

## Section 2: Study Area and Existing Water System

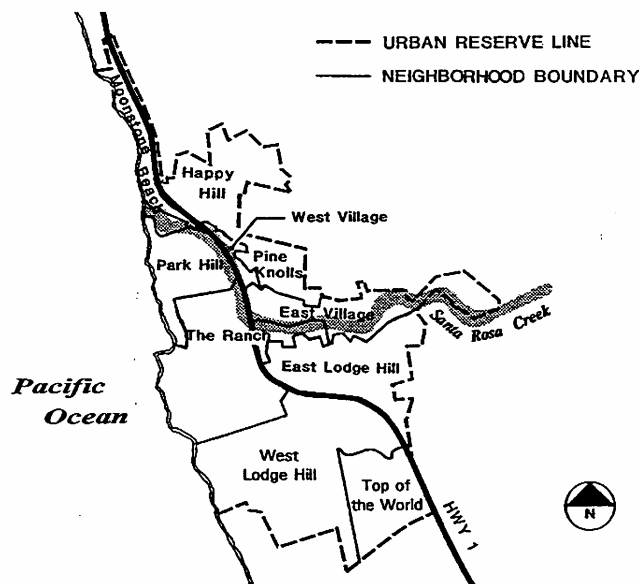
This section describes the CCSD service area, the status of land use planning for the area, existing CCSD water sources, and the CCSD distribution system.

### 2.1 Existing Service Area and Land Use Plans

Cambria is an unincorporated community located along the central California coastline approximately 35 miles north of San Luis Obispo. The area is bound by the Pacific Ocean to the west, Santa Lucia Mountains to the east and Big Sur to the north. Highway 1 is the main transportation corridor and bisects the community. Highway 46 is the main easterly corridor, and intersects Highway 1 approximately 4 miles south of town.

Figure 2-1 shows various neighborhood areas that may be referenced on occasion within this report. The commercial areas are generally located within East Village and West Village. The remaining areas are primarily residential with some scattered institutional land use for churches and schools.

**FIGURE 2-1  
CAMBRIA NEIGHBORHOODS<sup>1</sup>**



Core services provided by the CCSD include fire protection, potable water, and wastewater treatment and disposal. The CCSD also manages and contracts for refuse disposal, and provides some limited street lighting. An advisory parks, recreation, and open space committee

<sup>1</sup> San Luis Obispo County North Coast Area Plan, Land Use Element & Local Coastal Plan, Public Review Draft, December 1996, page 4-20.

reports to the CCSD Board. The District recently acquired the East/West (E/W) Ranch for preservation of open space and public recreation.

### **2.1.1 Status of Area Land Use Plans**

Land use planning for the service area is under the auspices of San Luis Obispo County, with Cambria being located within the County's North Coast Planning Area. Additionally, the area is also subject to provisions of the State Coastal Act, which is administered by the California Coastal Commission (CCC). To date of this Task 3 report, the County is in the process of updating its North Coast Area Plan (NCAP), and CCC is in the process of completing a periodic review of the County's Local Coastal Program.

The officially recognized version of the NCAP was last adopted by the County on March 1, 1988. This plan was certified by CCC on February 25, 1988. Although it has been over 14 years since the last NCAP was adopted and certified, a substantial volume of planning work has occurred during the intervening years. For example, draft land use elements for the NCAP were developed in both 1996 and 2000. An Environmental Impact Report for the 1996 NCAP was adopted and certified by the County on December 10, 1996. Since then, both the County and CCC have been involved in extensive negotiations over certain controversial elements of the NCAP updates. The most controversial element in the Cambria area dealt with proposed development of the E/W Ranch.

Besides the NCAP drafts, the County also adopted 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 (water, wastewater, roads, schools, and air quality, for example). 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 has also invoked its own water moratorium during November 2001, and no intent-to-serve letters had subsequently been issued. The County's annual Resource Summary Reports have deemed the Cambria water supply as being at severity Level III, its most critical level of concern. By County definition, Level III occurs when the level of resource use exceeds capacity of the resource. In July of 2003 however, Cambria Board issued a planning directive based in part on a desire to provide some relief to existing customers from these water-conserving measures that have evolved from years of shortages.

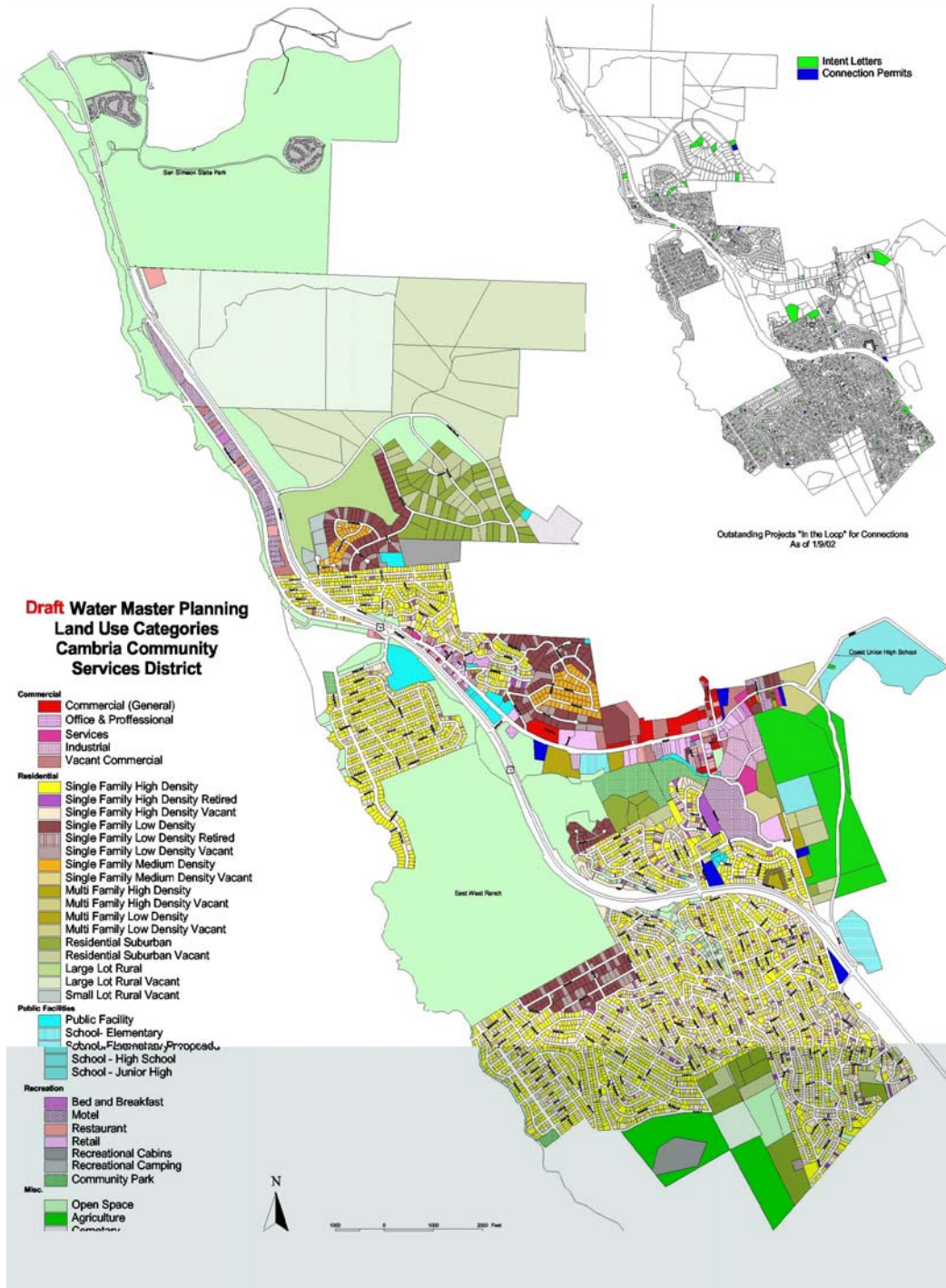
### **2.1.2 Draft Land Use Mapping for Water Master Planning Purposes**

Based on careful review of its own parcel database, past NCAP reports, and discussions with County planners, CCSD developed an updated land use map for water master planning purposes. Mapping updates made by CCSD included:

- Developing subcategories under each land use to allow identifying areas that may differ in the amount of indoor versus outdoor water demands, particularly with regard to planning for future recycled water as irrigation water.
- Updating land use for the E/W Ranch to reflect its recent purchase and planned open space and community park areas.
- Showing areas that are currently served by the District as the result of past agreements (e.g., the San Simeon State Park campground and the Liemert tract 1804).
- Identifying areas that have been permanently retired from future water service commitments in accordance with CCSD ordinances.
- Accounting for open space areas acquired by various land conservancies.
- Showing the non-controversial land use changes recommended by the draft NCAP updates.
- Showing merged lots and identifying very difficult, or highly unlikely to be built lots, that could become candidates for a long-term cooperative lot retirement program.
- Including the new grammar school site. (Funding for the new grammar school was recently approved via a referendum.)

Figure 2-2 shows CCSD's draft land use base map that resulted from Task 1 of the Water Master Plan. The Task 1 work consisted of developing digital-aerial ortho-photographs, a geographic information system (GIS), and a GIS-based development scenario model.

**FIGURE 2-2  
DRAFT LAND USE MAP DEVELOPED BY CCSD FOR  
WATER MASTER PLANNING PURPOSES**



### **2.1.3 GIS-Based Development Model and Review of Small Lots**

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 smaller lot subdivisions. During the late 1920s, very small lots were laid out with little regard to modern standards associated with topographic, geologic, 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.

Analyzing potential development within the small lot subdivisions is complicated and was the one of the factors motivating the development of a GIS-based development scenario model. As a further complication towards administering the 1966 ordinance conditions, the County assessor records only go back to 1975. Therefore, detailed title reports and analyses are required not only on the lot less than 3,500 square feet seeking a building permit, but also on the adjoining lots to assess how and when the lot was created in relationship to the 1966 time frame.

Past practice by the County requires considerable research on title history for those properties seeking a building permit that are under the 3,500 square foot minimum. If a property less than 3,500 square feet can be proven to have existed as an independent building site prior to 1966, and not having been the result of a subdivision from a post-1966 subdivision of a consolidated property, the County would normally allow the building permit processing to proceed. CCSD has relied upon the County to enforce their 1966 ordinance, and has received clearances from the County prior to placing a lot on their water wait-list. Therefore, lots already on CCSD’s water wait-list were deemed as buildable regardless of their square footage.

In addition to the unique and complex analysis that results from evaluating lot consolidations and subsequent subdivisions, the County has also set a past practice of not enforcing the merger of lots as part of its permit processing. In many cases, structures may have been constructed across property lines and the underlying lot lines were never formally eliminated via a Subdivision Map Act lot merger. This leads to further speculation and uncertainty over potential build-out due to concerns over existing homes being demolished and replaced with multiple housing units over the underlying lot lines. However, the likelihood of such a practice and percentage of homes being demolished in the future may be relatively low. From discussions with County planners, it is believed the most likely area where future demolitions and subdivision may be sought is along the ocean front lots. For purposes of this Water Master

Plan update, the percentage of homes that can develop from such demolitions is assumed to be negligible over a 20 year planning horizon.

Based on the unique fire hazards posed in Cambria, CCSD intends to enforce Uniform Building Code requirements requiring fire-rated walls to be located within three feet of property lines. This enforcement, in coordination with County development reviews, should encourage future lot mergers as opposed to the current practice of allowing lot consolidations.

With a goal of developing reasonable planning and build-out information, the CCSD GIS-based development scenario model analyzed residential lots with particular attention to the high-density single-family neighborhoods. This analysis focused on the following:

- Is the lot less than the 3,500 square foot minimum?
- Is the lot located in an area with greater than 30 percent slope?
- For those lots lying within a steep area, how much of the lot may be available for a housing site (i.e., on a flatter area within the same lot)?
- Was the lot already on the CCSD waiting list (indicating an earlier title search and analysis was required by the County to ensure compliance with the 1966 consolidation ordinance)?

In addition to the computer analysis, CCSD staff performed manual checks of the GIS analysis output based on review of maps, knowledge of past practices, and historical information maintained in CCSD files. Tasks performed manually included checking against CCSD's water wait-list and the spatial position of a lot in relationship to adjoining lots that are already built upon. For example, a single vacant lot located on a steep area between two existing residences may not be as likely to be built upon as two separately owned lots that could later be sold and merged to form one buildable lot. However, the potential for future construction still exists, particularly on lots with ocean views. Owners could also pursue variances with the County in order to receive permission to build. Therefore, the number of likely non-buildable lots is subject to a planning level order of accuracy and unknowns.

### **2.1.4 Multiple Development Scenarios used in Analyses**

Because of the complexity of the small lot issue and uncertain success rate for future long-range cooperative lot retirements, the Task 3 analyses evaluated several growth scenarios. Analyzing the different growth alternatives assisted with identifying distribution needs (additional piping for reliability and supply to in-growth), however the majority of upsizing and new pipe recommendations were driven by conservative fire flow criteria and are further detailed in the Sections 6 & 7. Additionally, the pending recycled water system component will address landscaping demands either associated with existing areas, or approved public facility land uses (e.g., proposed community park and grammar school). The number of dwelling units and build-out values will be revisited as part of Task 4, the Water Resource Planning Element.

For Task 3, each build-out scenario assumed the following basic criteria:

1. The planning period will be 20-years, unless otherwise specified by a governing agency.
2. No more than 125 units per year can be developed (per earlier CCC, Coastal Development permit).
3. A minimum of twenty percent of the system demand is to be applied towards “visitor serving” uses (per earlier CCC, Coastal Development permit).
4. The maximum allowable growth rate per year cannot exceed 2.3 percent (per San Luis Obispo County growth ordinance).

Development of multiple build out scenarios resulted from review of various County-planning documents, CCC reports, CCSD operating permits, as well as the Task 1 GIS modeling efforts. For example, the County commissioned “Hausrath study<sup>2</sup>” compared the cost of lot retirement and future supporting infrastructure. Under that study, four growth scenarios in addition to the existing land use plan were analyzed. The Hausrath report found the lowest total cost of both lot retirement and infrastructure occurred with 7,421 dwelling units at build-out (Level III). The lowest build-out value analyzed as part of the Hausrath study was 5,152 dwelling units (Level IV). The Level IV value was also included as a program recommendation within the Draft 1996 NCAP. However, the means for funding the lot retirements to reach Level IV was never decided. Additionally, the County and CCC subsequently became involved in a long-term negotiation that delayed completion of the NCAP update. Therefore, although an updated draft was prepared in 2000, the NCAP update has remained a work in progress.

In order to complete CCSD’s water master plan update while the NCAP updating process continues, CCSD developed four potential scenarios for subsequent water master planning analysis. Each Scenario is described below and summarized as Table 2-2.

### **Scenario 1**

Scenario 1 is based on CCSD’s GIS-based analysis and assumed no future cooperative lot retirements. This scenario resulted in approximately **6,700 housing units** and was based on the non-controversial changes recommended by the Draft NCAPs, an analysis of individual lots to determine their merged status, assigning open space and recreational land use to the E/W Ranch area, and developing estimates for future multiple family and mixed use residential units. Table 2-1 summarizes the data used to develop a 6,700 housing unit estimate. The 6,700 total does not include approximately 210 parcels that have been permanently retired by the CCSD from future water service, nor the open space areas acquired by land conservancies.

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<sup>2</sup> “County of San Luis Obispo, Draft Background Report, May 1997, North Coast Area Plan Update, Fiscal Analysis of Plan Alternatives, Infrastructure Costs and Visual Simulations,” Hausrath Economics Group, assisted by Crawford Multari & Starr.

**TABLE 2-1  
ESTIMATE OF HOUSING UNITS**

Description	Value
Built single family residences	3,620
“Likely non-buildable” single family parcels	1,014
“Likely buildable” single family parcels	1,465
Existing multi-family residences	40
Potential future multi-family	387
Potential future mixed use within commercial areas	163
<b>Total</b>	<b>6,689, rounded to 6,700</b>

**Scenario 2**

Scenario 2 assumed the same 6,700 total of Scenario 1 less the “likely non-buildable” lots from CCSD’s GIS-based analysis to total **5,700 housing units**. “Likely non-buildable” is defined with the assumption that approximately 1,000 of the remaining 2,346 vacant high density single family residential parcels will ultimately be retired from development. The GIS analysis found these parcels to be located in steep areas, non-conforming with respect to minimum sizes, and in less desirable locations. Manual review of the computer output was also completed by CCSD staff to further assess lot development potential. The number of “likely non-buildable” lots is a planning-level accuracy estimate that could change depending upon future Planning Commission decisions on future variance requests, as well as the success of any future cooperative lot retirement program.

**Scenario 3**

Scenario 3 is based on the California Coastal Commission Coastal Development permit (CCC permit 428-10) issued May 29, 1981 which sets a limitation on dwellings to **5,250 housing units**. The 5,250 dwellings also coincides with the existing CCSD’s existing wastewater treatment plant capacity.

**Scenario 4**

Scenario 4 was considered due to a July, 2003 CCSD Board recommendation to limit ultimate housing units to **4,650 housing units**. This number is consistent the 3,812 existing units in addition to those pending and on the wait-list. This build-out value also represents the most stringent limit on future units to be consistent with the proposed desalination project sized for 4,650 units.



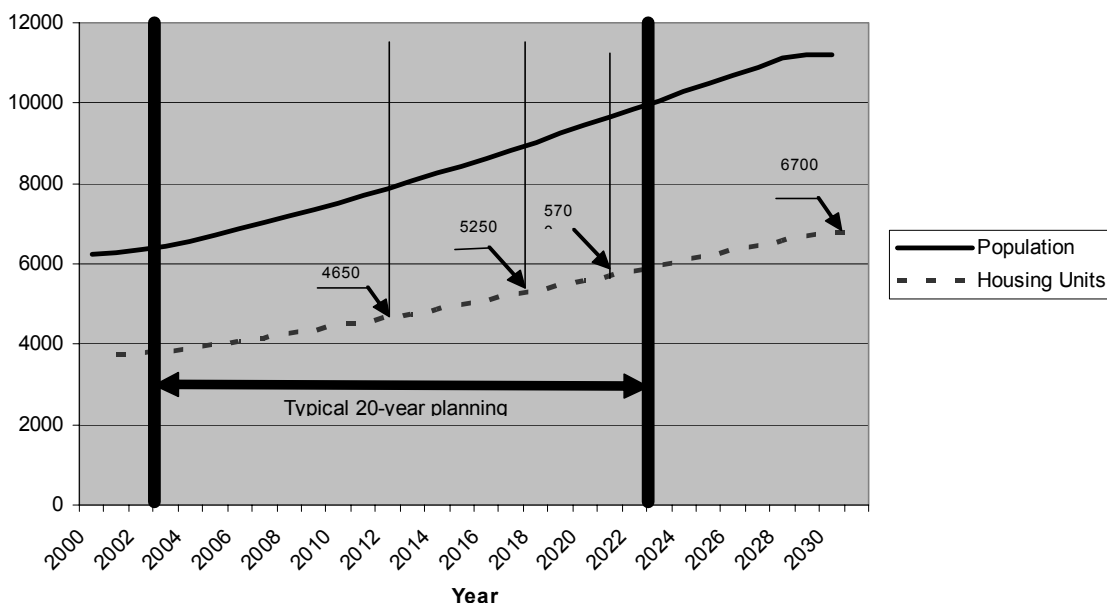
**TABLE 2-2  
SUMMARY OF BUILD OUT SCENARIOS**

<b>Scenario</b>	<b>Estimated Total Housing Units</b>	<b>Estimate Year</b>	<b>Basis/Rationale</b>
1	6,700	2029	Total number of future dwelling units from GIS analysis. Includes acquisition of the E/W Ranch, non-controversial changes from the Draft 2000 NCAP, merged single-family lots, and no subsequent lot retirements. Also included is an additional 163 mixed-use residential units within commercial land use areas, and 387 future multi-family units.
2	5,700	2020	Scenario 1 less the retirement of approximately 1,000 "likely non-buildable" high-density vacant single-family residential parcels.
3	5,250*	2016	Maximum number of dwelling units permitted under a May 29, 1981 California Coastal Commission Coastal Development permit (CCC permit 428-10).
4*	4,650	2011	<b>Adding 3,812 existing units (estimated as of the end of 2002) plus 165 connections in process, plus 670 remaining CCSD wait listed customers. This approximates the number of dwelling units served by a proposed desalination project that was subject of an August 2000 advisory ballot and also follows a July 24, 2003 Board recommendation for ultimate number of units.</b>

***\*Scenario 4 presents the strongest case for future growth as this is the most recent value recommended by the CCSD Board (as per reasons discussed above). It is for these reasons that future improvement phasing recommendations (Section 7.2) were made using 4,650 housing units and a dwelling unit density of 1.66, which is consistent with 2000 Census data.***

Figure 2-3 below, shows the approximate timing for each of the above scenario levels based on a maximum rate of 2.3 percent per year during a 20-year planning horizon. Based on draft land use mapping and assuming no further lot retirements, growth would level off at approximately 6,700 housing units, or about the year 2029. The upper curve in Figure 2-3 also shows the estimated full time population based on the 2000 Census data of 1.66 residents per home occupancy.

**FIGURE 2-3  
PROJECTED POPULATION AND NUMBER OF HOUSING UNITS**



## 2.2 Existing Water Demands

From analysis of past data, the Kennedy/Jenks 2000, “Baseline Water Supply Analysis” report found average water use within Cambria to be approximately 0.127 acre-feet per year per permanent resident (113 gallons per capita per day (gpcd)). This value is based on a 1999 total water production of 776 acre-feet divided by 6,100 full time residences. The water production value includes commercial/visitor serving demands, residential demands, and system losses (e.g., distribution system leaks and unaccounted water). Assuming an average of 1.66 persons per household, the 0.127 acre-feet per resident, equates to approximately 0.211 acre-feet per residence (188 gpd/residential connection). Approximately 25 percent of Cambria’s metered water flow is for commercial/visitor-serving accounts. When taking into the account the non-residential water use in the aforementioned values, the average residential use per residential connection is about 0.161 acre-feet (144 gpd/residential connection). Using the same approach for commercial use yielded 0.959 acre-feet per commercial connection (856 gpd/commercial connection).

District staff has also provided recent billing information which shows the average billing rate to be near 18 ccf/bi-monthly bill (1800 cubic-feet per bi-monthly billing cycle). This factor will be used as reference in calculating an accurate base usage for existing and future demands.

The 1.66 residents per household value is based on the 2000 Census that found a vacancy rate in Cambria to be 24.9 percent. From the same 2000 Census, each occupied residence

averaged about 2.21 residents. According to the draft 1996 NCAP<sup>3</sup>, the 1990 census yielded an average of 1.747 persons per household, whereas the 1980 census found 1.633 persons per household. Although concerns have been expressed in pre-2000 Census planning documents regarding an increase in persons per household, this does not appear to be the case. Many of the single-family residences in Cambria appear to be seasonally occupied and used as vacation homes.

Planning future systems based on current water use patterns and frequency of occupancy is complex and assumptions are therefore inherent in these forecasts. Assumptions made involve evaluating calculated vs. reported consumption values, changing demographics, fluctuating vacancy rates, rate structures, microclimates, and conservation practices. In an attempt to measure how Cambria compared with other agencies, data was gathered from other central coast communities located within the same relative microclimate [evapotranspiration zone (ET)]. These communities included Morro Bay, Cayucos, Los Osos, Pismo Beach and Grover Beach. Other nearby communities are outside of Cambria's ET zone and subject to considerably more demand for irrigation. Based on this review, Cambria is very close to Morro Bay on a gallon-per-day per capita basis when dividing total water production by population. Interestingly, Morro Bay also has a similar number of persons per household (1.66) from the 2000 census. However, Cambria is 25 percent lower than Morro Bay per residential connection and has less commercial business area. Therefore, one would expect the volume of water produced for both residential and commercial to be greater in Morro Bay. Therefore, the comparison may be biased due to the commercial water use not being segregated in the analysis. Figure 2-4 compares Cambria water use with other agencies.

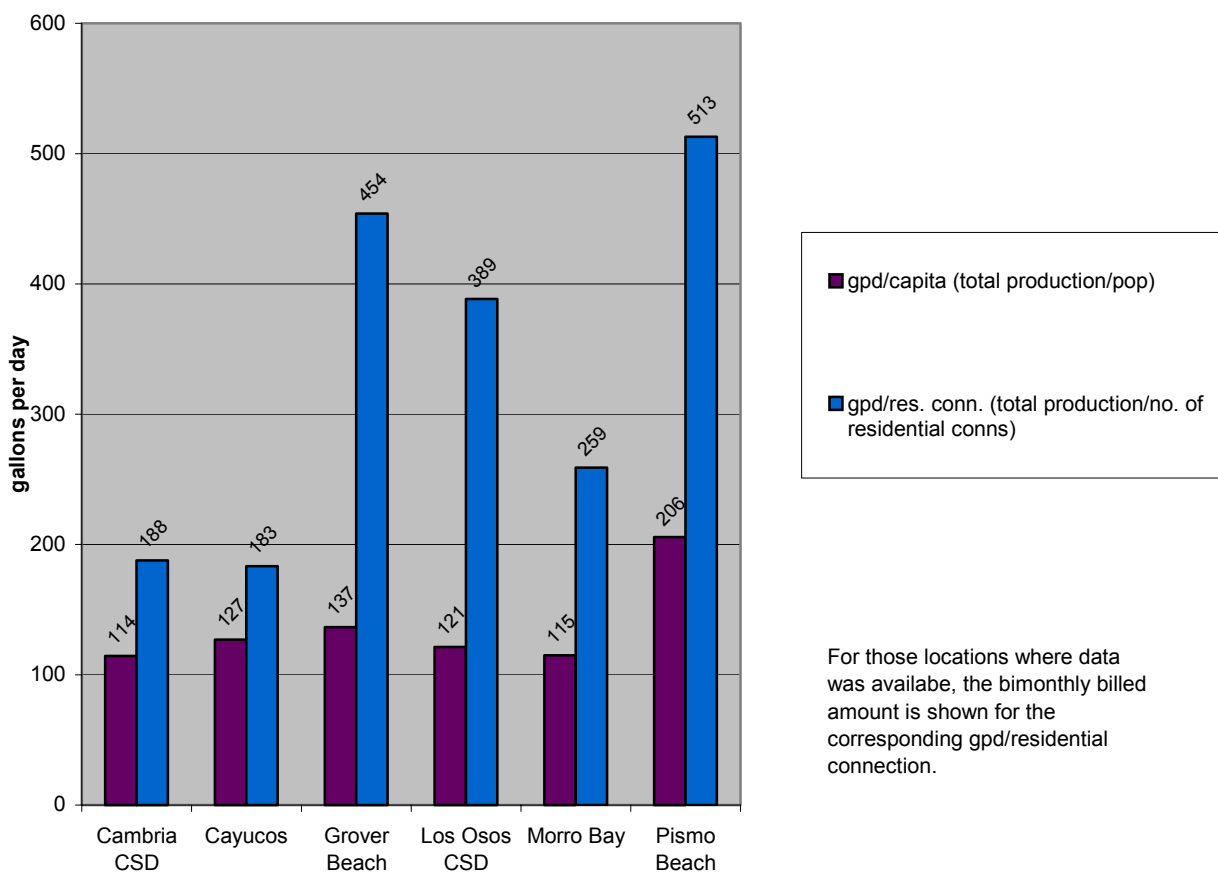
The level of conservation being practiced coupled with water rate structures also impact the amount of water used. The CCSD has instituted several measures to conserve water. Most of these measures are oriented towards limiting interior water use, and include low flow toilets, hot water recycling pumps, and rebates on water efficient clothes washers. A water-conserving retrofit program was also implemented that required upgrading 10 existing residential units with water conserving measures for every new residence constructed. During the mid 1990's, the retrofit program was modified to allow payment of an in-lieu fee versus actual modification of existing homes. Consequently, the level of existing housing upgrades has decreased. Currently, a tiered rate structure is the main impetus towards conserving outdoor water use.

Because of the high vacancy rates and seasonal use of homes in Cambria, summer demand peaking factors and fire flow demands will have more influence in sizing facilities than water usage per connection. Additional discussion on seasonal peaking factors and projected water demands is provided in Section 3.

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<sup>3</sup> San Luis Obispo North Coast Area Plan, Land Use Element & Local Coastal Plan, Public Hearing Draft, December 1996, page 3-25.

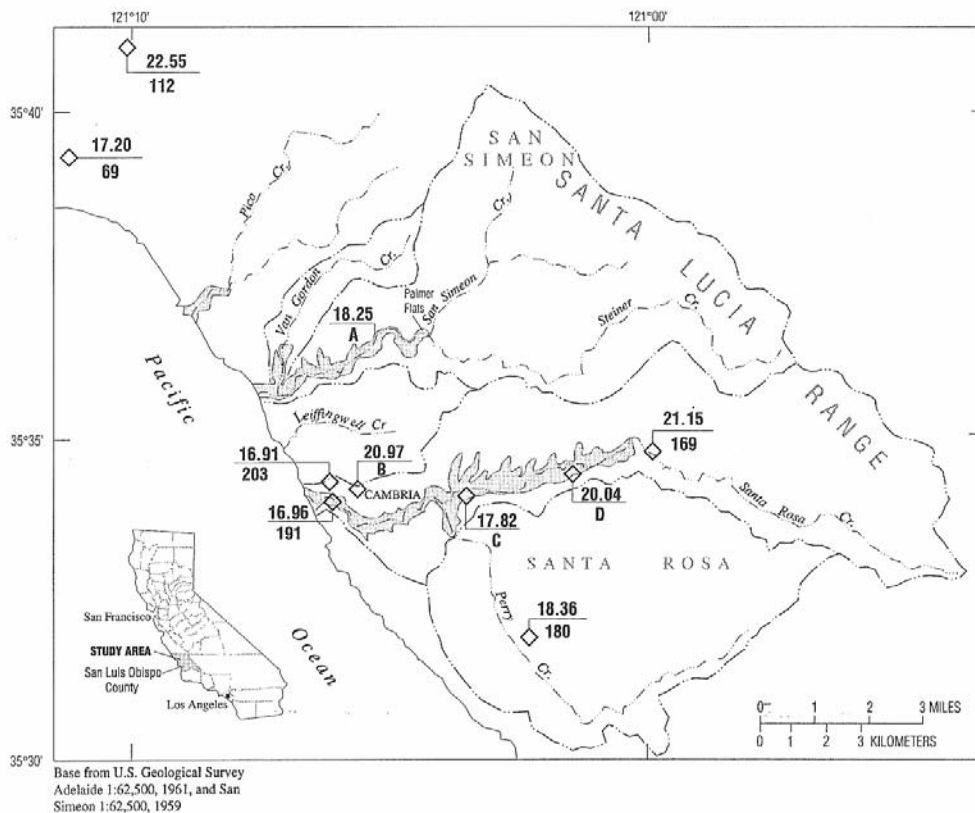
**FIGURE 2-4  
COMPARISON OF USE FOR WATER PURVEYORS WITHIN  
EVAPOTRANSPIRATION ZONE 1**



For those locations where data was available, the bimonthly billed amount is shown for the corresponding gpd/residential connection.

### 2.3 Existing Water Sources -

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## 2.4 Existing Distribution System -

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CCSD has six steel storage tanks serving its eight pressure zones. The total storage volume is 983,000 gallons, which is distributed as follows:

**TABLE 2-3  
EXISTING STORAGE TANKS**

Name of Facility	Number of Tanks	Floor Elevation	Pressure Zones Served	Volume Gallons	Total Volume Gallons
Fiscalini Tank	1	627	3, 4,	320,000	320,000
Stuart Street Tanks	1	439	2, 5A,	212,000	337,000
	1	439	5B <sup>1</sup> , 7	125,000	
Pine Knolls Tanks	1	285	1	103,000	206,000
	1	285		103,000	
Leimert Tank	1	323	6, 8,	120,000	120,000
<b>Total Storage:</b>					<b>983,000</b>

<sup>1</sup> Following recommendations subsequently outlined within this report, the Park Hill and Seacliff Estates neighborhoods will be served from the Stuart Street tanks. It is suggested that the Park Hill and Seacliff Estates service area be renumbered to "5B," and the existing Marine Terrace zone 5 be renumbered to "5A." This suggestion is reflected in the above table.

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**TABLE 2-4  
SERVICE ELEVATIONS OF EACH PRESSURE ZONE**

<b>Pressure Zone</b>	<b>Area Served</b>	<b>Upper Service Elevation (ft.)</b>	<b>Lower Service Elevation (ft.)</b>
1	Town, Park Hill, Moonstone Beach, Lower Happy Hill, Lower Pine Knoll	220	10
2	Lodge Hill	375	130
3	Lower Top of World, Upper Lodge Hill	490	310
4	Top of World	554	420
5	Marine Terrace	190	10
6	Upper Leimert	325	165
7	Upper Pine Knolls, Upper Happy Hill	260	200
8	Lower Leimert	165	115

NOTE: FIGURE 2-6 DELETED DUE TO WEB SECURITY ISSUES

