

Executive Summary

The community of Cambria has about 6,400 permanent residents and receives over 20,000 visitors per year that rely on local groundwater resources for their water supply. To meet this water supply need, the Cambria Community Services District (CCSD) operates several wells that withdraw water from shallow aquifers along San Simeon and Santa Rosa creeks. The current water rights diversion permits from the State Water Resources Control Board (SWRCB) allow CCSD to pump a maximum of 1,118 acre-feet (AF) during the wet season and 630 AF during the dry season, from both basins. However, the current California Coastal Commission (CCC) Development permit limits the total annual diversion from both basins to 1,230 AF. Due to recent detection of Methyl tert-Butyl Ether (MtBE), CCSD was forced to shutdown its Santa Rosa supply wells. In order to replace this supply and provide an increase in the quality of life to its customers, CCSD has prepared this report to investigate alternative long-term water supply sources.

Due to the lack of sufficient recharge during the drought periods and the influx of summer tourists, CCSD's water supply could be exhausted during an extended drought. Future estimates of dry season requirements depend upon projected build-out scenarios as well as projected unit demands. This report analyzed water supply needs for build-out scenarios with 4,650, 5,250, 5,700, and 6,700 residential housing units. Following presentation of earlier draft materials during a July 24, 2003 Board meeting, a motion was passed calling for an analysis of 4,650 residential connections with a further allowance for up to 18-hundred cubic feet (ccf) per bi-monthly billing period per residential customer. Based on this earlier Board motion as well as earlier modeling of the basin supply by Kennedy/Jenks (see the December 8, 2000 Baseline Water Supply Analysis), the volume of supplemental water needed during the dry season is approximately 602 acre-feet. This value is based on a total summer season demand of 888 acre-feet with 286 acre-feet being provided out of the CCSD aquifers. To provide the additional supply needed, it is recommended that CCSD's goal be two-fold; to reduce overall potable water demand and increase supply availability during the dry season.

A preliminary analysis was performed to consider the reliability, barriers to implementation, costs, and advantages of a variety of potential new water sources. Potential water supply alternatives were compiled from discussions with CCSD staff, as well as a collection of studies conducted in the last twenty years identifying and evaluating potential sources of additional potable water for CCSD. Sources of future supply include seawater desalination, local and imported surface water, groundwater, hard rock drilling, recycled water, and seasonal storage. Two types of seasonal storage options were investigated, those that would be used for groundwater recharge and those that would involve direct use. The seasonal storage options considered are discussed in detail in Section 5 and summarized in Table 5-1. Based on this qualitative screening level evaluation of the potential new water sources, several alternatives were recommend for more detailed evaluation and cost development and include:

- **Seawater Desalination:** The seawater desalination alternative would consist of constructing a subsurface seawater intake, pumping and pipeline facilities to transport the seawater to a desalination plant, a reverse osmosis (RO) desalination treatment process, a groundwater blending system, and pumping facilities to pump the treated water into the distribution system. Concentrate from the RO process would be conveyed in a separate pipeline back to a subsurface exfiltration gallery for disposal. Three desalination supply capacity alternatives were investigated with permeate flows of 300 gpm, 600 gpm, and

900 gpm. To meet the CCSD Board's July 24, 2003 motion of 4,650 residential connections and an average residential demand of 18-ccf per bi-monthly billing period, a desalination facility would need to be sized for a 600 gpm permeate flow and operate approximately 227 days per year.

- **Nacimiento Water Supply:** The Nacimiento water supply alternative would consist of pumping water from Lake Nacimiento "over-the-hill" where it would recharge the aquifer at Palmer Flats. It would then be extracted from Palmer Flats and pumped to the San Simeon well field to enter the distribution system. Two alternative pipeline routes and two pumping scenarios were investigated.
- **Whale Rock Exchange:** The Whale Rock exchange alternative would involve the exchange of water rights from Lake Nacimiento for water rights to Whale Rock Reservoir and would utilize the regional Nacimiento pipeline, if and when it is constructed. Two water supply capacities and pipeline routes were investigated for this alternative.
- **Hard Rock Drilling:** Hard rock drilling consists of developing groundwater supplies from fractured bedrock, which has typically not been explored for potential water supplies. Hard rock water supplies are acknowledged to be high-risk ventures where considerable capital investment must be made to develop supply.
- **Recycled Water:** The recycled water alternative would involve utilizing recycled water for irrigation purposes at various locations within Cambria. It would require treatment upgrades to the wastewater facilities as well as a recycled water distribution system.
- **Demand Management:** Demand management would consist of continuing with existing conservation measures and implementing additional measures to reduce potable water use for landscaping.
- **San Simeon Dam and Reservoir-Van Gordon Site:** This alternative would consist of the construction of a dam and reservoir on the San Simeon basin near the Van Gordon tributary. The reservoir would store the remaining wet season groundwater entitlement from both basins. The water would then be released into San Simeon Creek where it would recharge the groundwater basin during the dry season.
- **Jack Creek Dam and Reservoir:** This alternative would involve the construction of a dam and reservoir located on Jack Creek. The reservoir would collect runoff from the Dover Canyon watershed during the wet season. Releases would then be made during the dry season to Santa Rosa Creek for recharge of the groundwater basin.

For the selected alternatives, additional evaluation was performed to better identify and clarify the water source capacity, water quality, necessary infrastructure, reliability issues, required agreements/institutional issues, environmental issues, permitting/CEQA, cost/funding, and schedule associated with each alternative. The numerical matrix developed to evaluate the priority of the alternatives consisted of ranking the alternatives on the selection criterion listed above. For each selection criterion, an alternative was ranked on a scale of one to five, with five being the most desirable and one the least. Table ES-1 provides a summary of the ranking scales for each criterion.

**TABLE ES-1
SUMMARY OF THE CRITERION RANKING SCALE**

Criteria	1	2	3	4	5
Water Supply Capability (AFY)	< 600	600 – 750	750 - 850	850 – 1,000	> 1,000
Water Quality	Very Poor	Poor	Fair	Good	Excellent
Reliability	None	Little	Less than Sufficient	Sufficient	More than Sufficient
Required Agreements/ Institutional Issues	Very Difficult to Obtain	Difficult to Obtain	Obtainable	Relatively Easy to Obtain	None Required
Environmental Issues	Significant Impacts, Further Review Required	Significant, but Short-Term	Less than Significant, After Mitigation	No Significant Impacts	No Impacts
Permitting/CEQA	Very Difficult to Obtain	Difficult to Obtain	Obtainable	Relatively Easy to Obtain	None Required
Cost (Fixed/Variable)	Above/Above Average	Above/Below Average	Average/Average	Below/Above Average	Below/Below Average
Funding (reduction in capital cost)	None	25 percent	50 percent	75 percent	100 percent

The weighting factors (all equal to 0.125) and ranking scores are multiplied for each alternative and summed to determine its overall score. Alternatives with higher overall scores were considered more attractive. A summary of the alternatives and their corresponding scores is provided in Table 8-37.

Based on the evaluation and the recommended goals, it is recommended that CCSD's long-term water supply strategy consist of the following elements:

- Water Demand Management
- Recycled Water
- Seawater Desalination

Each of these alternatives had highest ranking using equal weight of criteria. Other alternatives, such as the Nacimiento Water Supply and Whale Rock Exchange, had ranking values slightly lower than these alternatives and may also be considered as sources of supplemental supply. The estimated costs for each phase of the recommended plan are summarized in Table ES-2.

**TABLE ES-2
ESTIMATED COST (2002) OF THE RECOMMENDED PLAN**

Element	Annual Fixed Cost ^(a) (\$/yr)	Variable Cost (\$/AF)
Water Demand Management	< \$100,000	\$0
Recycled Water	\$369,000	\$810
Seawater Desalination ^(b)	\$275,000	\$710

Notes:

- (a) Combination of the capital cost annualized over a 30-year period at 4 percent and annual fixed O&M costs.
- (b) Based on selection of a 600 gpm RO system with the 75 percent reduction in capital cost from grant funding incorporated.