Commission following its review of a May 2000 Community Plan. The mitigations being developed, as part of the District's build-out reduction plan will be used to address the growth-inducing concerns associated with this project. Other challenges include developing a design that minimizes disturbances to the marine environment and nearby riparian habitat. Therefore, the initial phase of the current design effort is focused on assessing the feasibility for a subterranean intake and brine disposal operation.

7.2 Recycled Water.

Figure 7-1 shows the overall recycled water distribution system that is planned for Cambria. The District's recently completed a recycled water master plan (Appendix K) focused on the larger irrigation customers, such as the Coast Union Santa Lucia middle school, a proposed park on the District's East-Ranch property, the Cambria Pines Lodge, and the Cambria Nursery. To date, a hydrogeologic study needs to be completed to assess how much recycled water can be diverted from the existing percolation pond area to irrigation customers. A key constraint in developing an acceptable recycled water supply quantity will be assessing whether there will be any impacts to the nearby San Simeon Creek and San Simeon lagoon. These areas provide habitat for threatened and endangered species. For this reason, the recycled water master plan looked at a "no-net increase" in the amount of water diverted from the aquifer by converting existing potable customers to non-potable recycled water. The report also

studied novel concepts such as the Evaporative Control System® (ECS) technology for irrigating play-field areas. The ECS concept was first introduced to the District by the Coast Union School District. Coast Union is currently installing an ECS irrigation system at its new elementary school in Cambria.

The amount of water that can be diverted from the treated wastewater stream flowing into the percolation ponds is a key factor that will drive the future feasibility for a recycled water system. Should the diversion of recycled water from the percolation pond area prove to be environmentally feasible, the District would be in a much sounder position to pursue the use of recycled water on future areas such as a proposed community park. To encourage future recycled water use, the District will also need to develop a more comprehensive recycled water program. Such a program should include the development of financial incentives for end customers to convert from potable to recycled water, as well as public education and outreach.

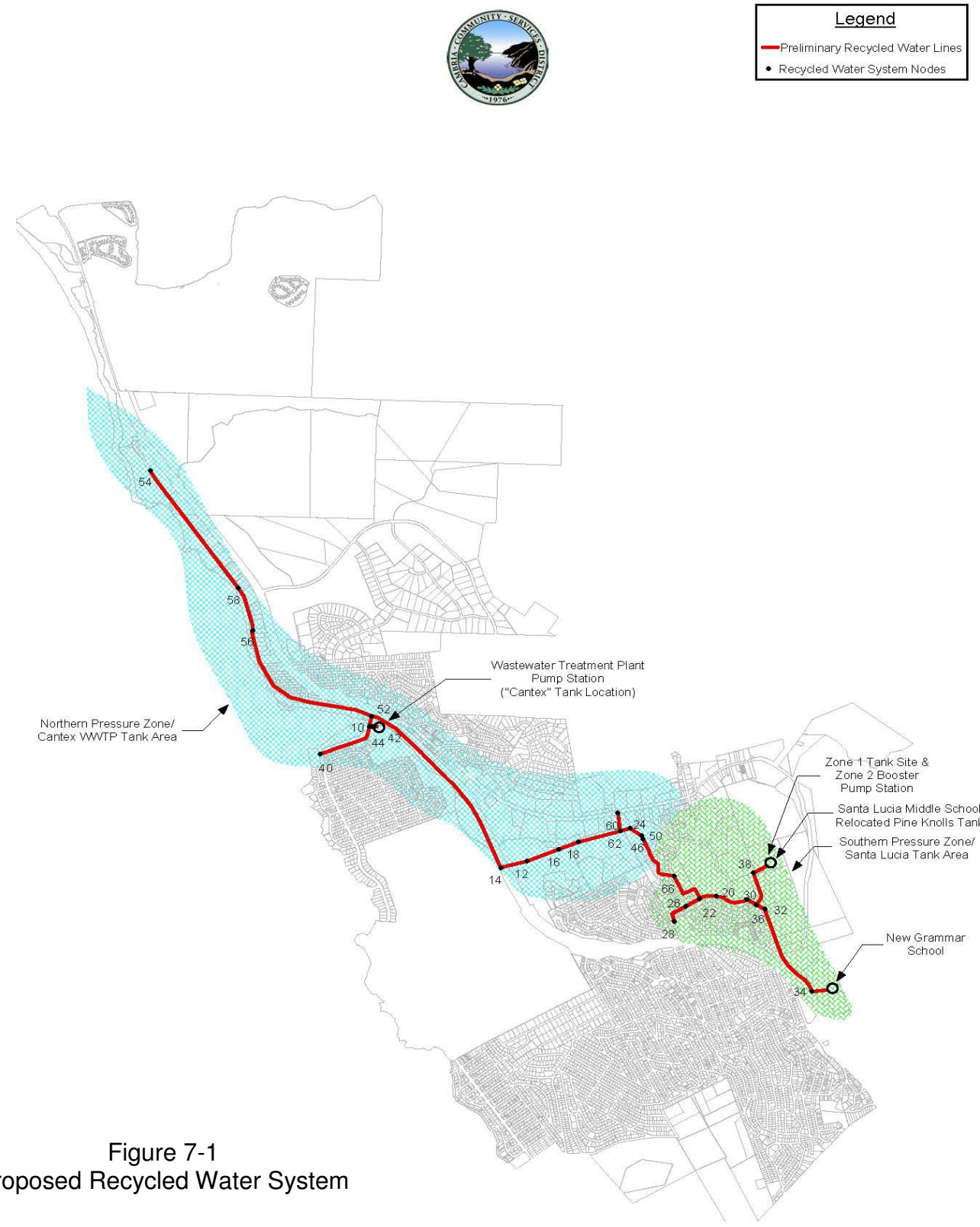


Figure 7-1
Proposed Recycled Water System

CHAPTER 8 – DEMAND MANAGEMENT MEASURES

The District has been aggressively promoting demand management measures for water conservation since the late 1980s. However, the data collected and associated records kept on these earlier efforts have not been directly correlated to the categories defined by past statewide Best Management Practices (BMPs) for Urban Water Conservation. The earlier statewide BMPs were initiated in 1991 by a consortium of water agencies that founded the California Urban Water Conservation Council (CUWCC). The original BMPs have since been updated and expanded upon as "Demand Management Measures" (DMMs) within the Urban Water Management Plan Act.

To ensure future conformity with statewide DMM reporting requirements and methodologies, and to also expand upon its access to available resources, the District has recently joined the CUWCC. As a result, the District is currently reorganizing and expanding upon its water conservation program to more accurately correlate with the state-defined DMM practices and reporting requirements.

The original ordinances that developed the water conservation programs in Cambria are now part of the District's Code. Table 8-1 provides a chronology of water conservation measures that have been implemented by the District since 1989. Existing demand management measures being practiced by the District include water surveys; plumbing retrofits of existing homes and commercial businesses; customer education; water conservation enforcement; and, customer leak detection services.

The DMM discussion that follows is intended to correlate with the completeness review format used by the DWR. Each DMM is summarized by describing the existing District program and practices, plans to expand existing practices to more rigorously promote a specific measure, as well as any projected water savings that may occur with each measure.

8.1 Water Survey Programs for Single-Family Residential and Multi-family Residential Customers.

Existing Program - Since starting this measure in 1988, the District has completed water surveys on all of its multi-family customers and over 50-percent of its residential connections. With the exception of two apartment buildings where it was not reasonable to modify existing plumbing, existing multi-family complexes were converted from one single master meter to individual meters for each housing unit. Single-family residential water surveys averaged approximately 250 per year from 1998 to 2002. The surveys continue to be offered free of charge upon customer request. The surveys typically include leak checking and noting whether water efficient fixtures and appliances have

Year	Table 8-1 Historic Summary of Existing CCSD Water Conservation Measures	Estimate of Annual Water Savings (Acre-feet)
1989	District passed ordinances that: 1) Established phased standby measures for control of water use under water shortage conditions; and, 2) Required installation of water conservation devices on properties undergoing resale or remodel. Requirements include limiting incoming supply pressure to no greater than 50 psi, 1.6 gpf maximum toilets, 2 gpm maximum showerheads and kitchen faucets, ½ gpm maximum lavatory faucets, and 4 gpm maximum exterior hose bibs. Over 600 homes retrofitted under the Resale/Remodel program.)	
1989	District added a water conservation officer position for providing customer education, water conservation enforcement, and customer leak detection services.	
1990	1) Ordinance Prohibiting Waste of Water (at ALL times) and Emergency Water Use Conditions 2) Established Pilot Retrofit Program: new construction must be built to water efficient standards and also must retrofit a sufficient number of existing properties to offset the proposed water use of the new hookup. (Program renewed every year thereafter) Almost 2,000 homes and businesses retrofitted under this program, resulting in about 750 new hookups.	
1994	Amended retrofit program to include retrofit of agricultural overhead irrigation systems to drip tape, and use of "in-lieu" fees to complete a leak detection program.	
1998	Program amended to include installation of hot water recirculation pumps on older homes without "hot-loop" plumbing. Over 700 pumps installed by 2004.	8.1
1999	Program amended to include requirement that residences built on properties larger than 8,000 sq ft. must have non-potable water collection cisterns for irrigation watering. 22 cisterns have been installed to date.	0.8
2002	Program amended to offer a $100 rebate for every 3.5 gpf toilet replaced with a 1.6 gpf toilet, increased to $150 if replaced with the 1.0 gpf toilet. Rebate of $150 instituted for installation of Energy-Star rated washing machines. Over 170 washing machines replaced with more water efficient units.	1.9
2003	Program instituted to facilitate conversion of Self-Regenerating Water Softeners to Portable Exchange units. This program saves water and also reduces salts in the CCSD wastewater stream. Began with 15 commercial properties and added residential to program in 2004. District provides up to $100 per residential conversion to offset installation cost, with payment going to softener service provider. Ten residential exchanges have been completed to date.	2.6
2004	Installed water-efficient pre-rinse valves in 30 commercial food operations. Updated District web site to educate homeowners on how to perform a leak detection check on their residence. Developed pressure gage loan program for homeowners to check operation of their service line's pressure regulating valve. Instituted plan checks with Fire Department to require fire rated wall or merger of existing lots on multiple lot remodels and new construction (Promotes future build-out reduction.)	5.5
2005	Adopted Ordinance 02-2005 limiting future connections to ≤ the density allowed by existing deed and service agreement restrictions. This reduced past build-out projections by approximately 1,543 residential connections.	

been installed. In addition to encouraging the installation of water efficient fixtures and appliances, the District also offers circulating hot water pumps to its residential customers.

Planned Measures – Future documenting of the number of surveys completed and associated estimate of water savings will conform to reporting criteria developed by the CUWCC. Further staff training through the attendance of CUWCC sponsored seminars will also be pursued with more emphasis being placed on potential savings related to landscaping practices. Future surveys will also track whether newer evapotranspiration (ET) based irrigation controllers are in place. The District will also expand upon the existing survey practice by targeting and promoting audits to high water use customers.

Estimated Cost, Potential Water Savings, & Effectiveness Monitoring - The following table reflects the District's continued water survey program for single and multiple family residential customers. Future Urban Water Management Plan updates will incorporate the CUWCC reporting practices to improve consistency of reporting and verification of water conservation effectiveness.

Estimate of Single Family & Multi-Family Surveys					
Planned	2006	2007	2008	2009	2010
# of single family surveys	180	180	180	180	180
# of multifamily surveys	5	5	5	5	5
projected expenditures - $	$18,000	$18,000	$18,000	$18,000	$18,000
projected water savings - AFY	4.35	4.35	4.35	4.35	4.35

The above savings assumed a potential of 15-precent reduction in water use on surveyed customers based on literature distributed by the CUWCC. The effectiveness can be monitored in the future using customers before and after billing records for the same bi-monthly billing period.

8.2 Residential Plumbing Retrofit.

Existing Program - Appendix G describes the details of the District's existing retrofit program. Since 1989, approximately 88-percent of the single-family residential connections within Cambria have had plumbing retrofits completed. Retrofitting of an existing house is a requirement upon resale or remodeling. The District uses a point system to develop equivalencies for any new home construction as well as remodels. Once the total points are determined, new construction and remodels are required to either retrofit a set number of retrofit points within the service area, or pay into a retrofit in-lieu fee. Collected fees from this program are used to support water conservation programs throughout the District. The District's retrofit program was designed to achieve a 2:1 water

savings goal, with retrofitted homes providing twice the water savings as the projected demand from new construction.

Planned Measures – The District proposes to continue with its existing retrofit program. There are an estimated 430 residential homes remaining within the District that may not have been part of a past retrofit. Future data collected from the retrofit program will also be maintained in a format that meets the CUWCC reporting criteria.

Estimated Cost, Potential Water Savings, & Effectiveness Monitoring – The following table projects the District's continuation of its residential plumbing retrofit program for single and multiple family residential customers, estimated cost for implementing the program, and approximate annual water savings. In developing this estimate, it was assumed that approximately 30 residential units per year would trigger retrofitting due to resales and remodeling. Because the state DMM reporting system is based on water conservation devices as opposed to the District's point system, or number of residential units, it was estimated that six water conservation devices would be installed per retrofitted home. Devices could include low-flow showerheads, low-flow aerators, new toilet flappers, and toilet displacement kits. To avoid duplication with DMMs dealing with installation of low-flow toilets and water efficient washing machines elsewhere in this report, installation of new toilets and washing machines is not included in the following estimate.

Estimate of Residential Plumbing Retrofitting					
Planned	2006	2007	2008	2009	2010
# of single family "devices"	180	180	180	180	180
# of multi-family devices	0	0	0	0	0
projected expenditures - $	$3000	$3000	$3000	$3000	$3000
projected water savings - AFY	.72	.72	.72	.72	.72

The effectiveness of installing the above can be monitored in the future using customers' before and after billing records for the same bi-monthly billing period.

8.3 System Water Audits, Leak Detection, and Repair.

Existing Program - Since approximately 1988, the District routinely compares its well production to billed totals every two months. The two-month interval is used because it also matches the District's two-month billing cycle. The District makes minor adjustments to account for non-metered use due to process equipment, such as flow through turbidity meters, and other non-metered District water use. System repairs are completed whenever water operations spot a leak or receive reports from citizens or other public services such as police and fire.

Planned Measures - To further reduce the difference between production and billed totals, the District will be replacing its entire inventory of water meters with remote-read units. It is estimated that all of the residential meters will be

replaced with new automatic remote read meters by early 2006. It is estimated that approximately 200 remaining commercial meters will be replaced over a period of two yeas. The new meters will each have alarm flagging capability to indicate excessive use as well as no zero flow. The no zero-flow flagging occurs when there is no period of time within a 24-hour window when flow through a meter reaches zero. This could indicate a potential problem downstream from the meter such as a leaking toilet or similar household leak.

Estimated Cost, Potential Water Savings, & Effectiveness Monitoring – The following table was developed in accordance with criteria used by the DWR. The costs for 2006 and 2007 assumes approximately 100 commercial meters would be replaced each of those years at an average replacement cost of $500 each. It is not known whether any projected water savings will occur at this time due to the possibility that more water use will be metered and billed as a result of new, more accurate meters. Therefore, although the amount of water billed may go up and lower the percent of unaccounted water, it is not known whether this will lower the amount of water being produced. For this reason, projected water savings from this measure are shown as being unknown.

System Water Audits, Leak Detection, and Repair					
Planned	2006	2007	2008	2009	2010
% of unaccounted water	12	11.5	11	10.5	10
miles of mains surveyed	N/A	N/A	N/A	N/A	N/A
miles of lines repaired	N/A	N/A	N/A	N/A	N/A
Projected expenditures - $	50,000	50,000	5,000	5,000	5,000
Projected water savings – AFY	unknown	unknown	unknown	unknown	unknown

A comprehensive annual water audit complying with AWWA audit worksheets will be completed following installation of the new billing meters to further document and attempt to identify potential savings. The audit should also be preceded by checking calibration on the existing production meters, estimating water used for fire training and fighting, as well as estimating losses that may occur throughout the year from accidental leaks such as a fire hydrant being hit by a car. The District should also adopt 5 % or less of unaccounted water as a long-term performance goal.

8.4 Metering with Commodity Rates

Existing Program - All of the District's customers are metered. Bi-monthly meter billings are also based on an inclining block rate to encourage conservation (See Chapter 6, part 6.1). Further discussion on the replacement of existing billing meters can also be found under the preceding section 8.3 discussion.

Planned Measures – The District has no plans to separate mixed-use meters that may be serving both domestic and irrigation uses, into separate meters to solely meter each use. However, the District would separate such uses as part of its long-term plan for the use of recycled water at certain larger scale landscape irrigation sites. Such future efforts would also comply with Department of Health Services requirements for isolation of systems and cross connection testing.

Estimated Cost, Potential Water Savings, & Effectiveness Monitoring – See discussion under section 8.3.

8.5 Large landscape Conservation Programs and Incentives.

Existing Program - Using funds obtained from its retrofit and in-lieu fee program (See 8.1), the District has funded retrofitting of all the existing school sites within Cambria as well as the State Parks campground. The use of District funding for these programs provides a direct incentive for improving water use efficiency while also lowering future water bills. Outdoor irrigation improvements typically involve the use of drip irrigation as opposed to conventional spray irrigation methods. On certain larger commercial establishments, cisterns have been installed for purposes of collecting rainfall for irrigation. To continue use of the cisterns during the dry season, an independent contractor or private individuals may truck non-potable water to specific cistern locations.

Planned Measures – Further staff training through the attendance of CUWCC sponsored seminars will be pursued with more emphasis being placed on potential water savings related to landscaping practices. Future surveys will also track whether newer evapotranspiration (ET) based irrigation controllers are in place. The District will also consider adopting future incentives to encourage installation of newer ET-based irrigation controllers. Staff training will also develop an understanding on how to develop an irrigation water budget for larger irrigation customers. The District's "MOMs" billing software will also be investigated to determine whether an irrigation budget can be tracked and flagged as part of existing operations.

Estimated Cost, Potential Water Savings, & Effectiveness Monitoring – Further research is needed to assess the potential savings from ET-based controllers. A recent study by the Irvine Ranch Water Agency has shown some promise in further water savings from these newer controllers. However, Cambria is unique due to its steeply tiered water rates, and hardening of demand that has already occurred from past water conservation efforts. It is estimated that further staff training will be needed in 2006 and that some nominal costs may be incurred to test a few certain ET controllers. The remaining years may follow with additional controller replacements and staff time spent in developing irrigation audits and budgets.

Estimate for Large Landscape Conservation Programs & Incentives					
Planned	2006	2007	2008	2009	2010
# of budgets developed	0	5	10	10	10
# of surveys completed	5	5	10	10	10
# of follow-up visits	0	0	0	5	5
Projected expenditures - $	1500	2000	2500	2500	2500
Projected water savings - AFY	Unknown	Unknown	Unknown	Unknown	Unknown

8.6 High-Efficiency Washing Machine Rebates.

Existing Program - The District offers a $150 rebate on every energy-star washing machine installed. Each energy-star washing machine saves on average approximately 4.8 units (3,580 gallons) of water per year. Since this program began in 2002, the District has funded the installation of 192 energy-star rated washing machines. In developing the actual program costs, approximately $25 was added to the rebate for staff processing time. The following summarizes the past installations, expenditures, and estimated water savings.

Historic High-Efficiency Washing Machine Rebates & Savings					
Actual	2001	2002	2003	2004	2005
$ per rebate	N/A	$150	$150	$150	$150
# of rebates paid	N/A	26	89	69	47
actual expenditures - $	N/A	4,550	15,575	12,075	8,225
actual water savings - AFY	N/A	.29	.98	.76	.52

Planned Measures – The District plans to continue the existing rebate program. In addition, staff will further assess whether modifications are needed to the rebate program to account varying level of water savings among different styles and brands of energy-star machines that have evolved since beginning the rebate program.

Estimated Cost, Potential Water Savings, & Effectiveness Monitoring – The following table summarizes future estimated costs and savings associated with the high-efficiency washing machine rebate program.

Projected High-Efficiency Washing Machine Rebates & Savings					
Planned	2006	2007	2008	2009	2010
$ per rebate (estimated median rebate value)	$150	$150	$150	$150	$150
# of rebates paid	50	50	50	50	50
Projected expenditures - $	8,750	8,750	8,750	8,750	8,750
Projected water savings - AFY	.55	.55	.55	.55	.55

8.7 Public Information Programs

Existing Program - The District routinely provides public information on water conservation via its quarterly newsletter, web site, billing inserts, and community billboards. Tent cards on water conservation are also provided to restaurants and motels. The existing billing system also provides customer water usage between current and prior years on each water bill.

During 2005, the District placed an added emphasis on testing pressure-regulating valves on services in response to a distribution pipeline project coupled with a high failure rate discovered from prior residential home surveys. To facilitate testing, pressure gages were loaned to customers free of charge for testing incoming household pressures downstream from their pressure-regulating valve. The District's web site was also updated to further explain pressure-regulating valve testing.

Planned Measures - The District will expand upon its public information program using additional resources made available as the result of its recent membership into the CUWCC. This will include promoting the use of the CUWCC's interactive "H2OHOUSE" on the District's web site. Opportunities to further promote water conservation will also be made during future televised Board meetings.

Estimated Cost, Potential Water Savings, & Effectiveness Monitoring – The following table projects the number of planned public information activities and estimated cost for each of the years shown.

Public Information Program					
Planned	2006	2007	2008	2009	2010
a. Paid advertising (#)	0	0	0	0	0
b. Public Service Announcements (#)	6	6	6	6	6
c. Bill Inserts / Newsletters / Brochures (#)	4	4	4	4	4
d. Bill showing water usage in comparison to previous year's usage (#)	6	6	6	6	6
e. Demonstration Gardens (#)	0	0	0	0	0
f. Special Events, Media Events (#)	0	0	0	0	0
g. Speaker's Bureau (#)	1	1	1	1	1
h. Program to coordinate with other government agencies, industry and public interest groups and media (#)	1	1	1	1	1
Projected expenditures - $	750	750	750	750	750

8.8 School Education Programs

Existing Program - School education programs on water conservation began after the District developed a water conservation officer position in 1989. The Water Conservation Officer conducted education programs free of charge to the schools. In more recent years, the schools have elected to conduct their own water conservation classes using their science teachers.

Planned Measures - The District plans to research available training materials available through the CUWCC as well as other professional water utility organizations, and make them available to the schools for their use. Training of the area's children on water conservation will continue to be encouraged.

Estimated Cost, Potential Water Savings, & Effectiveness Monitoring – To estimate the cost for this program, it was assumed that an average cost for handout materials would be $1 per student, with an average class size of 30 students, the cost of handouts will be approximately $330 per year.

School Education Program		No. of class presentations				
Actual	# of classes	2006	2007	2008	2009	2010
Grades K-3rd	3	3	3	3	3	3
Grades 4th-6th	2	2	2	2	2	2
Grades 7th-8th	2	2	2	2	2	2
High School	4	4	4	4	4	4
projected expenditures - $	330	330	330	330	330	330

8.9 Conservation Programs for Commercial, Industrial, and Institutional Accounts.

Existing Program - The District evaluates and funds conservation programs for its commercial, industrial, and institutional accounts on a case-by-case basis. For example, in 2004, the District provided funding to replace 15 commercial regenerative water softeners with non-regenerative softeners. In 2003, the District installed 30 water efficient pre-rinse valves for all of the restaurants and commercial kitchens within its service area.

Planned Measures - The primary commercial water users in the District's service area are restaurants and the hotel industry. Future research should include assessing water use efficiencies related to those industries such as dishwashers, icemakers, vegetable steamers, and similar water using equipment. The PG&E Food Service Laboratory in San Ramon, California conducts such equipment

testing and may be able to make further recommendations on the selection and use of more water efficient replacements. In addition, the replacement of regenerative water softening systems with non-regenerative systems should continue to be encouraged. Further staff training from the CUWCC on these subjects should also be pursued. In addition, the potential exists for the replacement of ultra-low flow hotel toilets with newer 1.0 gpf units.

Schools are the primary institutional water users in the District's service area. The school district recently completed a new elementary school, which was occupied for the first time during the fall of 2005. The High School was also recently upgraded approximately two years earlier. This leaves the middle school as the most likely candidate for future upgrades to further enhance water conservation. The use of recycled water has been planned by the District for use at the middle school, as well as a backup supply to the innovative Evaporative Control System (ECS) system that was recently commissioned at the new elementary school. Recycled water is also planned for a future community park, a commercial nursery, and a hotel complex.

Estimated Cost, Potential Water Savings, & Effectiveness Monitoring – Water savings under this demand management measure will require surveys to assess the specialized equipment in use and the possibilities for further water savings. The District's water conservation officer will need additional training in this area. In addition, the use of an outside expert may need to be used in some cases. The following tables provide estimates on future water conservation surveys as well as future potential ultra low flow toilet replacements under this measure.

Commercial and Institutional Water Conservation Surveys					
Planned	2006	2007	2008	2009	2010
Estimated # of surveys	5	5	5	5	5
Would incentives be provided?	Unknown	Unknown	Unknown	Unknown	Unknown
Estimated # of follow-up visits	5	5	5	5	5
Projected expenditures - $	$1000	$1000	$1000	$1000	$1000
Projected water savings – AFY	Unknown	Unknown	Unknown	Unknown	Unknown

In estimating potential savings for commercial replacements of ultra low flow toilets, it was assumed only single occupancy would occur per room, and an average of 50% occupancy during the course of a year. However, these values will need to be revisited on a case-by-case basis, after reviewing specific operating records and water consumption records.

Commercial & Institutional Ultra-low Flow Toilet Installations					
Planned	2006	2007	2008	2009	2010
# of commercial replacements	20	20	20	20	20
# of industrial replacements	0	0	0	0	0
# of institutional replacements	0	0	0	0	0
projected expenditures - $	2,000	2,000	2,000	2,000	2,000
projected water savings - AFY	0.10	0.10	0.10	0.10	0.10

8.10 Wholesale Agency Programs.

The District is the sole provider of water to the community and there is also no imported water from other agencies. Therefore, this demand management measure does not apply.

8.11 Conservation Pricing.

The District uses an inclining block rate structure that provides a direct financial incentive to conserve water. In addition, the District applies a drought surcharge to further curb demand during dry periods. In 2003 and 2004, a drought surcharge was applied during the summer season due to rainfall being 25-percent less than normal. The conservation pricing structure is further described within paragraph 6.1 of Chapter 6.

8.12 Water Conservation Coordinator.

Existing Program -The District has staffed a full time water conservation coordinator position since 1989. During 2003 this position was modified to one half-time person. The coordinator also relies upon water operators to complete field-level inspections.

Planned Measures - Further training of the District's Water Conservation Coordinator will be sought out from the CUWCC and other sources. This training will include water conservation associated with landscaping audits and budgeting, as well as commercial water conservation. The updating and collection of water conservation data will also be made to comply with the CUWCC database and reporting system.

Estimated Cost, Potential Water Savings, & Effectiveness Monitoring – Estimated costs for the Water Conservation Coordinator are shown on the following table.

Water Conservation Officer					
Planned	2006	2007	2008	2009	2010
# of full-time positions	0	0	0	0	0
# of full/part-time staff	.5	.5	.5	.5	.5
Projected expenditures - $	$52,025	$52,050	$52,075	$53,000	$53,025

8.13 Water Waste Prohibition.

The District's first water waste prohibition ordinance was approved in 1989. This was later modified in 1990, and again in 2000. The District subsequently codified the ordinances covering water waste prohibition in 2004. Therefore, Appendix D contains a full description of the current District Code (Chapter4.08) that prohibits the waste of water at all times.

8.14 Residential Ultra-Low-Flush Toilet Replacement Program.

Existing Program - Since be
ginning a rebate program for replacement of toilets in 1989, approximately 2,615 single-family residences have been retrofitted with ultra-low-flow toilets. This is the result of direct customer rebates as well as the existing plumbing retrofit program (See 8.2). It is estimated that a total of approximately 5,200 ultra-low-flow toilets have been installed to date. The District currently offers a direct rebate of $100 per 1.6 gallon per flush (gpf) unit installed. Customers electing to install newer 1.0 gpf toilets are offered $150 rebates.

The following Table summarizes the number of ultra low flow toilets installed from 2001 through 2005, the estimate costs, and estimated savings. In developing the savings, approximately 1.66 persons per household was used based on the 2000 Census. Approaches based on the CUWCC methodology found an average savings of 0.016 AFY per installation. The numbers of direct installations are based on plumbing retrofitting, which is required on resales and remodels. Rebates shown are based on customers voluntarily replacing an older style toilet. The table also includes CBO, for community-based organizations, which may also install such measures. The District does not currently differentiate between single-family and multi-family installations.

Residential Ultra-Low Flow Toilet Installations	Single-Family & Multi-Family				
Actual	2001	2002	2003	2004	2005
# of ULF rebates	N/A	9	24	34	17
# of ULF direct installs	140	112	162	130	44
# of ULF CBO installs	N/A	N/A	N/A	N/A	N/A
actual expenditures - $	14,000	12,100	18,600	16,400	6,100
actual water savings - AFY	2.24	1.94	2.98	2.62	0.98

Planned Measures - The District will be continuing its existing programs into the future. The following table estimates future ultra low flow toilet installations from 2006 through 2010. It is also estimated that all of the future installations will come from single-family residences due to the only a handful of older multi-family units being in the service area.

Residential Ultra-Low Flow Toilet Installations	Single-Family & Multi-Family				
Planned	2006	2007	2008	2009	2010
# of ULF rebates	20	20	20	20	20
# of ULF direct installs	40	40	40	40	40
# of ULF CBO installs	0	0	0	0	0
projected expenditures - $	6,000	6,000	6,000	6,000	6,000
projected water savings - AFY	0.96	0.96	0.96	0.96	0.96

Estimated Cost, Potential Water Savings, & Effectiveness Monitoring – It is not known whether newer 1.0 gpf toilets will begin to replace the 1.6 gpf ultra-low flow units into the future. The District will need to monitor for this potential trend and revise its projections accordingly in future updates.

8.15 Historical Water Conservation Effectiveness

Table 8-2 summarizes the overall effectiveness of water conserving measures from 1988 through 2000 by comparing the billed amount of water per connection to a 1988 baseline. This table illustrates how water conservation has offset the additional connections that have occurred over the 1998 through 2000 period. For example, in the year 2000 there were an additional 758 connections that occurred since the 1988 baseline. In comparing the reduction in the billed amount for these years, approximately 215 acre-feet in savings has occurred. This overall assessment of water conservation effectiveness is based on available data during the production of this 2005 Urban Water Management Plan update. Future updates to the Plan should consider means to further analyze water conservation savings by customer type as well as water conservation measure.

Table 8-2
Water Conservation Effectiveness 1988 through 2000

Year	Annual Water Production in Acre-feet	System Water losses in Acre-feet	Annual Water Deliveries (metered) Acre-Feet	Number of Connnections	Metered Use in Acre-Feet per connection	Cumulative Additional Connections 1998 to data year	Use Reduction Acre-Feet per connection	Acre-Feet of Water Conserved
1988	819.5	94.2	725.3	3,105	0.2336		0.0000	0.00
1989	797.0	81.1	715.9	3,148	0.2274	43	0.0062	19.45
1990	663.8	77.0	586.8	3,191	0.1839	86	0.0497	158.62
1991	555.7	82.5	473.2	3,234	0.1463	129	0.0873	282.22
1992	677.7	140.2	537.5	3,277	0.1640	172	0.0696	227.95
1993	691.4	121.0	570.4	3,316	0.1720	211	0.0616	204.19
1994	662.0	64.3	597.7	3,383	0.1767	278	0.0569	192.57
1995	677.8	76.8	601.0	3,448	0.1743	343	0.0593	204.40
1996	718.3	75.5	642.8	3,525	0.1824	420	0.0512	180.57
1997	785.8	139.8	646.0	3,647	0.1771	542	0.0564	205.85
1998	705.7	91.5	614.3	3,729	0.1647	624	0.0689	256.80
1999	774.1	105.6	668.5	3,796	0.1761	691	0.0575	218.20
2000	798.8	111.6	687.2	3,863	0.1779	758	0.0557	215.13

8.16 Future Demand Management Considerations

Future demand management considerations include a build-out reduction plan, a supervisory control and data acquisition system, and furthering incentives towards outdoors water conservation.

8.16.1 Build-Out Reduction

The District has retained RBF Consulting for purposes of completing a phased build-out reduction plan. To date, this work is in progress with an economic analysis and review of regulatory provisions currently being completed. The economic analysis will determine the program costs and financing options. The District's Program-level Environmental Impact Report covering its water master plan will incorporate key recommendations from the build-out reduction plan as mitigation measures.

Figure 8-1 provides an illustration of residential housing growth in Cambria at both a 2.3 percent and 1 percent annual rate following the completion of the desalination project. Figure 8-1 shows that at a 2.3 percent annual growth rate, 4,650 housing units occur by approximately 2017. Using the 1-percent annual growth rate that was last approved by the County for Cambria extends the period to reach 4650 by about 10 years, or 2027. The rate of growth established for Cambria is established by the County Board of Supervisors and normally follows review of an annual Resource Management System (RMS) analysis report. The RMS analysis assesses the availability of water, wastewater, schools, roads, as well as the condition of air quality. Land use policies and regulations that limit future build-out include an existing transfer of development credit program that is administered by the Land Conservancy of San Luis Obispo County. Besides the

San Luis Obispo conservancy, there are other land conservancies that are active within Cambria acquiring property rights for permanent preservation, particularly those that are within mapped environmentally sensitive habitat areas.

The build-out reduction program is currently under development and may include recommendations for further land use regulations, voluntary density reductions, economic incentives, and property acquisitions. This work will also dovetail into current County efforts at developing a Cambria Community Plan. Future updates to the Urban Water Management Plan should report on the progress of these efforts.

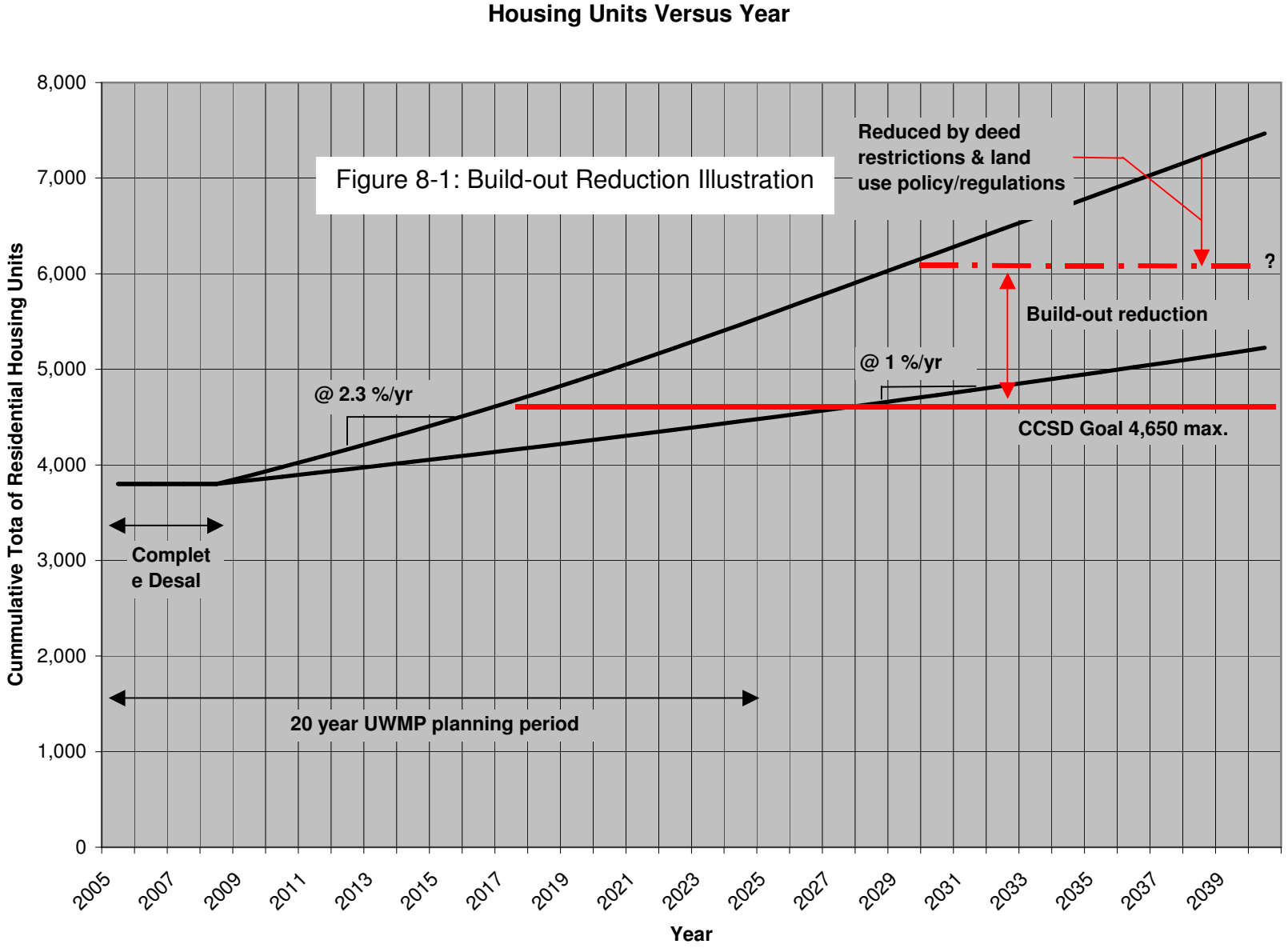
8.16.2 Supervisory Control and Data Acquisition (SCADA) System

The District is currently completing a SCADA system master plan to guide updating the remote monitoring and control of its water distribution system. The new system will use wireless technology and improve the reliability of communications. The existing system relies on obsolete equipment as well as leased phone lines that tend to short out during rain events. Accidental tank overflows have occurred in certain situations when the existing system fails. Therefore, the new SCADA system should provide the added benefit of reducing accidental water loss and "unaccounted" water.

8.16.3 Outdoor Water Conservation

Recommendations remaining to be completed from a 1999 Boyle Engineering report on the District's water conservation efforts include: updating the existing retrofit program to include exterior water use; and, creation of an "interruptible" water service category for irrigators that may be shut down during an emergency. As discussed within the earlier demand management measures discussion, part of the District's future efforts to improve outdoor water use efficiency, may include the promotion of newer "ET" (evapotranspiration) based irrigation controllers to replace time-based units. The newer ET units automatically adjust watering durations to match variations in seasonal irrigation demands.

Means to discourage the use of water-intensive landscaping should also be continued. For example, the current Coastal Zone Land Use Ordinance allows for up to 20-percent of landscaping to be turf grass. However, the proposed May 2005 Cambria Community Plan prohibits turf grass for new residential development. Further coordination between District and County planning staff could also be encouraged in developing measures to further promote the development of water budgets as landscaping plans are reviewed. Such measures may be helpful to homeowners that are new to the area and may be unaware of local water supply limitations. In addition, future considerations could include incentives to replace existing turf grass landscaping with native, drought-tolerant plants, xeriscape landscaping, and artificial turf.


Housing Units Versus Year
Figure 8-1: Build-out Reduction Illustration
Reduced by deed restrictions & land use policy/regulations
?
Build-out reduction
@ 1 %/yr
@ 2.3 %/yr
CCSD Goal 4,650 max.
Complet e Desal
20 year UWMP planning period
Cummulative Tota of Residential Housing Units
Year
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
2005
2007
2009
2011
2013
2015
2017
2019
2021
2023
2025
2027
2029
2031
2033
2035
2037
2039