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RESOLUTION NO. 23-2026
MAY 14, 2026

A RESOLUTION OF THE BOARD OF DIRECTORS
OF THE CAMBRIA COMMUNITY SERVICES DISTRICT
ADOPTING THE 2025 URBAN WATER MANAGEMENT PLAN AND AUTHORIZING ITS SUBMITTAL
TO THE DEPARTMENT OF WATER RESOURCES

WHEREAS, the California Legislature enacted Assembly Bill 797 (Water Code Section 10610 et seq., known as the Urban Water Management Planning Act) during the 1983-1984 Regular Session, and as amended subsequently, which mandates that every supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually, prepare an Urban Water Management Plan, the primary objective of which is to plan for the conservation and efficient use of water; and

WHEREAS, the District is an urban water supplier providing water to a population of over 6,000; and

WHEREAS, the Urban Water Management Plan shall be periodically reviewed at least once every five years, and the District shall make any amendments or changes to its Plan which are necessitated by the review; and

WHEREAS, the District prepared and circulated for public review a draft 2025 Urban Water Management Plan, and a properly noticed public hearing regarding said Plan was held by the District on May 14, 2026.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Cambria Community Services District as follows:

1. The 2025 Urban Water Management Plan is hereby adopted and ordered filed with the Confidential Administrative Assistant; the General Manager is hereby authorized and directed to file the 2025 Urban Water Management Plan with the California Department of Water Resources within 30 days after this date.
2. The General Manager is hereby authorized and directed to implement the Water Conservation Programs as set forth in the 2025 Urban Water Management Plan, which include recommendations to the District regarding necessary procedures, rules, and regulations to carry out effective and equitable water conservation and water recycling programs.

PASSED AND ADOPTED THIS 14th day of May 2026.

DocuSigned by:
Harry Farmer
50131785EA241B...
Harry Farmer, President
Board of Directors

APPROVED AS TO FORM:

DocuSigned by:
Timothy Carmel
B64D40A50AA141E...
Timothy J. Carmel
District Counsel

ATTEST:

DocuSigned by:
Haley Dodson
27CDBD8EE42E4C4...
Haley Dodson
Confidential Administrative Assistant

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Cambria Community Services District
2025 Urban Water Management Plan
April 29, 2026
DRAFT

MADDAUS WATER MANAGEMENT INC.
Making a Difference in the World of Water

Prepared by Cambria Community Services District and Maddaus Water Management Inc.

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COVER PHOTO: SAN SIMEON WELL FIELD LOOKING TOWARD THE OCEAN
COVER PHOTO CREDIT: PAUL CLEVELAND

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LIST OF ABBREVIATIONS AND ACRONYMS

AB	Assembly Bill
ABAG	Association of Bay Area Governments
ACS	American Community Survey
AF	acre-feet
AFY	acre-feet per year
AMI	Advanced Metering Infrastructure
Annual Assessment	Annual Water Supply and Demand Assessment
AWE	Alliance for Water Efficiency
AWWA	American Water Works Association
AWWARF	American Water Works Association Research Foundation
BMP	Best Management Practice
CalWEP	California Water Efficiency Partnership
ccf	100 cubic feet
CCR	California Code of Regulations
CCSD	Cambria Community Services District
CDP	Coastal Development Permit
CEC	California Energy Commission
cfs	cubic feet per second
CII	Commercial, Industrial, and Institutional
CIMIS	California Irrigation Management Information System
CIP	Capital Improvement Program
County	San Luis Obispo County
CPUC	California Public Utilities Commission
CUWCC	California Urban Water Conservation Council
CWC	California Water Code
DCR	DWR State Water Project Delivery Capability Report
DMA	District Metered Area
DMM	Demand Management Measures
DOF	California Department of Finance
DRA	Drought Risk Assessment
DSS Model	Least Cost Planning Decision Support System Model
DWR	California Department of Water Resources
EDU	Equivalent Dwelling Unit
ELT	Early Long Term
ETo	evapotranspiration
GCM	global climate model
GIS	Geographic Information System
GPCD	gallons per capita per day
gpd	gallons per day
gpf	gallons per flush
gpm	gallons per minute
Guidebook	2025 Urban Water Management Plan Guidebook
HET	High-Efficiency Toilet
IPR	Indirect Potable Reuse
IRWM	Integrated Regional Water Management
IPCC	International Panel on Climate Change
kWh	Kilowatt-hour
LD&R	Leak Detection and Repair
Legislature	California State Legislature
LHMP	Local Hazard Mitigation Plan
MF	Multifamily
MG	million gallons
MGD	million gallons per day
MOU	Memorandum of Understanding
MTBE	Methyl Tertiary Butyl Ether
MWM	Maddaus Water Management
NAICS	North American Industry Classification System
NBA	North Bay Aqueduct
NIWR	Net Irrigation Water Requirements
O&M	Operations & Maintenance
PEIR	Program Environmental Impact Report
psi	pounds per square inch
PWS	Public Water System
PWSID	Public Water System Identification Number
R-GPCD	Residential Gallons per Capita per Day
RCP	Representative Concentration Pathways
RUWMP	Regional Urban Water Management Plan

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SB	Senate Bill
SB X7-7	Water Conservation Act of 2009 or Senate Bill X7-7
SF	Single Family
SFR	Single-Family Residential
SLOMJHMP	San Luis Obispo County Multi-Jurisdictional Hazard Mitigation Plan
State Water Board	State Water Resources Control Board
SWP	State Water Project
SWTR	Surface Water Treatment Rule
USBR	United States Bureau of Reclamation
USGS	United States Geological Survey
UWCC	Urban Water Conservation Committee
UWMP	Urban Water Management Plan
UWMP Act	Urban Water Management Planning Act of 1983 (AB 797)
UWUO	Urban Water Use Objective
WMP	Water Master Plan
WRF	Water Reclamation Facility
WSCP	Water Shortage Contingency Plan
WWTP	Wastewater Treatment Plant
WUE	Water Use Efficiency
WUEP	Water Use Efficiency Plan

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1 INTRODUCTION AND OVERVIEW

This report presents the 2025 Urban Water Management Plan (UWMP) for the Cambria Community Services District (CCSD). This chapter describes the purpose, organization, and implementation of this 2025 UWMP; its relationship to California Water Code requirements and urban water Supplier grant and loan eligibility; and its coordination with other local and regional planning efforts involving the CCSD. The Urban Water Management Planning Act (UWMP Act) mandates that urban water Suppliers serving more than 3,000 customers or delivering over 3,000 acre-feet per year (AFY) must adopt an Urban Water Management Plan every five years. This plan must demonstrate the reliability of the water supply under both normal and drought conditions. This UWMP was prepared in compliance with California Water Code (CWC) requirements for UWMPs following guidance from the California Department of Water Resources (DWR) and is intended to guide long-term water resources planning for CCSD.

1.1 Lay Description

An Urban Water Management Plan (UWMP) is a report designed for local water conservation planning and implementation. This includes preparation for emergency supply interruptions and ensuring better alignment with other local planning documents. The UWMP is a vital tool for water management and planning, as it assists government officials and water supplier managers by linking land-use planning, water supply planning, and broader local or statewide issues, such as climate change. Additionally, the UWMP serves as a means for water suppliers to communicate their water management practices to customers, the community, and state authorities. A UWMP can offer precise information about various management actions. This includes evaluating the effectiveness of water shortage contingency planning, identifying necessary infrastructure improvements, and assessing emergency connections with neighboring water suppliers. Additionally, the UWMP can analyze trends in water supply reliability driven by climate change or regulatory conditions and highlight opportunities to secure funding for water management projects. Throughout this UWMP, the terms “urban water supplier” and “water supplier” will be shortened to “Supplier,” as defined under California Water Code Section 10617 as an entity providing water for municipal purposes to more than 3,000 customers or serving more than 3,000 acre-feet annually.

A UWMP is essential for collecting and assessing data on water supply reliability across the state. It assists both Suppliers and the state in preparing for future drought risks. Suppliers can include additional details to better illustrate the water supply conditions in their areas. This additional information can enhance the evaluation of their water supply consistency and drought risk, making the UWMP more effective in addressing local, regional, and statewide water management and planning issues.

CCSD provides water service to the unincorporated town of Cambria within San Luis Obispo County. It provides water supply, wastewater collection and treatment, fire protection, garbage collection, and limited street lighting, parks, recreation, and open space. When formed in 1976, CCSD succeeded the earlier Cambria County Water District, established in 1959. CCSD has a five-member Board of Directors elected at large by voters residing within the service area boundary. Land-use authority for the service area is under the auspices of San Luis Obispo County, which also provides police, flood control, and road services.

1.2 Urban Water Management Plan Organization

This UWMP is organized into the following chapters:

Chapter 1 – UWMP Introduction and Lay Description. This chapter discusses the fundamentals of the UWMP and the newly required lay description.

Chapter 2 – Plan Preparation. This chapter provides information on the processes used for developing the UWMP, including efforts in coordination and outreach.

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Chapter 3 – System Description. This chapter describes CCSD's water system, including maps of the service area, an explanation of the service area and climate, details on the public water system, and an overview of CCSD's organizational structure and history.

Chapter 4 – Customer Water Use. This chapter describes and quantifies the current and projected water uses within CCSD's service area.

Chapter 5 – SB X7-7 Baselines, 2020 Targets, and 2025 Reporting. In this chapter, CCSD details its compliance with the 2020 per capita water conservation mandate, the 2020 per capita target value adopted in the 2015 UWMP, and its compliance value based on actual 2020 customer water use. The goal of this chapter is to allow the Supplier to report on its progress toward meeting its urban water-use targets in its UWMP, pursuant to Water Code Section 10608.40. Suppliers that did not meet their 2020 target are required to compare their 2025 water use to the 2020 target.

Chapter 6 – System Supplies. In this chapter, the CCSD describes and quantifies current and projected potable and non-potable water supplies. A description of each supply source and its quantified supply availability is also provided.

Chapter 7 – Water System Reliability and Drought Risk Assessment. This chapter describes CCSD's water system reliability through a 20-year planning horizon for a normal year, a single dry year, and five consecutive dry years. This chapter also includes the Drought Risk Assessment (DRA). The water system's reliability differs from the DRA by allowing a different basis for characterizing the five consecutive dry years.

Chapter 8 – Water Shortage Contingency Planning. This chapter provides CCSD's structured plan for dealing with water shortages, incorporating prescriptive information and standardized action levels, along with implementation actions in the event of a catastrophic supply interruption.

Chapter 9 – Demand Management Measures. This chapter communicates CCSD's efforts to promote conservation and reduce water supply demand, including a narrative describing the implementation of several demand management measures.

Chapter 10 – Plan Adoption, Submittal, and Implementation. This chapter describes and documents the steps taken to make CCSD's UWMP publicly available, as well as the steps taken to adopt and submit it in accordance with the Water Code.

Appendices – Several appendices are included to support the main chapters of this planning document.

1.3 UWMPs in Relation to Other Efforts

Effective water supply planning is best achieved when integrated with other urban planning efforts. As such, CCSD has incorporated relevant data from the following sources into the UWMP:

- *2020 Cambria Decision Support System (DSS) Model Update and Demand Analysis*
- *2008 Water Master Plan and related efforts*
- *CCSD Water Rights Licenses*
- *CCSD Waste Discharge Requirements and Water Recycling Requirements*
- *2020-2024 AWWA Water Loss Audits*
- *2025 Wastewater Annual Report*
- *San Luis Obispo County Multi-Jurisdictional Hazard Mitigation Plan 2025-2030*
- *Water production volumes from 1988 to 2025*

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- 2008 North Coast Area Plan (updated in September 2022)

1.4 UWMPs and Grant or Loan Eligibility

To be eligible for any water grant or loan administered by the California Department of Water Resources (DWR), a Supplier must maintain a current UWMP, confirmed by DWR to address California Water Code requirements, throughout the term of the grant or loan administered by DWR. A UWMP may also be required for other state funding depending on specific funding guidelines.

1.5 Demonstration of Consistency with Bay Delta Plan for Participants in Covered Actions

This section is not applicable because CCSD does not rely on the Sacramento-San Joaquin Delta for any of the water used to supply its service area.

1.6 Background and Purpose

This UWMP is the legal and technical foundation for water management across California. A well-constructed UWMP can save time and money and provide CCSD staff, the public, and elected officials with an understanding of past, existing, and future water conditions and management. The UWMP integrates local and regional land-use planning, regional water supply, infrastructure, and demand management projects, as well as statewide issues of concern, such as climate change and regulatory revisions. For this 2025 UWMP, CCSD has gathered and synthesized water-related information from numerous sources into a plan with practical utility at the local, regional, and statewide levels. CCSD has developed this UWMP to offer practical and effective guidance regarding water management to its staff, stakeholders, customers, the community, and California's water regulatory bodies and the California State Legislature (Legislature).

The UWMP also provides a framework for evaluating additional strategies for managing CCSD's water assets in support of long-term reliability and broader management objectives. A rigorous accounting of water supply, water demand, and system reliability enables CCSD to identify opportunities to retain conserved water, leverage water assets for environmental benefits or financial value, and better understand potential surplus or shortage conditions under varying scenarios. More detailed and reliable accounting improves CCSD's ability to make informed asset management and infrastructure planning decisions, and to proactively address long-term challenges associated with climate change, evolving regulatory requirements, and local water quality conditions.

This plan intends to provide DWR and the public with information on current and future water sources and demands, and to assess CCSD's water resource needs. Specifically, the 2025 UWMP must provide water supply planning for a 20-year planning horizon in five-year increments, identify and quantify adequate water supplies to meet existing and future demands during normal, dry, and drought years, and ensure the efficient use of urban water supplies. This 2025 UWMP addresses all Water Code requirements for such a plan, as shown in the completed DWR UWMP checklist provided in Appendix A.

Thoughtful urban water management planning provides CCSD with the opportunity to integrate supply and demand in a balanced, methodical framework that addresses short- and long-term water planning conditions. This 2025 UWMP will:

- Assess changes in natural hydrology, climate, and groundwater conditions.
- Anticipate the implications of regional, state, and federal regulations.
- Understand supply conditions and water use variability.
- Identify regional constraints on, or opportunities for, shared water resources.

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- Integrate local land-use changes, development, plans, and population growth.
- Prepare for water shortages and unforeseen calamities.
- Anticipate infrastructure improvements.
- Recognize project funding needs and opportunities.

This UWMP will address the following water-planning fundamentals:

- Preparing a detailed look at current and future water use, including assessing and error-checking available baseline data and examining long-term planning documents like municipalities' General Plans and Specific Plans.
- Analyzing potable and non-potable water supplies, including reviewing water rights and contracts, assessing water deliveries, ascertaining restrictions on water availability under certain regulatory and hydrological conditions, and other opportunities or limitations explained in documentation for each water supply.
- Analyzing water supply reliability by integrating the water use analyses with the water supply analyses to provide a water service reliability picture under normal conditions, single dry year conditions, and five consecutive dry years through at least 2050.
- Preparing a realistic DRA by including integrated water supplies and projected water use in a hypothetical five-year drought condition.
- Developing an effective Water Shortage Contingency Plan (WSCP) that specifies opportunities to reduce demand and augment supplies under numerous and even unpredictable water shortage conditions.

Furthermore, this UWMP allows CCSD to reflect short-term and long-term land-use planning assumptions and goals, account for specific plan and infill development projects during the UWMP planning period, address the dynamic nature of water supplies and demands through water-shortage contingency planning, and inform the state and CCSD's customers about its water management practices.

Lastly, changes in use patterns, such as those associated with the stay-at-home orders during the 2020 pandemic, can alter urban water use patterns and affect future water conservation accounting and analysis. Water data at the time of this report may reflect a temporary or long-term change in water use and could influence evaluation of near-term and long-term management considerations. In this UWMP, CCSD describes these changes and their potential effects on water use in 2025 and future demand.

1.7 Urban Water Management Planning and the California Water Code

In 1983, the California Legislature enacted the Urban Water Management Planning Act (UWMP Act). The law required an urban water Supplier[1] to adopt a UWMP every five years, demonstrating water supply reliability in normal, single-dry, and multiple-dry years. The original Act also required DWR to provide a report to the California Legislature on the status of water supply planning in California.

Since the UWMP Act was passed, it has undergone significant expansion and revision, as reflected in the 2025 UWMP Guidebook (Guidebook, see details below). Prolonged droughts, groundwater overdraft, regulatory revisions, and changing climatic conditions not only affect a Supplier's water reliability determinations, but also the broad picture of statewide water reliability overseen by DWR, the State Water Resources Control Board

[1] A "Supplier" is defined as an entity providing water for municipal purposes to more than 3,000 customers or serving more than 3,000 acre-feet annually.

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(State Water Board), and the California Legislature. Accordingly, the UWMP Act has grown to address changing conditions as it guides California's water resource management.

There have been minor changes to the Water Code since the 2020 UWMP was submitted, primarily the addition of several definitions. None of these change the UWMP requirements for the 2025 UWMP. Updated guidance for the 2025 UWMP effort includes the following:

- Suppliers with Multiple Public Water Systems (PWSs) – Provides more consistent criteria for determining when a Supplier with multiple PWSs must submit a UWMP.
- DWR Submittal Tables – Improvements were made for accuracy and clearer identification between required and optional data.
- Water Loss Standard Reporting – There has been no change to the Water Code regarding water loss standard reporting since the 2020 UWMP was submitted. However, Suppliers are now requested to report progress toward meeting the 2028 Water Loss Standard.
- Direct Potable Reuse – The State Water Board has adopted regulations for the use of direct potable reuse since the 2020 UWMP was submitted. Minor updates were added to supply and demand tables to support clearer direct potable reuse reporting.
- Lower-Income Housing Demands – While projections for lower-income housing were required in the 2020 UWMP, additional guidance has been provided for optional reporting of the method used to project water use for lower-income housing. This optional guidance incorporates Regional Housing Needs Assessment (RHNA) into projected land uses and water demands.
- Reporting Groundwater Recharge and Water Storage – In previous years, the guidance for reporting storage water did not differentiate between long-term (i.e., water placed into storage one year but extracted in a future year) and short-term storage (i.e., water placed into storage and extracted the same year). New clarification is provided to prevent short-term storage from being double counted.

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2 PLAN PREPARATION

Lay Description

This chapter describes the basis for the development of the UWMP; the requirements for preparation; the processes used, including notification, coordination, and outreach; the regional planning involved; and the type of year and units of measure used.

2.1 Plan Preparation

Coordination and outreach are key elements in developing a useful and accurate UWMP. Notification to all interested parties and stakeholders allows those entities to provide information on aspects of the UWMP and stay informed on the different water management considerations that may affect their own decisions. CCSD notified neighboring cities and San Luis Obispo County of its intent to update the UWMP so feedback could be incorporated as applicable. For further information about this notification process, see Chapter 10 of this UWMP.

Coordination with city and county land use planning agencies can provide information on regional planning, demographics, and expected future development for determining future water use, supply, and reliability. Since San Luis Obispo County has authority over land-use planning for CCSD's service area, its planning staff was consulted in the preparation of this UWMP to ensure a complete and accurate representation of potential water demand from land-use development.

CCSD also participates in the San Luis Obispo County Integrated Regional Water Management (IRWM), which includes all neighboring Suppliers in the county. See Section 2.6 for further outreach activities.

2.2 Basis for Plan Preparation

California Water Code Section 10617 defines an urban water Supplier as "*a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems."*[2] In accordance with the California Water Code Section 10621, urban water suppliers are required to prepare a UWMP every five years.[3] Throughout this UWMP, the term "urban water supplier" will be shortened to "Supplier".

As per the above definition, CCSD qualifies as an urban water supplier (Supplier). As such, CCSD has prepared this plan in compliance with state law and following the guidelines as outlined by DWR in its *Guidelines for Urban Water Management Plan Guidebook 2025*, posted as Final on January 29, 2026 (DWR, 2026). This 2025 UWMP is the five-year update to the 2020 UWMP and supersedes the contents of the 2020 plan.

Public water distribution systems provide drinking water for human consumption. All public water systems are given a unique Public Water System Identification Number (PWSID). The State Water Board Division of Drinking Water regulates these systems. The California Health and Safety Code 116275 defines a public water system as "*a system for the provision of water for human consumption through pipes or other constructed conveyances that has 15 or more service connections or regularly serves at least 25 individuals daily at least 60 days out of*

[2] California State Legislature. (1983). Water Code Section 10617, amended 1996. https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=WAT&sectionNum=10617.

[3] California State Legislature. (1983). Water Code Section 10621. http://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=WAT&sectionNum=10621

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the year."[4] Based on this definition, CCSD is a public water system and therefore operates under a water supply permit issued by the Division of Drinking Water.

CCSD served approximately 6,050 people through 4,035 metered municipal connections and supplied 520 acre-feet (AF) of potable water in 2025. The total number of connections accounts for all billed water meters in the service area but does not account for the number of multifamily residential units served by master meters. Multifamily residential developments, such as apartment complexes and mobile home parks, may use a single master meter to measure consumption for more than one dwelling unit.

Table 2-1. Public Water System

Submittal Table 2-1 Retail: Public Water Systems			
Has there been a change in the number of affiliated Public Water Systems since the 2020 UWMP?			No
Public Water System Number	Public Water System Name	Number of Municipal Connections 2025	Volume of Water Supplied 2025 (AF)
CA4010014	Cambria Community Services District	4,035	520
	Total	4,035	520
NOTES: This includes potable water supplied volume only and all active connections.			

2.3 Regional Planning

Regional planning can deliver mutually beneficial solutions for all agencies involved by reducing costs for individual agencies, assessing water resources at the appropriate geographic scale, and enabling solutions that cross jurisdictional boundaries. CCSD is preparing an individual UWMP and is not a member of a Regional Alliance or Regional UWMP. CCSD does not sell or purchase water from other Suppliers.

2.4 Individual or Regional Plans

CCSD has developed this UWMP to report solely on its distribution service area. The individual UWMP addresses all requirements of the Water Code as provided in the UWMP Guidebook. CCSD has notified and coordinated with the appropriate regional agencies and constituents.

This 2025 UWMP, which is an individual UWMP (see Table 2-2), updates and replaces CCSD's 2020 UWMP.

Table 2-2. Plan Identification Type

Submittal Table 2-2: Plan Identification	
Select	**Type of Plan**
☑	**Individual UWMP**

2.4.1 Regional UWMP

Suppliers may choose to work with other agencies within a region, such as wholesaler(s), other retailers, an Integrated Regional Water Management group, or other regional agencies, to develop a regional urban water management plan (RUWMP) instead of an individual one. A RUWMP reports on the combined regional service area and must still address all the requirements of the Water Code Section. CCSD did not participate in a RUWMP.

[4] California State Legislature. (1995). Health and Safety Code Section 116275. https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=HSC&sectionNum=116275.

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2.5 Fiscal or Calendar Year and Units of Measure

Since CCSD reports on a calendar rather than fiscal year basis, it is required to include water use and planning data for the entire calendar year of 2025, as reflected in this UWMP. In addition, CCSD uses acre-feet (AF) and acre-feet per year (AFY) throughout this plan as the units of measurement for reporting water volume, unless otherwise noted.

Table 2-3 provides Supplier identification information, type of year reporting, and units of measure used by CCSD in this 2025 UWMP.

Table 2-3. Supplier Identification

Submittal Table 2-3: Supplier Identification	
Type of Supplier (select one or both)	
☐	Supplier is a wholesale supplier
☑	Supplier is a retail supplier
Fiscal or Calendar Year (select one)	
☑	UWMP Tables are in calendar years
☐	UWMP Tables are in fiscal years
Units of measure used in UWMP	
Unit	AF

2.6 Coordination and Outreach

This section describes the coordination and outreach efforts of CCSD during preparation of the 2025 UWMP.

2.6.1 Wholesale and Retail Coordination

When a Supplier relies on a wholesale agency for water supply, both are required to provide each other with information on projected water supply and demand. Retail agencies that receive their water supply from one or more wholesalers are required to provide their wholesaler(s) with the projected water demand from that source in five-year increments for 20 years or as far as possible based on available data.

As listed in Table 2-4, CCSD does not receive any portion of its supply from a wholesaler, nor does it sell water to other agencies as a wholesaler, so no wholesale-retail coordination is necessary. Additionally, because CCSD does not use groundwater from a basin regulated under the California Sustainable Groundwater Management Act (SGMA), no coordination with groundwater sustainability agencies is necessary. More information about coordination and notification efforts is in Chapter 10.

Table 2-4. Water Supplier Information Exchange

Submittal Table 2-4 Retail: Water Supplier Information Exchange - Water Code Section 10631(h)
The retail Supplier has informed the following wholesale supplier(s) of projected water use in accordance with Water Code Section 10631 (h).
Wholesale Water Supplier Name
NOTES: CCSD has no wholesaler suppliers.

2.6.2 Coordination with Other Agencies and the Community

On March 14, 2026, notices of preparation and intent to update the UWMP were sent to San Luis Obispo County and the San Simeon Community Services District. A copy of the notice is in Appendix B of this UWMP.

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A notification to the general public was published in The San Luis Obispo Tribune newspaper for two successive weeks, as required by DWR (at least 14 days and 7 days in advance of the public hearing). Copies of the notice are available in Appendix C of this UWMP. Notification was also posted on CCSD's website.[5]

On [DATE], CCSD convened a public hearing to receive comments on the 2025 UWMP prior to its final adoption by the Board of Directors and submittal to the California DWR. Prior to the hearing, copies of the 2025 UWMP and WSCP were made available for public review at CCSD's office at 2150 Main Street #1-A in Cambria, CA, and on CCSD's website. The Final 2025 UWMP was submitted to the Department of Water Resources by July 1, 2026.

2.6.3 Notice to Cities and Counties

California Water Code 10621(b) requires that agencies notify the cities and counties to which they serve water that the 2025 UWMP is being updated and reviewed. The California Water Code requires this to be done at least 60 days prior to the public hearing. CCSD's notification to cities and counties is reported in Table 10-1 in Chapter 10 of this UWMP.

[5] www.cambriacsd.org

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3 SYSTEM DESCRIPTION

Lay Description

This chapter describes Cambria Community Services District's (CCSD's) water system, service area, climate, projected population, and other factors that might affect water management planning. It discusses potential uncertainties, such as the impacts of climate change. CCSD provides water supply, wastewater collection and treatment, fire protection, garbage collection, as well as a limited amount of street lighting, parks, recreation, and open space. When it was formed in 1976, CCSD succeeded the Cambria County Water District, which was established in 1959. CCSD has a five-member Board of Directors elected at large by voters throughout its service area. Land-use authority for the service area is under the auspices of San Luis Obispo County, which also provides police, flood control, and road maintenance services.

3.1 General Description

CCSD provides water service to the approximately 6,000-resident unincorporated town of Cambria within San Luis Obispo County, California. 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 community is relatively isolated, with access to the north and south via Highway 1 as the only option, due to the Pacific Ocean to the west and the Santa Lucia Mountains to the east. Highway 46 connects to Highway 1 approximately four miles south of Cambria and provides the main inland connector route to Highway 101, which is approximately 22 miles inland. To travel inland towards Paso Robles, the route along Highway 46 passes over a summit at 1,720 feet above sea level.

CCSD's service area is within the Coastal Zone and subject to the Local Coastal Program, which was first developed by the County and certified by the California Coastal Commission in 1988. In addition to providing water service within its Urban Services Boundary, CCSD provides water and wastewater services under contract to the Hearst San Simeon State Parks campground, approximately two miles north of Cambria, near the intersection of Highway 1 and Simeon Creek Road. Providing water service beyond its current boundary and previously contracted areas is subject to Measure P,[6] which was approved by voters in 2006. This measure required amending CCSD's water master plan,[7] completing supporting environmental review, and obtaining voter approval before water service could be extended. Land use is guided through conformance with the San Luis Obispo County North Coast Area Plan,[8] the Coastal Zone Land Use Ordinance,[9] Framework for Planning Coastal Zone,[10] General Plan Land Use,[11] and Circulation Elements.[12]

[6]Measure P (06-2006-11-07 General Election)
https://www.slocounty.ca.gov/departments/clerk-recorder/forms-documents/elections-and-voting/past-elections/general-elections/2006-11-07-general/documents/measure-p-06-2006-11-07

[7] Water Master Plan (Cambria Community Services District)
https://www.cambriacsd.org/water-master-plan

[8] North Coast Area Plan: https://www.slocounty.ca.gov/departments/planning-building/forms-documents/plans-and-elements/area-plans/north-coast-area-plan

[9] San Luis Obispo County Code (Title 23 – Coastal Zone Land Use Ordinance):
https://library.municode.com/ca/san_luis_obispo_county/codes/county_code?nodeId=TIT23COZOLAUS

[10] Framework for Planning in the Coastal Zone: https://www.slocounty.ca.gov/departments/planning-building/forms-documents/plans-and-elements/elements/framework-for-planning-coastal-zone

[11] San Luis Obispo County General Plan Documents: https://www.slocounty.ca.gov/departments/planning-building/forms-documents/general-plan-forms-and-documents

[12] Circulation Element (San Luis Obispo County General Plan):
https://dn720702.ca.archive.org/0/items/C124891547/C124891547.pdf

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Prior to 1959, the community water supply was provided by the Cambria Development Company, and earlier by the J.D. Campbell Water Company. CCSD currently serves a year-round population of about 6,038, as well as many visitors to the Central Coast.

CCSD'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 D contains the Bulletin 118 summary description of each of the two aquifers, neither of which is listed as being in overdraft status by the State.

Due to the steep and varied topography of the service area, there are eight pressure zones within CCSD's water distribution system. The area is served by five groundwater wells, three distribution system pumping stations, several pressure-reducing stations, and four tank sites. Since the 2020 Urban Water Management Plan, CCSD has not grown, and the only new water service established was for a relocated historical building that has been turned into a museum. The CCSD service area covers approximately four (4) square miles.

3.2 Service Area Boundary

Figure 3-1 shows the CCSD service area and sphere of influence areas, which were last adopted by the San Luis Obispo County Local Agency Formation Commission in 2024. Cambria is known for its outstanding natural environment, including native Monterey Pine forests, creek-side areas, and a scenic coastline. The beauty of the area, combined with a mild climate tempered by sea breezes, has made Cambria popular with retirees and tourists. Rainfall averages approximately 18 inches per year and is generally limited to the winter months.

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Figure 3-1. Cambria Community Services District Service Area

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Cambria is within an original Rancho Santa Rosa Mexican land grant area. The town was established in the late 1860s to accommodate the shipping of mining and agricultural products in the central coast region. Its importance as a commercial center dissipated around 1900 as mines were depleted and shipping moved further inland by railroad. Today, visitor-serving commercial establishments consist of hotels, motels, restaurants, and retail shops. The California State Parks-operated Hearst Castle is approximately five miles north of Cambria, which also draws tourism to the area.

Much of the water service area is characterized by hilly terrain, with lower-lying areas located along the coastline, the Santa Rosa Creek channel, Main Street, and the Highway 1 corridor. The water service area elevations range from near sea level to approximately 550 feet above sea level. There are two commercial retail areas along Main Street: the East Village and the West Village. Much of the hilly areas outside of the lower lying commercial areas were subdivided into 25-foot-wide residential lots during the late 1920s by the Cambria Land Development Company.

The dominant geologic feature of San Luis Obispo County and the Cambria area is the Santa Lucia Mountains. The San Simeon Creek and Santa Rosa Creek basins lie on the western slope of the Santa Lucia Mountains, where drainage is to the Pacific Ocean. The maximum elevation of the Santa Rosa basin is 2,933 feet on Cypress Mountain, and the highest point in the San Simeon basin is 3,432 feet on Rocky Butte.

The Santa Lucia Mountains are largely composed of the Franciscan Formation, which in the San Simeon and Santa Rosa basins is a mélange of varied rock types. The Franciscan Formation is partially overlain by uplifted marine sediments of the late Jurassic, Cretaceous, Tertiary, and Quaternary periods. The most recent formations are Holocene alluvial deposits, consisting of gravel, sand, silt, and clay, which make up the streambeds of the creeks. These deposits are the only apparent water-bearing formations within the Santa Rosa and San Simeon drainage basins. Figure 3-2 below describes Cambria's public water system map and was prepared by CCSD staff using the Geographic Information System (GIS) program in March of 2026.

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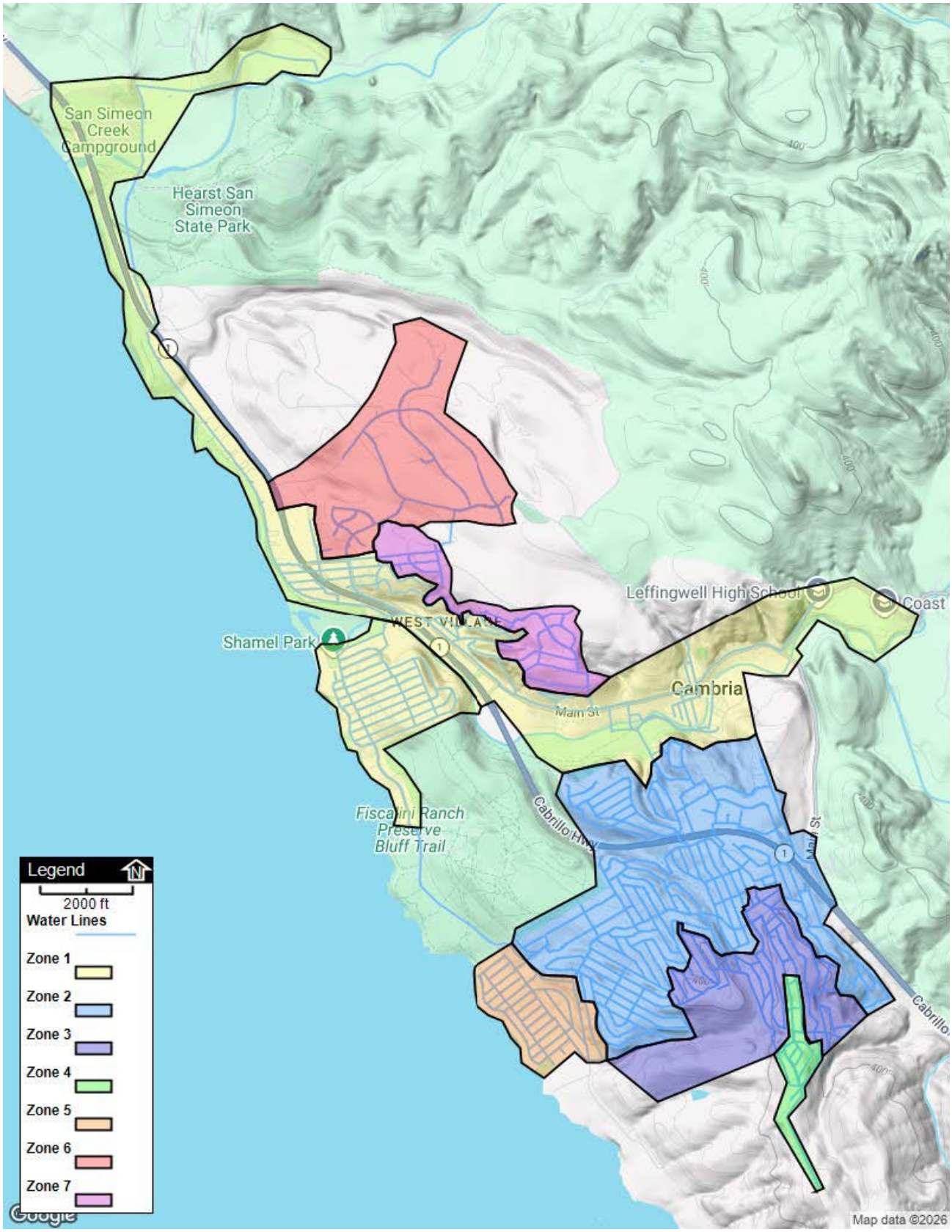
Figure 3-2. Public Water System



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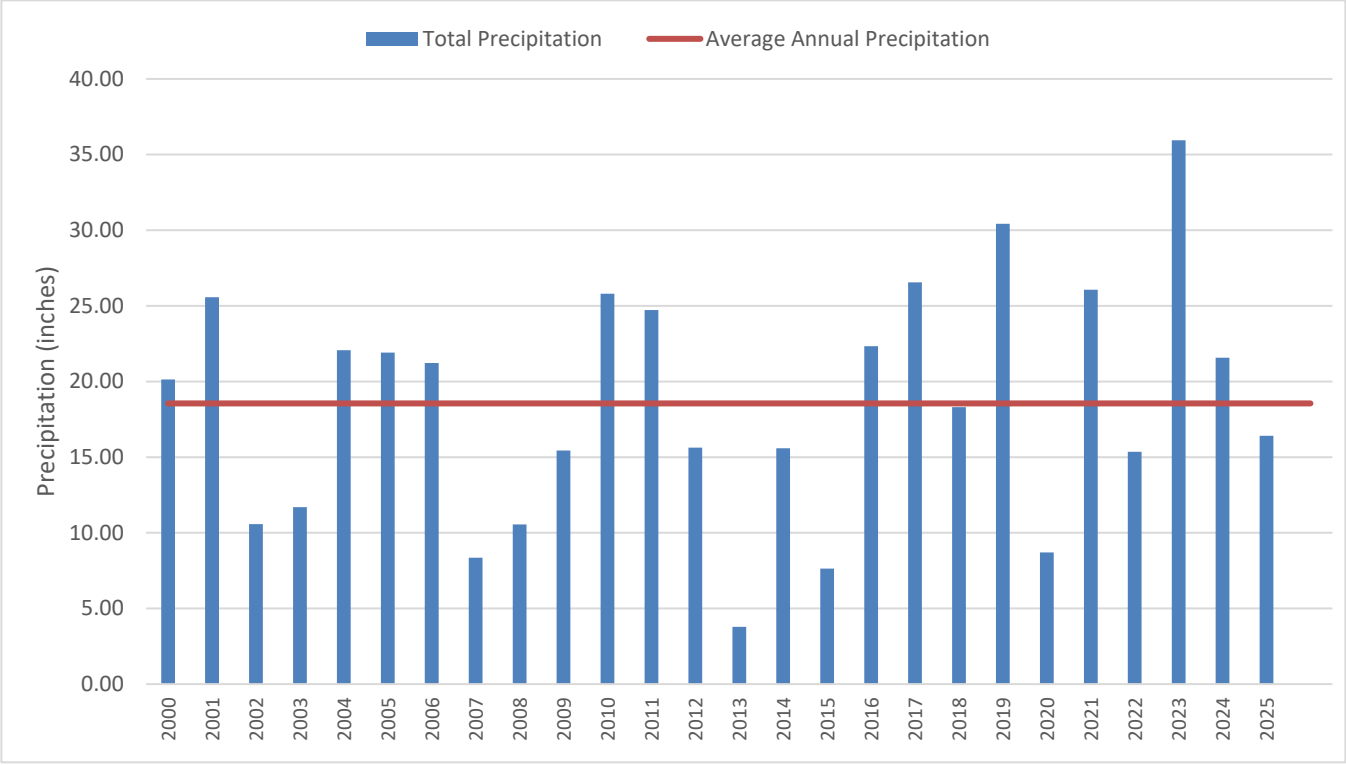
3.3 Service Area Climate

The area served by CCSD has a mild, temperate climate year-round and experiences pleasant weather for most of the year. The predominant wind direction is from the northwest. Climate data from the California Irrigation Management Information System (CIMIS) collected at Station 160,[13] San Luis Obispo West, from November 2000 to December 2025, including evapotranspiration (ETo) and temperature data, was evaluated (CIMIS, 2026). The Cambria area benefits from relatively low ETo rates compared to inland areas due to its coastal location. The area also has a Mediterranean rainfall pattern, with rain typically occurring from October through April.

Annual precipitation was measured at the Santa Rosa at Main Street rain gage, located within the Santa Rosa Creek watershed in CCSD's service area and owned and operated by San Luis Obispo County Department of Public Works. Average annual precipitation is approximately 18 inches, with average monthly precipitation ranging from 0 to 3.9 inches and annual totals ranging from a low of 3.79 inches in 2013 to a high of 35.95 inches in 2023. In comparison, 2025 received 16 inches of rainfall (County of San Luis Obispo Public Works Station 717, 2026)[14]. The peak summertime irrigation period, combined with seasonal tourism, results in the highest daily water demand occurring during the summer.

Figure 3-3 shows the annual precipitation in calendar years from 2000 through the end of 2025 and illustrates which years fall above or below the annual average precipitation for this period. As shown in this figure, the area can experience multiple years of below-average precipitation, making water management even more critical to ensure communities are prepared for the next drought.

Figure 3-3. Santa Rosa at Main (Station 717) Annual Precipitation from 2000 to 2025



Source: San Luis Obispo County Department of Public Works Station 717.

[13] CIMIS Station 160 — San Luis Obispo West. https://cimis.water.ca.gov/WSNReportCriteria.aspx

[14] San Luis Obispo County Department of Public Works Station 717, Precipitation and Weather Data Accessed March 2026: https://www.slocounty.ca.gov/departments/public-works/forms-documents/water-resources/monthly-precipitation-reports

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Figure 3-4 shows the monthly averages for ETo and temperature from 2000 through 2025. CCSD's average monthly temperature ranges from about 51 to 61 degrees Fahrenheit (°F). On average, July through October are the warmest months of the year. Average monthly ETo varies from 2.06 in December to 6.06 inches in July, with a yearly average of approximately 50 inches per year.

Figure 3-4. CIMIS Station 160 Average, 2025

Month	Average ETo (inches)	Average Air Temp (F)
January	2.23	51.63
February	2.62	51.75
March	3.79	52.81
April	4.63	52.69
May	5.57	55.55
June	5.87	58.26
July	6.06	59.89
August	5.60	60.69
September	4.67	61.01
October	3.91	59.80
November	2.59	55.44
December	2.06	51.69
Yearly Average	**49.59**	**55.93**

3.3.1 Climate Change Impacts on Water Demands, Supplies, and Reliability

According to the National Academy of Sciences, climate change refers to any significant change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period (decades or longer).[15] Climate change may result from:

- Natural factors, such as changes in the sun's intensity or slow changes in the Earth's orbit around the sun.
- Natural processes within the climate system (e.g., changes in ocean circulation).
- Human activities that change the atmosphere's composition (e.g., through burning fossil fuels) and the land surface (e.g., deforestation, reforestation, urbanization, desertification, etc.).

Climate change has the potential to directly impact CCSD's surface water supply and to indirectly impact groundwater supplies. CCSD is committed to adapting to climate change in a manner that protects the water resources for the maximum benefit while continuing to maintain a reliable, affordable, high-quality water supply for agriculture.

Several potential effects of climate change have been identified by the scientific community, including reduced winter snowpack, more variable and extreme weather conditions, shorter winters, and increased evaporative demand. Additionally, climate change could affect water quality through increased flooding and erosion; greater concentration of contaminants, if any, in the water supply; and warmer water, which could lead to increased growth of algae and other aquatic plants. Rising sea level and increased flooding are also potential effects of climate change.

[15] National Academies of Sciences, Engineering, and Medicine, Reference Manual on Scientific Evidence: https://www.nationalacademies.org/read/26919/chapter/21

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The source of CCSD water supply, which comes from the San Simeon and Santa Rosa watersheds, is in the coastal mountain range. Coastal ranges have minimal snowfall; therefore, climate change, reduced snowpack, and snowpack-related runoff timing issues will not impact CCSD's water supply. Additionally, the CCSD service area is not located in the Sacramento-San Joaquin River Delta and would not be affected by rising sea levels and the related flooding and salinity effects on the Delta. Therefore, the CCSD discussion of climate change only focuses on the effects and impacts related to CCSD's water demand and does not address potential effects of reduced winter snowpack or rising sea levels.

Changes in precipitation, temperature, and atmospheric carbon dioxide affect crop ETo and net irrigation water requirements (NIWRs). Global climate models (GCMs) have been used to project future climate change and impacts on crop water demands. Future conditions of warm-dry, warm-wet, hot-dry, hot-wet, and central tendency were used. Three future periods for these five conditions were selected to project climate change effects and impacts, including the 2020s (2010-2039), 2050s (2040-2069), and 2080s (2070-2099). Changes in precipitation timing and amounts could result in greater or lesser irrigation requirements to meet ETo demands.

Although there is consensus that climate change is occurring, and the effects of climate change are being observed, the timing and magnitude of climate change impacts remain uncertain. CCSD will mitigate climate change impacts with this uncertainty in mind through an adaptive management approach in cooperation with other regional stakeholders, municipalities within CCSD, and neighboring water management agencies. Under adaptive management, key uncertainties will be identified and evaluated (e.g., April-July runoff as a percentage of annual runoff, total runoff, average temperature, and reference evapotranspiration), and strategies will be developed to address the related climate change impacts. As the actual impacts occur, the strategies will be prioritized, modified as needed, and implemented.

Additional Resources for Water Resources Planning for Climate Change

Much work has been done at state and regional levels to evaluate the effects and impacts of climate change and to develop strategies to support effective statewide, regional, and local water management in the future. For more information, see Section 4.4.1.

The following resources provide additional information describing water resources planning for climate change:

- Ackerly, D., Jones, A., Stacey, M., & Riordan, B. (2018). California's Fourth Climate Change Assessment: San Francisco Bay Area Summary Report. https://www.climateassessment.ca.gov/
- California Department of Water Resources (DWR). (2008). Managing an Uncertain Future: Climate Change Adaptation Strategies for California's Water. https://digitalcommons.csumb.edu/hornbeck_usa_3_d/63/
- California Department of Water Resources (DWR). (2010). Climate Change Characterization and Analysis in California Water Resources Planning Studies. https://cawaterlibrary.net/document/climate-change-characterization-and-analysis-in-california-water-resources-planning-studies-2/
- California Department of Water Resources (DWR). (2024). Climate Action Plan Phase 1: Greenhouse Gas Emissions Reduction Plan Update 2023. https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/All-Programs/Climate-Change-Program/Climate-Action-Plan/Files/Exhibit-C-CAP-Phase-1-Update-2023.pdf
- California Department of Water Resources (DWR). (2025). State Water Project Adaptation Strategy. https://mavensnotebook.com/wp-content/uploads/2025/08/SWP-AdaptationStrategy_Final.pdf
- California Department of Water Resources (DWR). (2026). California Water Plan 2028. https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/California-Water-Plan/Docs/Update2028/CWP-2028-Fact-Sheet.pdf

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- California Energy Commission (CEC). (2018). California's Fourth Climate Change Assessment: Statewide Summary Report. https://www.energy.ca.gov/sites/default/files/2019-11/Statewide_Reports-SUM-CCCA4-2018-013_Statewide_Summary_Report_ADA.pdf
- California Governor's Office of Emergency Services. (2020). California Adaptation Planning Guide. https://www.caloes.ca.gov/wp-content/uploads/Hazard-Mitigation/Documents/CA-Adaptation-Planning-Guide-FINAL-June-2020-Accessible.pdf
- California Natural Resources Agency. (2012). California Climate Adaptation Planning Guide. https://resources.ca.gov/CNRALegacyFiles/docs/climate/01APG_Planning_for_Adaptive_Communities.pdf
- California Natural Resources Agency. (2024). California Climate Adaptation Strategy. https://www.climateresilience.ca.gov/
- CDM. (2011). Climate Change Handbook for Regional Water Planning. https://cawaterlibrary.net/wp-content/uploads/2017/06/Climate_Change_Handbook_Regional_Water_Planning.pdf
- Intergovernmental Panel on Climate Change (IPCC). (2022). Sixth Assessment Report: Impacts, Adaptation and Vulnerability, Chapter 4: Water. https://www.ipcc.ch/report/ar6/wg2/chapter/chapter-4/
- U.S. Bureau of Reclamation (USBR). (2015). West-Wide Climate Risk Assessments: Irrigation Demand and Reservoir Evaporation Projections (Technical Memorandum No. 86-68210-2014-01). https://www.usbr.gov/watersmart/baseline/docs/irrigationdemand/irrigationdemands.pdf
- U.S. Geological Survey. (2025). Climate Change and Future Water Availability in the United States (Professional Paper 1894-E). https://pubs.usgs.gov/pp/1894/e/pp1894E.pdf
- University of California, Berkeley. (2012). Climate Change and Integrated Regional Water Management in California: A Preliminary Assessment of Regional Perspectives. https://watershedscoalition.org/wp-content/uploads/2022/07/IRWM_CCReport_Final_June2012_EConrad_UCBerkeley.pdf

3.4 Service Area Population, Demographics, and Socioeconomics

Suppliers are required to report their current and projected service area populations in their UWMP. The Water Code does not require a specific methodology for projecting future populations, but it does require that the estimates of future population be based upon data from state, regional, or local service agency population projections.

CCSD has had a water connection moratorium in place since November 2001 due to concerns over the long-term reliability of its water supply and the need to increase water storage for fire suppression. To address these concerns, CCSD completed a series of water master planning studies, which were incorporated by reference into a program-level Water Master Plan (WMP) Program Environmental Impact Report (PEIR)[16] that was certified by the CCSD Board on August 21, 2008. The studies recommended a multifaceted approach that included improvements to the potable distribution system to enhance firefighting, water conservation, recycled water for non-potable irrigation, and further augmenting and drought-proofing the local potable supply using seawater desalination.

Over the years, CCSD has made steady progress, including the completion of its Pine Knolls storage tanks, an interconnecting water distribution main across an open space area (the East-West Ranch pipeline, which interconnects the Lodge Hill distribution system with the Park Hill distribution system), and the installation of

[16] Cambria Community Services District, Water Master Plan Environmental Impact Report. https://www.cambriacsd.org/water-master-plan#docaccess-3edf0222933c725f6c7c6b28a5065cbbfc78c2f6c8a99b7b423123547842cf37

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two separate segments, totaling roughly seven tenths (0.7) of a mile, of non-potable "purple pipe" water mains (though these purple pipe segments have yet to be connected to a source of recycled water).

In response to a 2014 drought emergency, CCSD more recently completed its Water Reclamation Facility (WRF) project, which went into service in early 2015. The WRF currently operates under an emergency coastal development permit, which includes a condition requiring the submission of an application for a regular coastal development permit. CCSD submitted a regular coastal development permit application in 2014, which was subsequently revised due to project modifications, then resubmitted and accepted as complete for processing in the fall of 2025. The application is supported by the San Simeon and Van Gordon Creeks Instream Flow Study, which addresses localized impacts from the WRF on the creeks. The Instream Flow Study was accepted as complete in the fall of 2024. CCSD is currently completing a similar instream flow study for lower Santa Rosa Creek.

The earlier 2008 PEIR addressed growth-inducement concerns by adopting a buildout reduction program as a mitigation measure. The build-out reduction program was based on detailed GIS mapping and analysis coupled with financial modeling. This work was further reviewed by a local citizens' committee, which met for over a year during its development. The result was a recommended build-out goal of 4,650 existing and future residences. This essentially allowed the existing single-family water connection waiting list of 665 lot owners to proceed at a pace estimated to take over 22 years once the moratorium is lifted, potentially including some number of residential connections not currently on the waiting list.

San Luis Obispo County also completed work on the Cambria and San Simeon Acres Community Plans[17] within the San Luis Obispo County North Coast Area plan. The County Board of Supervisors certified its Environmental Impact Report on the community plans, which adopted an alternative for 4,650 existing and future housing units and was subsequently incorporated into the San Luis Obispo County North Coast Area Plan.

As of this 2025 UWMP, San Luis Obispo County also has a Growth Management Ordinance[18] in place that sets maximum growth rates following review of a periodic Resource Management System report to the County Board of Supervisors (periodic reviews are completed every two years). Layered on top of the County's Growth Management Ordinance are conditions imposed by the California Coastal Commission from earlier Coastal Development Permits that may also affect CCSD's growth rate, as well as the current condition on growth that all new additional water allocations and services must not impact the Santa Rosa or San Simeon Creeks.

The timing of future growth is contingent on the permitting and approval of projects by other agencies, as well as on economic conditions and other factors that may not be under the direct control of CCSD. Therefore, any projections on population growth should be viewed cautiously.

3.4.1 Service Area Population

CCSD's current and projected population is shown in Table 3-1. Due to the building moratorium in Cambria, there has been no growth between 2010 and 2025 and no net population change. For the purposes of future water planning in this UWMP, it is assumed that additional water allocations or new service connections will not be permitted until 2030. From 2030-2047, a population growth rate of approximately 1% per year for single family only is projected, until a maximum of 4,650 residential units is reached. The baseline population is calculated

[17] Cambria and San Simeon Acres Community Plans of the North Coast Area Plan ED04-503 (LRP2004-00024): https://ceqanet.lci.ca.gov/2004091020/2

[18] San Luis Obispo County Planning and Building Department, Growth Management Ordinance Allocation Request User Guide: https://www.slocounty.ca.gov/departments/planning-building/forms-documents/land-use-permit-forms-and-documents/allocation-request-package/allocations-user-guide

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using 2023 American Community Survey[19] data for Cambria's population of 6,038 with an expected annual increase of 1%.

In developing this 2025 UWMP, CCSD and Maddaus Water Management (MWM) evaluated several data sources for historical and projected population data. 2023 American Community Survey (ACS) population data was used, which was the most recent available for the service area at the time. The ACS defines Cambria as a Census Designated Place encompassing an area that closely matches CCSD's service area. CCSD and MWM further refined the ACS data by comparing the ACS boundary to CCSD's service area boundary, accounting for the actual population percentage within the included area. CCSD's service area encompasses the vast majority (over 99%) of the population within the ACS boundary. The only exception is an area to the south of CCSD's service area, which includes approximately nine residences. The additional population of those nine residences is well within the margin of error from the 2023 ACS data, so no adjustments were made.

It should be noted that geographical and resource constraints may limit actual population growth from reaching these projections.

Table 3-1. Retail Population – Current and Projected

Submittal Table 3-1 Retail: Population - Current and Projected - Water Code Section 10631(a)						
Population Served	2025	2030	2035	2040	2045	2050(opt)
	6,038	6,038	6,340	6,660	7,000	7,350
NOTES: Current 2025 population is based on 2023 American Community Survey (ACS) five-year estimate data, which showed the service area has a population of 6,038. Projections are based on negligible growth through 2030 and a subsequent conservative 1% annual growth rate based on infill and available parcel considerations, and the ability of the aquifer to support growth.						

According to the 2023 American Community Survey data from the U.S. Census, Cambria had a total population of 6,038, with a median age of 61.4 years (2023 ACS Table DP05), and an average household size (excluding vacant units) of 2.11 persons per household (2023 ACS Table S1101). According to the 2010 U.S. Census, the service area had a population of 6,032. That number declined to the 2020 U.S. Census population of 5,678. The population according to the 2023 ACS is 6,038, therefore, the service area experienced no net population change from 2010 to 2023. The population change from the 2020 U.S. Census to the 2023 ACS was likely due to an increased use of second homes during the COVID-19 pandemic, with some of those residents choosing to remain full time once it was over.

3.4.2 Other Social, Economic, and Demographic Factors

It is recommended that Suppliers describe the social, economic, and demographic factors in their service areas, since recent trends or shifts in these factors can affect water management and planning. Other demographic factors affecting water management in CCSD's service area include visitor-serving uses, vacant houses, low-income households, and the effect of distance from major population and employment centers. Cambria experiences a significant number of tourists and visitors, and their impact on water use and water planning must be considered.

Another factor to consider in Cambria's water use patterns is the high percentage of homes used as second or vacation homes. The 2023 ACS reported a total of 4,119 housing units, with 1,261 vacant (2023 ACS Table B25002). This translates to a vacancy rate of 31%, suggesting a high proportion of homes may be second or vacation homes. In contrast, the United States average for housing vacancies in the 2023 ACS was 9.6%.

The 2023 ACS data indicated that approximately 27% of all households in Cambria were within a low-income group (i.e., annual income below 80% of the area median income). Cambria's 2023 median area income was approximately $89,049 (2023 ACS Income). To project low-income water demands, it was assumed that the 27%

[19] U.S. Census Bureau, Cambria CDP, California. https://www.census.gov/quickfacts/fact/table/cambriacdpcalifornia/PST120224

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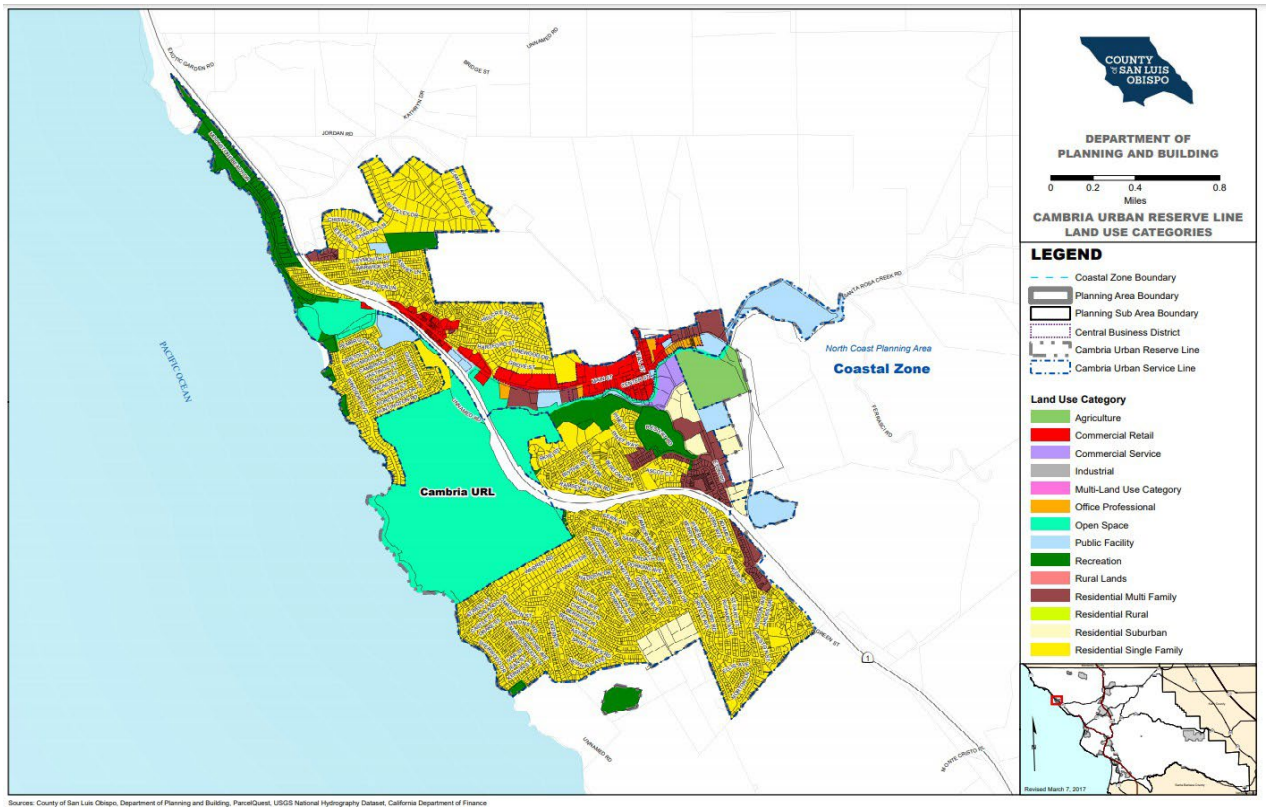
was evenly distributed between the single-family and multifamily water use sectors. The projected low-income demands using this approach are shown in Table 4-3b. Water Use Sectors of the Customer Base are addressed in Chapter 4.

Cambria's predominant demographic will likely remain retired persons with the means to live in marginally isolated communities, given the community's remoteness along the California coast without nearby employment centers or a larger community that might lead to a significant demographic shift.

3.5 Land Uses within Service Area

The urban part of Cambria encompasses approximately 2,351 gross acres, or 3.67 square miles, with a net acreage of approximately 1,790 acres, or 2.8 square miles, excluding land in road rights-of-way and beach areas along the bay or ocean. Cambria primarily consists of residential zoning (57.1%), with a combination of commercial (4.8%) and public institutional (4.0%) uses along Main Street. The surrounding outlying areas are devoted to agricultural uses (2.2%), primarily grazing. Additionally, a large portion of land is zoned as open space (28.8%), including the Fiscalini Ranch, the State-owned floodplain and riparian vegetation at the mouth of the Santa Rosa Creek, and areas with slopes too steep for residential development.[20] The primary land uses in the developed portions of CCSD are residential, commercial, and recreation. Cambria's land use is shown in Figure 3-5.

Figure 3-5. Cambria Community Area Land Use Map



Source: County of San Luis Obispo, Department of Planning and Building. [21]

[20] Cambria Community Services District, Water Master Plan (July 2008): https://ceqanet.lci.ca.gov/2004071009/2

[21] County of San Luis Obispo, Department of Planning and Building, ParcelQuest, USGS National Hydrography Dataset, California Department of Finance https://www.slocounty.ca.gov/Departments/Planning-Building/Forms-Documents/Coastal-Zone-Maps/Estero-Planning-Area-Maps/Estero-Planning-Area-Land-Use-Map.pdf

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4 WATER USE CHARACTERIZATION

Lay Description

The Water Code requires a description and quantification of water uses in the service area, including recycled water if used or may be used in the future. This chapter describes and quantifies CCSD's past, current, and projected water uses through 2050, based on available records. Future water use is based on CCSD's past and existing water use (as of 2025), combined with anticipated growth, new regulations, changing climate conditions, and trends in customer water-use behavior. A thorough analysis examined each water use sector and aggregated the results into a comprehensive projection of customer water use.

Accurately tracking and reporting current water demands enables a Supplier to properly analyze and plan the use of its resources. Estimating future demand as accurately as possible enables water agencies to manage their water supply and plan infrastructure investments effectively. Assessments of future growth and related water demand, done in coordination with local planning agencies, provide essential information for developing demand projections.

The tables in this chapter summarize total current water use and projected water use, including recycled water. Table 4-1 and 4-6 present CCSD's actual total 2025 water consumption and projected water demand through 2050 by water use sector.

4.1 Non-Potable vs. Potable Water Use

CCSD does not have a developed, available supply of recycled water. Chapter 6 discusses recycled water and its potential use in the CCSD service area (Section 6.2.5) and CCSD's overall recycled water use.

4.2 Past, Current, and Projected Water Use by Sector

This section identifies water use, based on available records, for the 10 water use sectors identified in Water Code Section 10631(d). Additionally, a narrative description is included of how water use is calculated and how projections are estimated.

Actual and projected CCSD potable water use for the various customer types is shown in Tables 4-1, 4-2, and 4-3b. CCSD tracks registered vacation rental homes, which are used as for-profit commercial enterprises to serve outside visitors, but for the purposes of this UWMP, has included them as part of the single-family residential demands. Similarly, CCSD includes schools, churches, and non-CCSD-related governmental facilities in the commercial water category. CCSD does not buy or sell water to other water agencies in the area.

For the demand analysis, CCSD reviewed metered data from 2020 through 2025 for its water use sectors, monthly water consumption, water conservation, and information for historical and projected use analyses. Based on these analyses, CCSD describes its historical, current (2025), and projected water use for its seven water-use sectors in five-year increments through 2050. As shown in Table 4-1, in calendar year 2025, the CCSD service area used a total of 520 AF, including non-revenue water.

In 2025, 53% of CCSD's total potable water use was single-family residential, while 3% was multifamily, 10% Commercial Lodging, 8% Non-lodging Commercial, 0.4% Institutional/Governmental, and 1% Other (Riparian deliveries). The remaining 24% of year 2025 potable water use was classified as water loss, including both real and apparent losses. More information on water loss can be found in Section 4.3.

Water use over the past five years has notably remained well below pre-2014 drought levels. Over the last five years, the average CCSD water use was approximately 520 AFY. The most recent peak in demand occurred in 2017 with a total demand of 575 AFY. This peak represented a decrease from the pre-2014 drought peak in demand, which was 731 AFY in 2013. A lesser peak of 539 AFY occurred in 2020 and carried over into 2021, largely due to increased use of second homes during the COVID-19 pandemic as residents temporarily relocated and visitation increased due to bans on out-of-state and international travel. It is anticipated that CCSD's

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customers will continue to implement conservation behaviors and keep demand below pre-drought levels, but future water use by the existing water customer base remains subject to variability and cannot be assured.

4.2.1 Water Use Sectors Listed in Water Code

The following water sectors are listed in the Water Code. Additional sectors or subdivisions are included as needed to reflect unique conditions for sectors or subsectors not listed in the Water Code.

Single-Family Residential

This is defined as a single-family dwelling unit or a lot with a free-standing building containing one dwelling unit that may include a detached secondary dwelling. CCSD also includes duplexes in the single-family category.

Multifamily Residential

This is defined as multiple dwelling units contained within a single building or within several buildings within a single complex. CCSD also includes mobile home parks in the multifamily category.

Commercial

This is defined as a water user that provides or distributes a product or service. CCSD further splits the Commercial Water Use Sector into Commercial Lodging and Non-lodging Commercial. CCSD includes water use by users who would traditionally be classified as Institutional/Governmental, such as schools, churches, healthcare centers, and the CCSD Fire Department, in the Commercial water use sector.

Industrial

This is defined as a water user that is primarily a manufacturer or processor of materials as defined by the North American Industry Classification System (NAICS) code sectors 31 to 33, inclusive, or an entity that is a water user primarily engaged in research and development. More information is on the NAICS website.[22] CCSD does not serve any industrial customers.

Institutional/Governmental

This is defined as a water user dedicated to public service. This type of user includes, among others, higher education institutions, schools, courts, churches, hospitals, government facilities, and nonprofit research institutions. At present, CCSD only includes CCSD-utility-related facilities in the Institutional/Governmental category.

Landscape

This is defined as water connections supplying water solely for landscape irrigation. Such landscapes may be associated with multifamily, commercial, industrial, or institutional/governmental sites, but are considered a separate water use sector if the connection is solely for landscape irrigation.

Sales to Other Agencies

CCSD does not sell water to other agencies; therefore, this section is not applicable.

[22] https://www.census.gov/naics/

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Groundwater Recharge

This is defined as the managed and intentional replenishment of natural groundwater supplies using man-made conveyances such as infiltration basins or injection wells. Water used for groundwater banking or storage can be reported using this sector.

CCSD operates the Water Reclamation Facility (WRF), an Indirect Potable Reuse (IPR) facility that injects highly treated water into the San Simeon aquifer for gradient control. Currently, the WRF is permitted only for use during a drought emergency. However, CCSD is in the process of obtaining the facility's permit for use during normal and below-average rainfall years. The planned groundwater recharge would be 21 AF in normal and below-average years, up to a reasonable maximum of 150 AF during drought years. Additional information on this water use sector can be found in Section 6.2.2.

Saline Water Intrusion Barrier

This is defined as the injection of water into a freshwater aquifer to prevent the intrusion of saltwater.

CCSD does not inject water to form a saline-water intrusion barrier; therefore, this section is not applicable.

Agricultural

This is defined as water used for commercial agricultural irrigation.

CCSD does not have any commercial agricultural irrigation customers; therefore, this section is not applicable.

Distribution System Water Loss

Distribution system water losses (also known as “real losses”) are the physical water losses from the water distribution system and storage facilities, up to the point of customer consumption. The water loss projections were developed under the assumption that water loss will remain constant, given the negligible increase in water infrastructure required to serve any additional customers, CCSD’s commitment to minimizing water losses, and advancing technology for leak detection over the planning horizon. See Section 4.3 for further details.

4.2.2 Water Use Sectors in Addition to Those Listed in the Water Code

The water use sectors described below are not specifically listed in or required by the Water Code.

Exchanges

Water exchanges are typically water delivered by one water user to another, with the receiving water user returning the water at a specified time, or when the conditions of the parties’ agreement are met. Water exchanges can be strictly a return of water on a basis agreed upon by the participants or can include payment and the return of water. The water returned may or may not be an even exchange. Water can be returned on a one-for-one basis or by another arrangement (e.g., for each acre-foot of water received, two are returned).

For more information on this water use sector, refer to Section 6.2.6.

Surface Water Augmentation

This is defined as the planned placement of recycled water into a surface water reservoir that is used as a source of domestic drinking water supply (refer to Chapter 6, Section 6.2.5).

CCSD has no surface water sources and does not participate in surface water augmentation; therefore, this section is not applicable.

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Transfers

The Water Code defines a water transfer as a temporary or long-term change in the point of diversion, place of use, or purpose of use due to a transfer, sale, lease, or exchange of water or water rights. Transfers can be between neighboring Suppliers or across the state, provided there is a means to convey or store the water. A water transfer can be a temporary or permanent sale of water or a water right by the water right holder, a lease of the right to use water from the water right holder, or a sale or lease of a contractual right to water supply. Water transfers can also take the form of long-term contracts to improve long-term supply reliability.

CCSD has no water transfers; therefore, this section is not applicable.

Wetlands or Wildlife Habitat

This is defined as water used for managed environmental use to improve environmental conditions.

CCSD does not manage a wetlands or wildlife habitat program; therefore, this section is not applicable.

Visitor-Serving Commercial

This is defined as a water user that provides lodging or otherwise directly serves visitors.

Per CCSD's Coastal Development Permit, a minimum of 20% of the available water capacity must be reserved for visitor-serving uses.

Riparian

This is defined as a water user with an agreement with CCSD for a supply of water that would normally be fulfilled through riparian rights.

4.2.3 Past Water Use

While not part of the DWR UWMP Reporting Tables, the Water Code requires Retail Suppliers to quantify past water use. Past water use is valuable during the development of projected uses, as it helps create an understanding of water use trends, the effects of temporary use restrictions imposed during the most recent prolonged drought and the recovery from such temporary restrictions, the effects of long-term demand management measures, and other pertinent water use factors. CCSD's historical data from 1988-2025 was analyzed to assess the impacts of various factors (e.g., water rates, economic conditions, and weather) on water demand.

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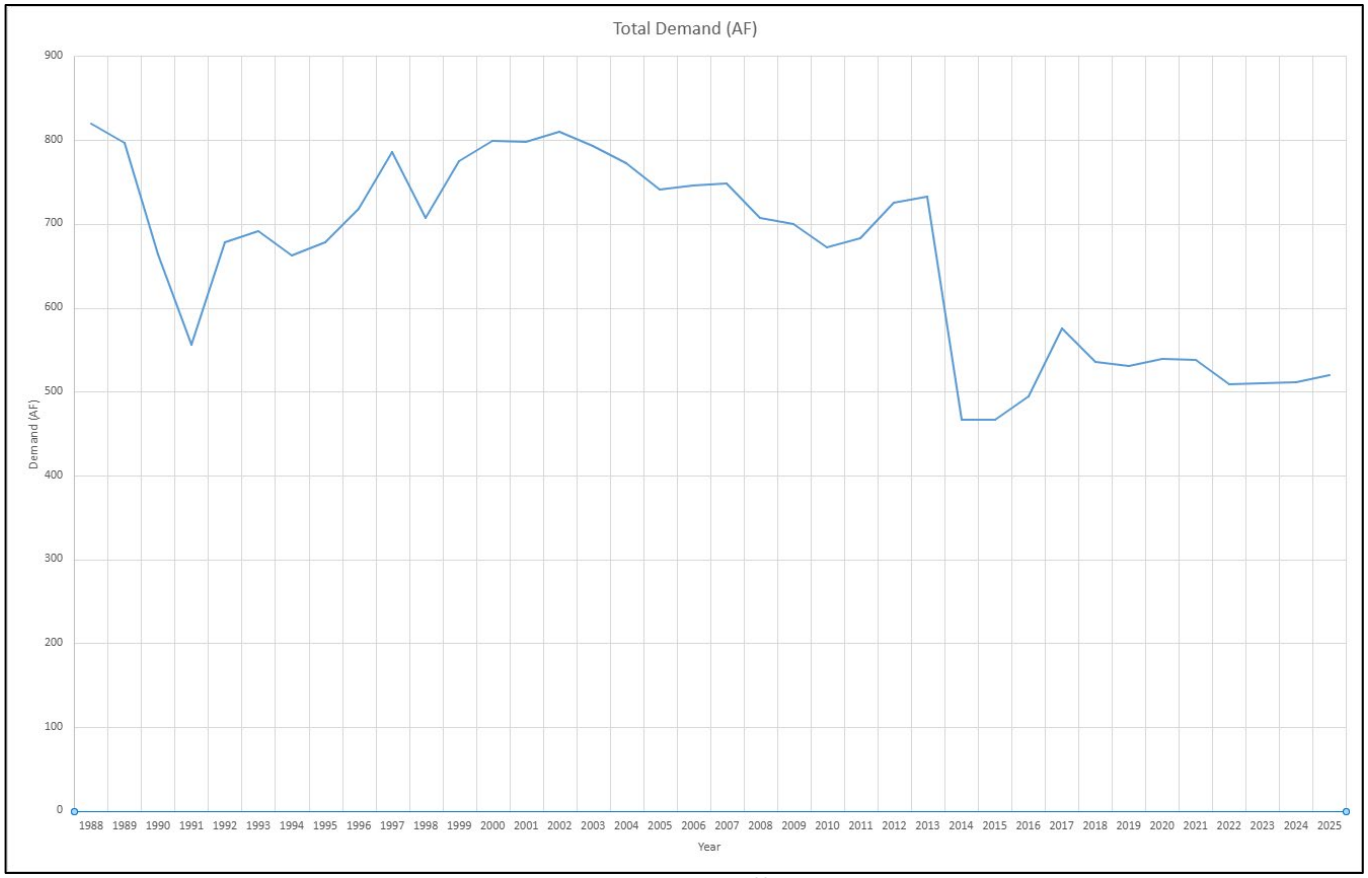
Figure 4-1. CCSD Historical Water Use in Acre-Feet per Year



Source: Prepared by CCSD staff, March 2026.

4.2.4 Current Water Use

This section presents current water use as determined by analyzing information such as meter data, billing records, and other sources, as well as recently submitted Electronic Annual Report (eAR) and water loss reports. Current water use is reflected in Table 4-1, which includes current gross and recycled water use. Potable use volume is based on the amount billed or otherwise accounted for; system water loss is calculated as the difference between potable use and the total 2025 potable water production of 520 AF as reported in Table 2-1. CCSD staff suspects potable customers were underbilled due to the Advanced Metering Infrastructure (AMI) transition, yielding a higher water loss volume and lower customer category use. This is evident when comparing year 2025 individual use type volume to previous years' use. Riparian/Other and Institutional water use are not considered to be under-tracked. For 2025, the volume of water for the seawater intrusion barrier is the amount of wastewater collected from the service area, which is based on metered effluent data reported to the State Water Board in CCSD's annual self-monitoring report.

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Table 4-1. Demands for Potable and Non-Potable Water – Actual

Submittal Table 4-1 Retail: 2025 Actual Total Uses for Potable and Non-Potable Water Water Code Section 10631(d)(1)			
Use Type	Additional Description	2025 Actual Water Use	
		Treatment Level when Delivered	Volume (AF)
Single Family	Includes Vacation Rental Water Use	Potable	278
Multifamily		Potable	16
Commercial	Commercial Lodging	Potable	53
Commercial	Non-Lodging Commercial and 5 Commercial Dedicated Irrigation Meters	Potable	39
Institutional/Governmental	Internal and No-Charge accounts	Potable	2
Other (optional)	Riparian Deliveries	Potable	6
Saline water intrusion barrier	Use of existing percolation pond operation	Non-Potable	482
Distribution System Water Loss	Non-Revenue Water	Potable	126
		Subtotal Potable	520
		Subtotal Non-Potable	482
		Total	1,002
NOTES: Potable use volume based on amount billed or otherwise accounted for; system water loss calculated as the difference between potable use and the total 2025 potable water production of 520 AF as reported in Table 2-1. CCSD staff suspects potable customers were underbilled due to the AMI transition, yielding a higher water loss volume and lower customer category use. This is evident when comparing year 2025 individual use type volume to previous years' use. Riparian/Other and Institutional water use are not considered to be under-tracked. For 2025, the volume of water for the seawater intrusion barrier is the amount of wastewater collected from the service area which is based on metered effluent data reported to the State Water Board in CCSD's annual self-monitoring report. Commercial Non-Lodging accounts include five commercial dedicated irrigation meters.			

4.2.5 Projected Water Use

This section presents projected water use for each sector in five-year increments through 2050, as reported in Table 4-2. The water use projections are based on negligible growth from 2025 through 2030, followed by a conservative 1% annual growth rate, reflecting infill and available parcel considerations, and the aquifer's ability to support growth. Due to the suspected underbilling of customers in the AMI transition, yielding a higher water loss volume and lower customer category use, 2030 water use, though not expected to increase overall, is based on the average of 2020-2025 for the individual customer categories and NRW volumes, including Institutional and Other/Riparian.

In addition to past and projected uses, this UWMP more closely analyzes anticipated conditions for the next five years (2026-2030). Over the next five years, CCSD anticipates that demand will continue the trend that started in 2022 and remain constant at approximately 510 to 520 AFY. This projection is based on no population growth expected over the next five years, coupled with minimal demand reduction due to significant conservation saturation, as many of CCSD's residents continue to conserve water following the most recent drought, which ended in 2017. Details on the projected dry year use and supply analysis for the next five years are discussed in Chapter 7.

Potable water use projections for the next 20 years were developed by averaging water consumption by customer class from 2020 to 2025, with 1% annual increases across all customer categories starting in 2030 to

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account for growth. Using the 2020-2025-time horizon as the basis for the projections was chosen because it spans a variety of recent years, including the COVID-19 pandemic, post-pandemic/new-normal, normal, dry, and wet years. Including pandemic years allows consideration of a full-occupancy consumption scenario. The water demand projections summarized in this section incorporate anticipated development factors within CCSD, affecting both residential and non-residential sectors. Those development factors include restrictions on the number of new connections/water allocations allowed per year, requirements that new connections/water allocations have no impact on the Santa Rosa or San Simeon Creeks, and the total number of connections allowed. The potable water demand projections are based on CCSD's average historical demand from 2020 until 2025, with 1% per year added starting in 2030. Recycled water was added to CCSD's water supply portfolio in 2035 which, combined, created an estimated 715 AFY of total water demand in 2050. Of the total 2050 demand, 615 AFY is anticipated to be potable water, and 100 AFY anticipated to be recycled water. Table 4-2 and Table 4-3b present projected demands through 2050.

Chapter 5 discusses CCSD meeting the Senate Bill (SB) X7-7 target and the newer Urban Water Use Objective (UWUO), also known as the *"Making Water Conservation a California Way of Life"* regulation). While actual 2020 GPCD was below the SB X7-7 target, and CCSD's water demands are below the UWUO target, future demand could increase due to a variety of factors; this UWMP conservatively projects demand to proactively develop water resources management strategies for these potential demands. CCSD plans to continue encouraging efficient water use and implementing water-use efficiency measures to support meeting future water-use standards and to enhance resiliency to drought and other water shortage conditions, as described in Chapters 7, 8, and 9.

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Table 4-2. Demands for Potable and Non-Potable Water – Projected

Submittal Table 4-2 Retail: Total Uses of Potable, and Non-Potable Water – Projected - Water Code 10631(d)(1)							
Use Type	Additional Description	Projected Water Use					
		Treatment Level when Delivered	2030 (AF)	2035 (AF)	2040 (AF)	2045 (AF)	2050 (AF)
Single Family	Includes ADU and rental homes	Potable	298	313	328	345	362
Multifamily		Potable	17	17	18	19	20
Commercial	Commercial Lodging	Potable	66	70	73	77	81
Commercial	Non-Lodging Commercial and 5 COM Dedicated Irrigation Meters	Potable	48	51	53	56	59
Institutional/ Governmental	Internal and No-Charge accounts	Potable	4	4	5	5	5
Other (optional)	Riparian deliveries	Potable	5	5	6	6	6
Landscape	Landscape Irrigation (excl. golf courses)	Non-Potable	0	50	100	100	100
Saline Water Intrusion Barrier	Existing percolation pond operation use	Non-Potable	482	456	431	458	486
Distribution System Water Loss		Potable	82	82	82	82	82
		Subtotal Potable	520	542	565	589	615
		Subtotal Non-Potable	482	506	531	558	586
		Total	1,002	1,048	1,097	1,147	1,201

NOTES:
1. Potable projection based on negligible growth from 2025 through 2030 and a subsequent conservative 1% annual growth based on infill and available parcel considerations, and the ability of the aquifer to support growth. Due to the suspected underbilling of customers in the AMI transition in 2025, yielding a higher water loss volume and lower customer category use, year 2030 potable water use, though not expected to increase in total volume overall, is based on the average of 2020-2025 for their individual customer categories and water loss volumes, including Institutional and Other/Riparian. Years 2020-2025 use includes pandemic, post-pandemic/new-normal, dry, and wet years. Including pandemic years in the water use projection profile allows for the consideration of a full occupancy consumption scenario.
2. The volume of water for the seawater intrusion barrier is the amount of wastewater collected from the service area which is based on metered effluent data reported to the State Water Board in CCSD's annual self-monitoring report. In addition to indoor metered water use, this value includes infiltration and inflow into the collection system. For subsequent years, the volume of wastewater collected from the service area is estimated to grow 1% per year in line with increases in water consumption due to population growth, with the assumption that inflow and infiltration will remain constant. All wastewater collected is used as a seawater intrusion barrier via the existing wastewater percolation pond system, for CCSD's WRF (an indirect potable reuse project constructed in 2014), or for landscape irrigation with recycled water. Beginning in 2035, approximately 50 AFY of no-net-increase in diversion from aquifer recycled water use is anticipated by converting existing CCSD customers from potable groundwater use to non-potable outdoor irrigation using recycled water. From 2040 onward, an additional 50 AFY of outdoor irrigation with recycled water is estimated to meet future project demands. Landscape irrigation feasibility is based on the 2004 Recycled Water Master Plan and will be driven by available funding and potential downstream habitat concerns. Because of potential downstream habitat concerns, the 2004 Recycled Water Master Plan[23] bifurcated recycled water demands between converting existing groundwater-based customer uses and potential future project demands. Non-potable irrigation use is not expected to be online until 2035.
3. Commercial Non-Lodging accounts include five commercial dedicated irrigation meters.

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Codes and Other Considerations Used in Projections

Water savings from codes, standards, ordinances, and land-use planning, also known as *passive savings,* generally reduce water use for new and future customers compared to existing customers. However, some ordinances and standards may also apply to existing customers, such as plumbing code changes that result in fixture and appliance replacements. Suppliers are required to state the extent to which passive savings are considered in these water use projections.

The water demand projections in Table 4-2 are based on an analysis of historical metering data and projected population, job, and development growth. They do not include reductions from passive savings or "plumbing code" upgrades, nor reductions from the implementation of future active conservation measures by CCSD. Passive savings were excluded due to significant retrofit saturation within the service area and the stringent requirements for remodels and new construction resulting in minimal additional savings.

Suppliers are to include any estimated passive savings expected to occur in their water-use projections pursuant to Water Code Section 10631(d)(4)(A) and future water projections needed for lower-income residential water use pursuant to Water Code Section 10631.1. Water usage for lower-income housing units is included in the overall water demand projections; however, passive water savings estimates are not, as documented in Table 4-3.

Table 4-3. Inclusion in Water Use Projections

Submittal Table 4-3 Retail: Inclusion in Water Use Projections – **Water Code Section 10631 (a), 10631 (d)(4)(A), and 10631 (d)(4)(B)**	
Are Future Water Savings Included in Projections?	No
Are Lower Income Residential Demands Included in Projections?	Yes

Water Use for Lower Income Households

CCSD has included projected water use for lower-income households (i.e., those with income below 80% of area median income, adjusted for family size) in its 2025 UWMP. However, it should be noted that CCSD does not use this estimate for planning purposes. Projected water use by lower-income households is estimated by multiplying the projected housing need for CCSD by the average household size and assumed per capita water use. According to 2023 ACS data, 27% of households in Cambria are low-income and Cambria median household income is approximately $89,049. Since low-income is 80% of the median, the low-income household income is approximately $71,239 representing roughly 27% of households in Cambria. To project low-income water demands, it was assumed that the 27% was evenly distributed between the single-family and multifamily water use sectors. Water use is assumed to be directly proportional to the proportion of low-income households. The projected low-income demands using this approach are shown in Table 4-3b.

[23] Cambria Community Service District Master Water Plan, Recycled Water Section: https://www.cambriacsd.org/water-master-plan#docaccess-76724ee5b54ae7086430b8e21f716d905b5404c222429b541aed18f7e70dc620

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Table 4-3b. Low-Income Uses of Potable Water – Projected

Use Type	Additional Description (as needed)	Projected Low-Income Water Use (AFY)				
		2030	2035	2040	2045	2050
Single Family	Includes ADU and rental homes	80	84	89	93	98
Multifamily		4	5	5	5	5
Total		85	89	94	98	103
NOTES: Low-income water use projection assumed to be distributed equally among Single Family and Multifamily. Water use is assumed to be directly proportional to the proportion of low-income households. 27% of households in Cambria are low-income according to 2023 ACS data. This data source reports that the 2023 Cambria median household income is approximately $89,049. Since low-income is 80% of the median, the low-income household income is approximately $71,239 representing roughly 27% of households in Cambria.						

As noted in Table 4-4 (Optional Submittal Table 4-4), CCSD is not reporting projected passive water-use savings, which are not included in the demand projections.

Table 4-4. Passive Water Savings Projections

OPTIONAL Submittal Table 4-4 Retail: Passive Water Savings Projections - Water Code Section 10631(d)(4)(A)					
Description (Codes, Standards, Ordinances, or Plans)	Passive Savings				
	2030	2035	2040	2045	2050 (opt)
	(AF)	(AF)	(AF)	(AF)	(AF)
N/A	N/A	N/A	N/A	N/A	N/A

4.3 Distribution System Water Loss

Distribution system water losses are categorized into two components: real losses and apparent losses. Real losses are the physical losses of potable water from the pressurized distribution system and storage facilities, from the point of supply up to the customer's point of delivery (typically the customer's water meter). Apparent losses include non-physical losses such as meter inaccuracies, data-handling errors, and unauthorized consumption. Water loss volumes are calculated in accordance with the American Water Works Association (AWWA) Water Audit Method[24], as required under Title 23 of the California Code of Regulations (CCR), Section 638.1 et seq. The total distribution system water loss is the sum of real losses and apparent losses.

In the 2025 UWMP, distribution system water loss audits for each of the five years preceding the plan update must be reported (Water Code Section 10631(d)(3)) in accordance with the rules adopted pursuant to Water Code Section 10608.34.

To better understand the nature of non-revenue water, CCSD completed its first detailed Water Audit and Component Analysis of Real and Apparent Losses in 2015, utilizing the AWWA method. This method uses known factors, such as system input volume, authorized consumption, and revenue water, to determine water losses. These losses are further categorized into two types:

- Apparent losses – From meter inaccuracies, data errors, and theft. The water is consumed but is not properly measured and accounted for.
- Real losses – From system leaks and breaks.

[24] American Water Works Association (AWWA), Manual of Practice M36: Water Audits and Loss Control Programs. https://store.awwa.org/M36-Water-Audits-and-Loss-Control-Programs-Fifth-Edition-PDF?whence=

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Through these efforts and other measures, real losses have been reduced significantly. Table 4-5 shows that CCSD has submitted Water Audits for the last five years, including the most recent reporting period, January 1, 2024, through December 31, 2024; links to each report are provided.

The 126 AF of water loss reported in 2025 (Table 4-1) is high relative to CCSD's water loss from the previous several years, though it still falls within a reasonable operating range. However, as reported in Table 4-2, the losses used in future projections are held steady because CCSD's water loss goal is less than 15% of total production. CCSD will need to discuss plans to control water loss and to continue maintaining a reasonably low level of water loss in the future.

Table 4-5. Water Loss Audit Reporting

Submittal Table 4-5 Retail: Water Loss Audit Reporting - Water Code Section 10631(d)(3)(A)			
Public Water System ID	Reporting Period	Submitted to DWR	Link to WUEdata Submittals of Water Loss Audit Reports
CA4010014	2020	Yes	https://wuedata.water.ca.gov/public/awwa_uploads/3784589469/Copy%20of%20Cambria%20CSD%20%2D%20CY2020%20Validated%20Audit.xlsx
	2021	Yes	https://wuedata.water.ca.gov/public/awwa_uploads/3295148551/Cambria%20CSD%20%2D%20CY2021%20Validated%20Water%20Audit%20xlsx.xlsx
	2022	Yes	https://wuedata.water.ca.gov/public/awwa_uploads/8526426017/Cambria%20CSD%20CY2022%20%2D%20Validated%20Audit.xlsx
	2023	Yes	https://wuedata.water.ca.gov/public/awwa_uploads/6404416739/Cambria%20CSD%20CY2023%20%2D%20Validated%20Audit.xlsx
	2024	Yes	https://wuedata.water.ca.gov/public/awwa_uploads/8310270011/2024%20CCSD%20WLA%20Workbook%20%28Final%29%20%2D%20KF.xlsx

In Table 4-6, CCSD presents its Water Loss Performance Standard. Each relevant PWS and its associated standards are listed in the table, along with relevant information for converting between the performance standard and water loss volumes to determine progress toward meeting the 2028 Water Loss Standard. Submittal of this table and relevant data does not constitute compliance with the Water Loss Control Regulation, which is governed by the State Water Board.

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Table 4-6. Progress Towards 2028 Water Loss Standard

Submittal Table 4-6 Retail: Progress Towards 2028 Water Loss Standard - Water Code Section 10631(d)(3)(C)											
Public Water System ID #	Did the Water Board Calculate a Water Loss Standard for this Public Water System?	Real Water Loss					Apparent Water Loss				
		State Water Board Standard		Most Recent AWWA Water Loss Audit		Real Water Loss Per Unit per Day	State Water Board Standard		Most Recent AWWA Water Loss Audit		Apparent Water Loss Per Unit per Day
		2028 Real Water Loss Standard per Unit per day	Units for Real Water Loss	Number of Units (Connections or Miles)	Volume of Total Real Loss (AF)		2028 Apparent Water Loss Standard per Unit per Day	Units for Apparent Water Loss	Number of Connections	Volume of Total Apparent Loss (AF)	
CA4010014	Yes	12.8	Gallons per Service Connection per Day (GPSCD)	4,034	102.672	22.7	2.6	Gallons per Service Connection per Day (GPSCD)	4,034	7.924	1.8
NOTES: Connections include active and inactive meters.											

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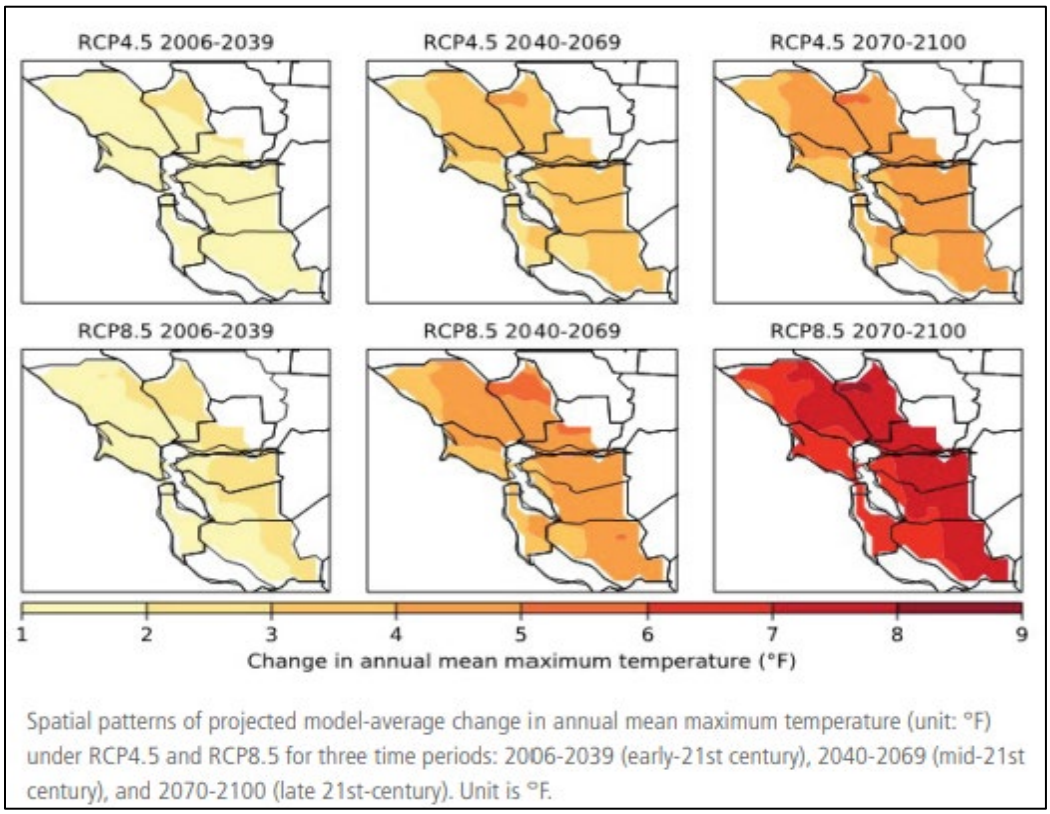
4.4 Climate Change Considerations

The Public Policy Institute of California has predicted that five climate pressures will impact the future of California's water management: warming temperatures, shrinking snowpack, shorter and more intense wet seasons, more variable precipitation, and rising seas.[25] As of 2019, some of these pressures are already apparent. The climate impact on water supply is predicted to significantly exceed the impact on water demand.

Precipitation in the Santa Rosa and San Simeon watersheds will continue to exhibit high year-to-year variability, leading to very wet years at times and very dry years at other times. The largest winter storms will likely become more powerful and potentially more damaging. Due to a predicted increase in future temperature, it is assumed that California and the Cambria area will experience longer and deeper droughts, which could impact the water supply.

The International Panel on Climate Change (IPCC) develops several future climate change scenarios referred to as Representative Concentration Pathways (RCP). RCP 4.5 represents a mitigation scenario in which global CO_2 emissions peak by 2040. RCP 8.5 represents the business-as-usual scenario where CO_2 emissions continue to rise throughout the 21st century. The following figure shows the spatial changes in annual mean of maximum daily temperatures across nine Bay Area counties under RCP 4.5 and RCP 8.5.

Figure 4-2. Bay Area Historical and Projected Mean Maximum Temperatures



Spatial patterns of projected model-average change in annual mean maximum temperature (unit: °F) under RCP4.5 and RCP8.5 for three time periods: 2006-2039 (early-21st century), 2040-2069 (mid-21st century), and 2070-2100 (late 21st-century). Unit is °F.

Source: Ackerly et al. (University of California, Berkeley), 2018.

According to the San Francisco Bay Area Climate Change Assessment (Ackerly et al., 2018), the Bay Area's historical temperature increased 1.7 degrees Fahrenheit from 1950 to 2005. It is predicted that annual mean maximum temperatures will increase by 1 to 2 degrees Fahrenheit in the early 21st century from 2006 to 2039, then will increase by an additional 3.3 degrees Fahrenheit in the mid-21st century from 2040 to 2069. This

[25] Public Policy Institute of California. (2025). Priorities for California's Water, accessed online March 2026: https://www.ppic.org/publication/priorities-for-californias-water/

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increment for the mid-21st century rises to 4.4 degrees Fahrenheit if the Bay Area remains under the high emissions scenario of "business-as-usual."

The temperature change in above IPCC report is broken over two time periods (early-21st century and mid-21st century). Following are the considerations and methodology used to calculate the average annual temperature change for each of the IPCC report time periods:

- Early 21st century (2006-2039) had an estimated temperature increase of 1 to 2 degrees Fahrenheit that was averaged to 1.5 degrees Fahrenheit. For the 33-year time period, this equates to an average annual temperature increase of 0.045 degrees Fahrenheit.
- Mid-century (2040-2069) was estimated to have an increase of 3.3 degrees Fahrenheit. For the 29-year time period, this equates to an average annual temperature increase of 0.114 degrees Fahrenheit.

4.4.1 Sea Level Rise

Sea level rise poses a growing risk to coastal areas of Cambria, California, where projections show expanded coastal flooding and erosion hazards by the end of the century. Under a high-sea-level-rise scenario (approximately 1.4 meters), flood zones and erosion-prone areas extend further inland, increasing risks to infrastructure, ecosystems, and groundwater resources.[26]

The State of California Sea Level Rise Guidance: 2024 Science and Policy Update (Guidance),[27] adopted by the California Ocean Protection Council, provides statewide projections to support planning and adaptation decisions. Compared with the previous 2018 Guidance, the 2024 Guidance incorporates the latest scientific research and narrows the projection range through the mid-century, while acknowledging increased uncertainty later in the century. The 2024 Guidance emphasizes the incorporation of local conditions (including vertical land motion and storm-driven flood processes) and recommends using scenario analysis—rather than relying on a single value—to support resilient, adaptive planning.

Unlike the 2018 Guidance, which focused on specific risk aversion projections tied to an RCP 8.5 high-emissions scenario, the 2024 Guidance recommends considering a suite of scenarios spanning a plausible range of future seas and integrating these with risk tolerance, asset criticality, and project lifespan. For long-lived or high-consequence assets (e.g., infrastructure with expected service life beyond 2050), higher future sea level scenarios should be included in vulnerability assessments and design analyses.

In order to properly plan for sea level rise, facilities with a planning horizon to 2050 might assume a sea level rise projections around 0.8 feet (and consider higher localized adjustments where appropriate). Facilities with a planning horizon to 2100 or beyond might evaluate the range of projected sea level rise (e.g., ~1.6–3.1 feet or more) along with sensitivity to higher-end outcomes and risk-averse design objectives.

4.4.2 Precipitation

Climate change has the potential to impact CCSD's surface water supply directly and groundwater supplies indirectly, particularly through precipitation. However, CCSD is committed to adapting to climate change in ways that protect water resources for maximum benefit. For further discussion on the climate change impacts on precipitation for the CCSD service area, see the full discussion in Section 3.3.1 of this UWMP.

[26] Pacific Institute, Coastal Flooding Map of Cambria, CA: https://pacinst.org/reports/sea_level_rise/hazmaps/Cambria.pdf

[27] State of California Sea Level Rise Guidance: 2024 Science and Policy Update: https://opc.ca.gov/wp-content/uploads/2024/05/California-Sea-Level-Rise-Guidance-2024-508.pdf

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5 SB X7-7 BASELINES, 2020 TARGETS, AND 2025 REPORTING

Lay Description

The Water Conservation Act of 2009, also known as Senate Bill (SB) X7-7, mandated a 20% reduction in urban per-capita water use across California by 2020. To achieve this goal, the Act required each Supplier to establish an urban water-use target, contributing to the State's collective efforts. The California Legislature stated that the combined reductions from all Suppliers would fulfill the statewide legislative mandate.

The goal of this chapter is to allow the Supplier to report on its progress toward meeting its urban water-use targets in its UWMP, pursuant to Water Code Section 10608.40. Suppliers that did not meet their 2020 Target in 2020 are required to compare their 2025 water use to the 2020 target.

To be eligible for water related state grants and loans, Suppliers are required to comply with SB X7-7 individually or as a region in collaboration with other Suppliers or demonstrate they have a plan or have secured funding for compliance.

GPCD Terminology

When determining water use in a UWMP, two terms are often used interchangeably:

- **Daily Per-Capita Water Use** – The amount of water used per person per day. In the UWMP calculations, this is total water use within a service area divided by population and measured in gallons.
- **Gallons Per-Capita Per Day (GPCD)** – This is the "daily per-capita water use" measured in gallons. Therefore, the term commonly used when referring to daily per-capita water use is "gallons per-capita per day" or GPCD.

It is important to distinguish GPCD (as used in UWMPs) from the Residential GPCD (R-GPCD) that is used in some reporting to the State Water Board. GPCD is the total water use from all sectors within a service area (residential, commercial, institutional, and any others) minus allowable exclusions (as defined in SB X7-7), then divided by the population. This is used in UWMPs. R-GPCD is only a part of the GPCD; it is the estimated residential water use in a service area divided by population.

5.1 Reporting Requirements

CCSD met its 2020 SB X7-7 Target in 2020 as shown in the following table. A discussion of conservation programs implemented to support the achievement of CCSD's per capita water reduction goals is covered in Chapter 9 of this UWMP.

Table 5-1. SB X7-7 2020 Target Progress

Submittal Table 5-1 Retail: SB X7-7 2020 Target Progress - Water Code Section 10608.40						
Was Supplier part of a merger or consolidation since 2020?	Regional Alliance Target or Individual Target?	2020 Target	Actual 2020 GPCD	Did Supplier Achieve Targeted Reduction for 2020?	For Suppliers that did not meet the Target in 2020	
					Actual 2025 GPCD	2020 Target met in 2025?
No	Individual Target	105	80	Yes	N/A	N/A

5.2 Nexus to State Water Board Urban Water-Use Objectives

The State Water Board's "Making Water Conservation A California Way of Life" Regulation on Urban Water-Use Efficiency Standards, Objectives, and Performance Measures (23 CCR Section 965 et seq.) uses the 2020 target as a back stop for the Urban Water Use Objective (UWUO) calculations. CCSD is currently meeting its UWUO as

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reported in its current annual UWUO report. The following table presents CCSD's current actual use compared to its current urban water use objective as presented in its UWUO report. Information about CCSD's actions towards achieving its urban water use goals can be found in Chapter 9.

Table 5-2. Fiscal Year 2024/2025 Actual Use Compared to Urban Water Use Objective

Water Use Component	Actual Water Use (AF)	Urban Water Use Objective (AF)
Total Residential Water Use, Indoor + Outdoor	272.00	663.69
Outdoor Irrigation of CII Landscapes Associated with Dedicated Irrigation Meters (DIMs)	0	0
System Water Loss	59.3	57.97
Variances, Provisions, and 20% Irrigable-Not-Irrigated Buffer (if applicable)	N/A	N/A
Bonus Incentive	0	0
Sum of Water Use Components (Specific to Objective)	**331.30**	**721.66**
Excluded Demands	0	142.38
Sum of Water Use Components (Objective + Excluded)	**331.30**	**864.04**
SB X7-7 Target Volume Plus Previously Excluded Process and Recycled Water	331.30	793.02
"Capped" Objective	331.30	508.27
Regional Alliance Met Regional Target? (if applicable)	N/A	N/A
Final Comparison of Actual Water Use to Objective	**331.30**	**508.27**

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6 WATER SUPPLY CHARACTERIZATION

Lay Description

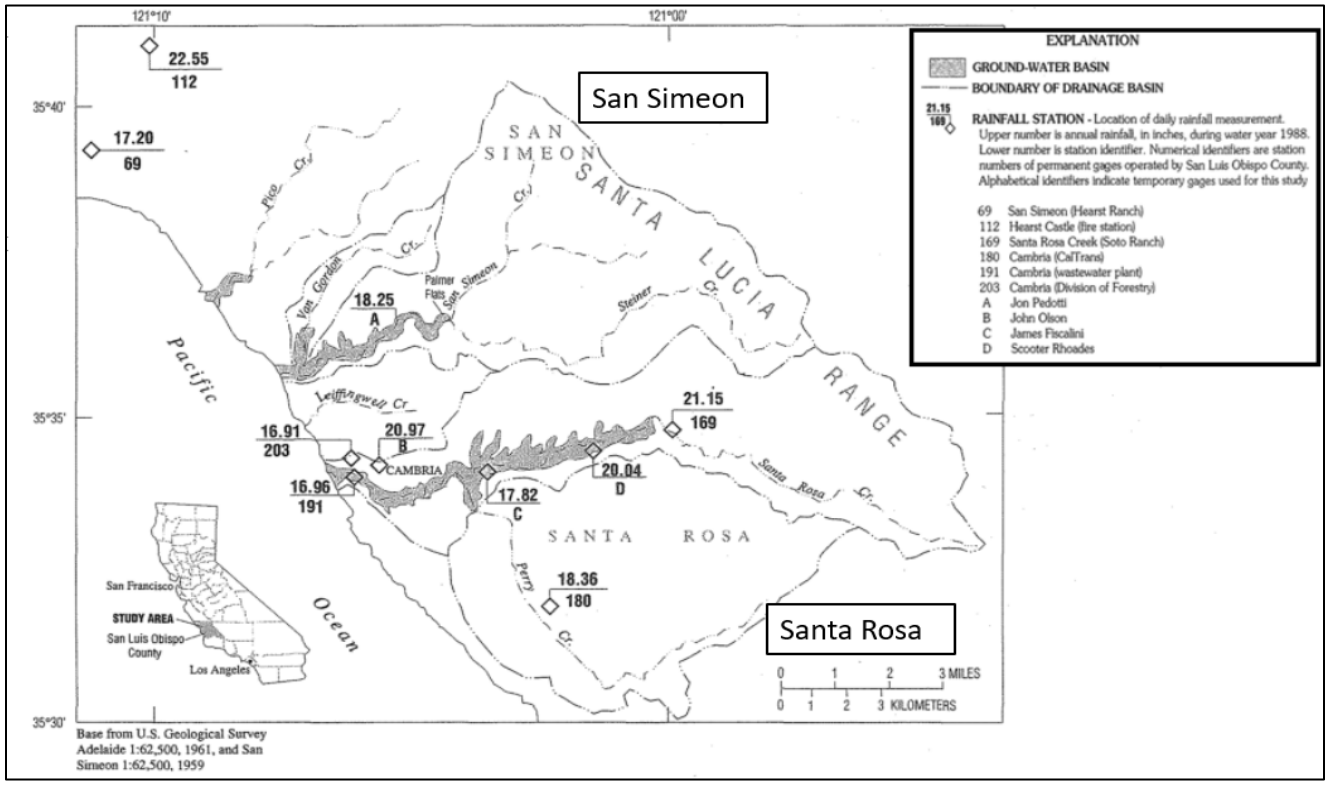
Chapter 6 describes and quantifies the sources of water available to CCSD's supply portfolio and the actions anticipated to meet future water demands. The water supply characterization is an assessment of CCSD's water supply during a normal year and future projections through 2050. This section characterizes CCSD's system supplies, including purchased or imported water, groundwater, surface water, stormwater, wastewater, recycled water, desalinated water, exchanges or transfers, future water projects, and any climate change impacts.

6.1 Water Supply Analysis Overview

This section will identify and quantify, to the extent practicable, the existing and planned sources of water available to CCSD in five-year increments for the next 25 years.

CCSD's potable water supply portfolio consists of groundwater from two coastal aquifers: the San Simeon and Santa Rosa aquifers, groundwater basin numbers 3-35 and 3-36, respectively. Neither aquifer is listed as being in overdraft status by the State Water Board. The basins are recharged primarily by underflow from the San Simeon and Santa Rosa Creeks. A map of the San Simeon and Santa Rosa aquifers is shown in Figure 6-1.

Figure 6-1. Map of San Simeon and Santa Rosa Aquifers



The San Simeon Creek and Santa Rosa Creek watersheds lie on the western slope of the Santa Lucia Mountains and drain to the Pacific Ocean. The maximum elevation of the Santa Rosa basin is 2,933 feet on Cypress Mountain, and the highest point in the San Simeon basin is 3,432 feet on Rocky Butte.

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6.1.1 Specific Analysis Applicable to All Water Supply Sources

CCSD has two sources of water as of 2025, the San Simeon and Santa Rosa groundwater basins. The primary water supply to CCSD is from the San Simeon basin, which accounts for approximately 80% of total water production in a given year, with the Santa Rosa basin supplementing the remaining 20%.

6.1.2 Special Considerations

Numerous special conditions may affect water supplies. In fact, each individual water supply may have specific conditions that may affect current or future supply characterization. As each water supply is considered and described, CCSD considered climatological, regulatory, projected development, and other local conditions that may affect water supply availability, especially when assessing the supply's availability for service reliability and DRAs during single dry years and drought periods lasting five consecutive years.

Climate Change Effects

The issue of climate change has become an important factor in water resources planning in the state and is frequently considered in urban water management planning, though the extent and precise effects of climate change remain uncertain. The impacts of climate change were discussed in Section 4.4.

Regulatory Conditions and Project Development

Emerging regulatory conditions and planned future projects may also affect the characterization of future water supply availability and analysis. CCSD is in the permitting process for its Water Reclamation Facility, and conditions that may be imposed by the California Coastal Commission could impact the project's operational parameters, with potential indirect implications for CCSD's water supply portfolio.

6.2 Water Supply Characterization

CCSD's water supply portfolio is described and quantified in the following subsections, including recycled water.

6.2.1 Purchased or Imported Water

CCSD does not purchase or import water from outside sources.

6.2.2 Groundwater

The San Simeon Creek aquifer wells have been CCSD's primary water supply since they were installed in 1979. The San Simeon aquifer groundwater is of a higher quality than that of the Santa Rosa aquifer, primarily because it has lower hardness and lower concentrations of iron and manganese. The Santa Rosa Creek aquifer was the community's sole water source prior to the installation of the San Simeon Well Field in the San Simeon Creek aquifer and prior to CCSD becoming the community's local water purveyor. During the mid-1970s and prior to the operation of CCSD's San Simeon Well Field, localized areas along the lower Santa Rosa Creek channel experienced land subsidence (Cleveland, 1980). Establishing the San Simeon wells as the primary water source has reduced municipal demand on the Santa Rosa Creek aquifer, helping mitigate and prevent subsidence.

CCSD relies on five (5) production wells in two aquifers: San Simeon Well #1 (SS1), San Simeon Well #2 (SS2), and San Simeon Well #3 (SS3) in the San Simeon Well Field in the San Simeon aquifer, and Santa Rosa Well #3 (SR3) and Santa Rosa Well #4 (SR4) in the Santa Rosa Well Field in the Santa Rosa aquifer. CCSD also uses the monitoring wells Windsor Bridge East and Windsor Bridge West in the Santa Rosa basin, and San Simeon Well #4 (SS4) and Monitoring Well 9P2 (9P2) in the San Simeon basin, to monitor aquifer levels. Under normal conditions, CCSD splits its production between the two aquifers using an 80/20 ratio. Thus, approximately 80% of CCSD's supply comes from the San Simeon aquifer, and 20% comes from the Santa Rosa aquifer. If the production limit is reached in one aquifer, the 80/20 split is adjusted accordingly to protect that aquifer.

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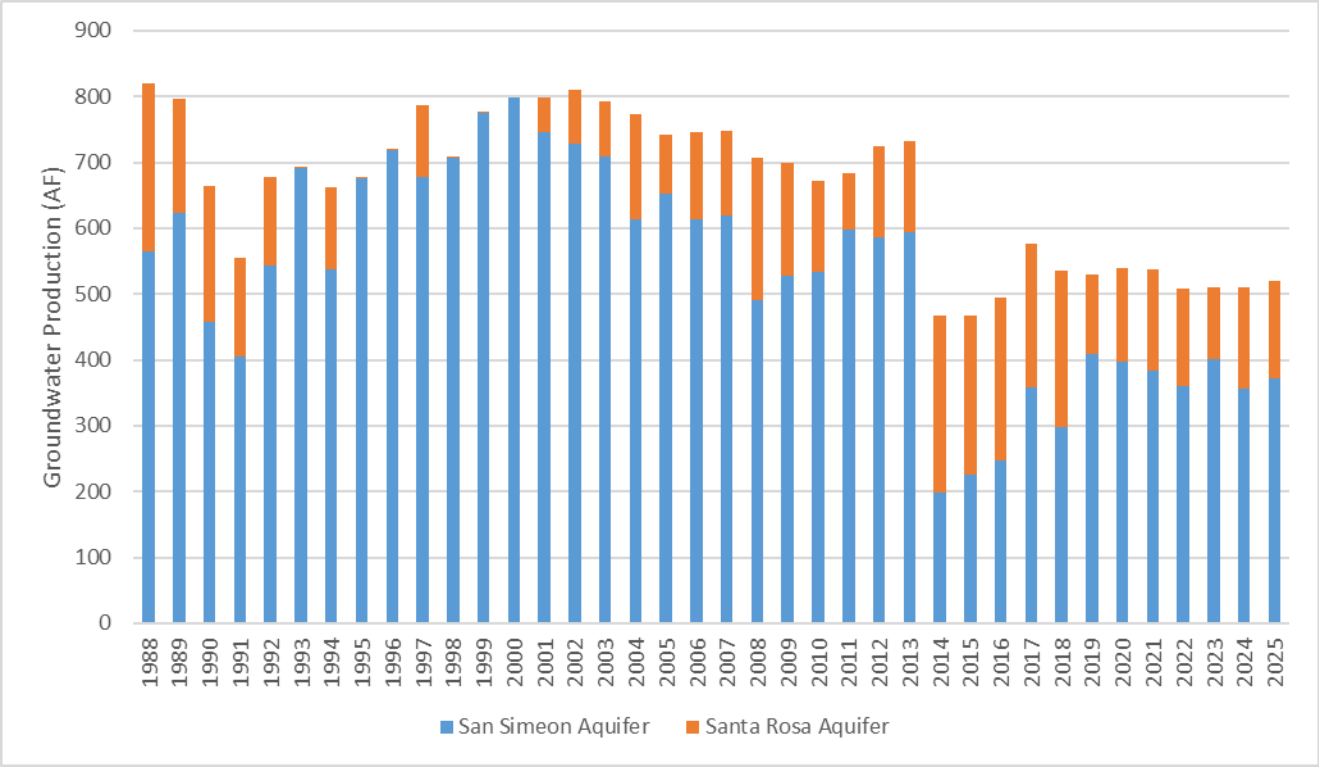
Figure 6-2 shows the annual CCSD pumping from each aquifer for the period of 1987 through 2025. Production dropped substantially during 2014 and 2015 in response to the community's conservation efforts, which included CCSD Board's emergency drought declaration on January 30, 2014.[28] The 2014 legacy Stage 3 (Stage 5 or 6 under the current water shortage stages) declaration prohibited the use of potable water for all outdoor irrigation.

Figure 6-2. CCSD Groundwater Production



The Santa Rosa Well Field is Cambria's oldest supply source and was relegated to a backup, augmentation role following the startup of the San Simeon Well Field in 1979. In 1999, the Santa Rosa well field was shut down after a Methyl Tertiary Butyl Ether (MTBE) plume from a nearby gas station was discovered. An emergency well, SR4, and its associated treatment plant were subsequently installed further upstream from the existing Santa Rosa well field and placed into operation in August of 2001. In response to the 2014 drought emergency, CCSD separated Santa Rosa Well #1 (SR1) from the potable system and converted it to non-potable use. This coincided with rebuilding the wellhead treatment facility for SR3 and bringing well SR3 back online in midsummer 2014. Additionally, CCSD completed its WRF for the lower San Simeon Creek aquifer, which began operating in January 2015.

Basin Description

CCSD's November 19, 2015, adopted Groundwater Management Plan[29] (Appendix E) describes groundwater planning for the area's San Simeon Creek groundwater basin and Santa Rosa Creek groundwater basin. Both basins are within the north coast area of San Luis Obispo County. Additionally, United States Geological Survey (USGS) Report 98-4061 (Appendix F) provides a more detailed discussion on the hydrogeology, water quality, and water budgets of these two basins.

[28] Cambria Community Services District & CDM Smith, Cambria Emergency Water Supply Project Description: https://www.cambriacsd.org/files/8e0a3f03f/20-cambria-project-description-6-2014.pdf

[29] CCSD Groundwater Management Plan: https://www.cambriacsd.org/groundwater-management-plan

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The San Simeon and Santa Rosa aquifers are relatively shallow and porous, with groundwater typically recharged each year during the wet or rainy season. With District and other pumping, groundwater levels generally exhibit a characteristic pattern: consistent high levels during the wet season, a steady decline during the dry season, and a rise when the wet season resumes.

During the wet season, the aquifers are continuously recharged via surface water flow from San Simeon and Santa Rosa Creeks. However, during the dry season, recharge is reduced or eliminated, and the amount of water in storage in the aquifer and groundwater levels decline. Once recharge from surface water ceases, there is a limited or finite amount of water available in the aquifers to support municipal, agricultural, and environmental needs until it refills during the next wet season. During drought years, when surface water flows and associated recharge stop earlier in the year, CCSD and other users must rely on the finite amount of water in these aquifers.

In addition to the physical characteristics of the aquifers, there are key permitting conditions that affect how CCSD may operate the well fields. Municipal production from the San Simeon and Santa Rosa aquifers is limited by the constraints contained in CCSD's Water Rights License (Permit No. 17287 and 20387) and Waste Discharge Requirements and Water Recycling Requirements (Permit No. R3-2019-0051, R3-2022-0035, and R3-2025-00007). The three main operational conditions that affect how CCSD uses its wells are wet- and dry-season production, Windsor Bridge East and Windsor Bridge West well levels, and the SS4 to 9P2 gradient.

Wet and Dry Season Production Limits

The production limits for the Water Rights License are shown in Table 6-9. The State Water Board license allows a maximum of 799 AFY annually from the San Simeon aquifer, while limiting dry season pumping to 370 AFY maximum from the time that the creek ceases flow at the Palmer Flats gauging station until October 31. The Santa Rosa Creek license limits the Santa Rosa aquifer pumping to 218 AFY annually, with a dry season pumping limit of 155.3 AFY from May 1 to October 31. Pumping rates are limited to an average 30-day direct diversion rate of 1.43 cubic feet per second (cfs, or 641.83 gallons per minute [gpm}) for the San Simeon aquifer and 0.59 cfs (264.81 gpm) for the Santa Rosa aquifer. Diversions to provide water to riparian users as required by the State Water Board are excluded from licensed totals. This amount of water is not necessarily actually available in a given year. In addition to the State Water Board licenses, California Coastal Commission Coastal Development Permit 428-10 limits CCSD's annual diversion from both basins to 1,230 AFY. Copies of licenses are provided in Appendix G.

Windsor Bridge East and Windsor Bridge West Well Levels in the Santa Rosa Aquifer

Environmental protection is a key operating concern associated with the Santa Rosa Creek aquifer wells, specifically seawater intrusion prevention and Santa Rosa Creek Lagoon health. To address this concern, a key permit condition requires maintaining a minimum groundwater elevation of three feet above mean sea level at monitoring wells Windsor Bridge East and Windsor Bridge West. During dry years, these monitoring wells may approach the three-foot minimum elevation from August to September. Operation of the nearby Shamel Park irrigation well and the tides also impact monitoring well Windsor Bridge East. When the three-foot elevation condition occurs, CCSD stops using its Santa Rosa Creek aquifer wells (Wells SR1, SR3, and SR4) and shifts production to the San Simeon Creek wells.

Water Reclamation Facility (WRF)

In response to the exceptional drought conditions and an emergency water shortage in 2014, CCSD completed its Water Reclamation Facility (WRF) project on the lower San Simeon Creek property. The WRF is an indirect potable reuse (IPR) facility designed as a gradient control measure to protect the aquifer under the San Simeon Well Field and prevent the migration of impaired water from the percolation ponds toward the San Simeon Well Field during times of shallow or flat groundwater gradient. The WRF extracts water from an existing well (State Well Number 27S/8E-9P7, referred to as Well 9P7 or 9P7) at CCSD's treated wastewater effluent percolation ponds, treats the extracted water to the SWRBC's standards for IPR using an advanced water treatment plant,

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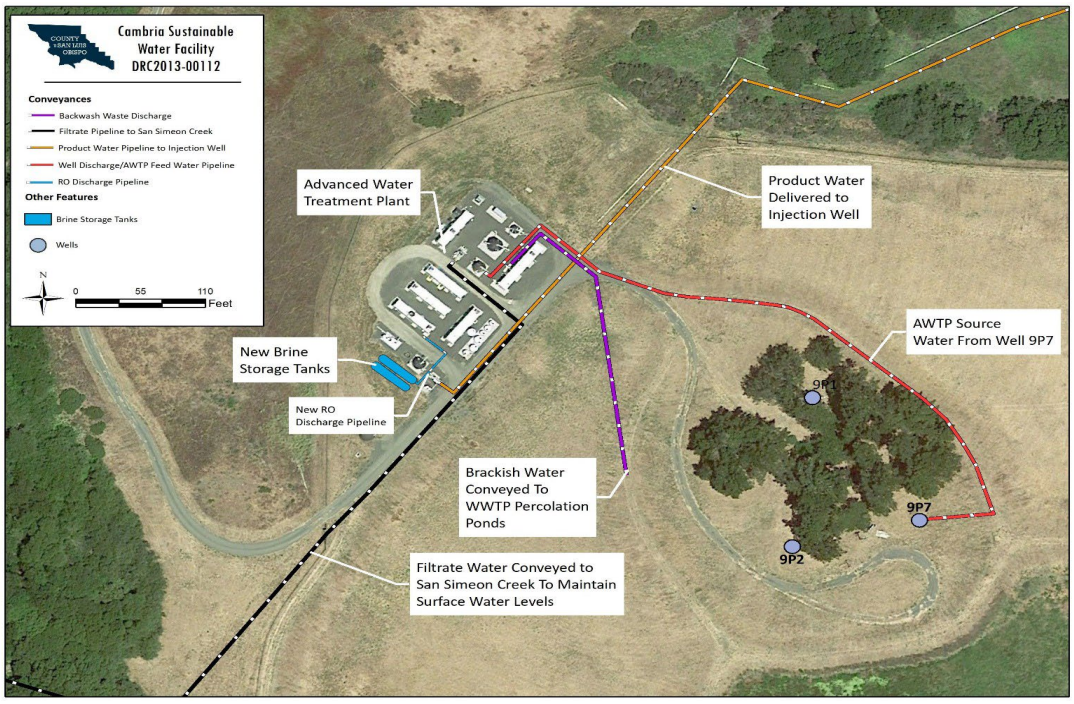
and reinjects the treated water at the downstream edge of the San Simeon Well Field. The WRF is currently operating under an emergency Coastal Development Permit (CDP), which limits its use to extreme drought emergencies only. A regular CDP that would allow the operation of the WRF as needed during dry years is in progress.

The WRF's source water composition will vary with seasonal rainfall and the time of year. Typically, it will be a combination of percolated treated wastewater effluent, creek underflow, and diluted saltwater, with the latter sourced from a deeper seawater wedge. Figure 6-3 provides an overview of the WRF. Per the application submitted for the WRF's regular CDP, 21 AF of WRF production is estimated to occur during a normal year (described in more detail in Section 7.2), which is based on a nine-hour daily runtime up to four working days per week for a minimum of eight weeks per year at a product water reinjection rate of 400 gpm. Should the IPR system operate continuously over a six-month dry season, its theoretical total production would be approximately 250 AFY. However, 150 AF from the WRF is at the upper end of realistic production levels and will be the assumed maximum annual volume of supply throughout this UWMP, as needed to meet demands.

To ensure protection of riparian habitat during its operation, the WRF includes discharging approximately 100 gpm at the head of the San Simeon Creek Lagoon to maintain surface water levels. This protective feature is further supported and the process refined by an Adaptive Management Plan[30] that includes biological monitoring to ensure favorable conditions are maintained. Actual operating conditions/restrictions for the WRF will not be finalized until approval of the regular CDP.

A primary concern in the San Simeon Creek aquifer is the hydraulic gradient between the percolated mound of treated wastewater at its percolation ponds and the upgradient potable wells in the San Simeon Well Field. The WRF helps preserve this gradient by capturing and returning water extracted from the percolation pond area for reuse, while maximizing groundwater elevation and storage at the up-gradient potable well field.

Figure 6-3. Overview of the Water Reclamation Facility



[30] Cambria Community Service District, Adaptive Management Plan: https://www.cambriacsd.org/files/4c5ae3caa/Adaptive%2BManagment%2BPlan%2BSWCA%2Bedits%2B%28HD%2BFinal%29.pdf

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The San Simeon and Van Gordon Creeks Instream Flow Study[31] was completed in the fall of 2024 as part of the environmental evaluation for the WRF. In the summer of 2025, CCSD commissioned an instream flow study of Santa Rosa Creek as recommended by the 2008 Water Master Plan[32] and related studies. The goals of this study are to assess the impact of CCSD diversions on the instream conditions in Santa Rosa Creek. The study is ongoing and is expected to conclude in the summer of 2027.

Surface Water Treatment Rule (SWTR)

CCSD is subject to the state's surface water treatment rule (SWTR) because several of its groundwater sources are under the influence of surface water. To meet these requirements, CCSD does not operate SS1 when surface flow is present in San Simeon Creek. San Simeon Wells SS2 and SS3 are outside the SWTR's 150-foot boundary and can continue to operate when there is flow in the creek. The Santa Rosa wells SR3 and SR4 have water treatment facilities that allow them to operate while within the SWTR's 150-foot limit.

Past Five Years' Groundwater Pumping

Table 6-1 shows the annual volume of groundwater pumped over the past five years (2021-2025). Demand has increased slightly from the low volume of 467 AFY in 2014 and 2015 but has not yet returned to pre-drought levels.

Table 6-1. Groundwater Volume Pumped

Submittal Table 6-1 Retail: Groundwater Volume Pumped - Water Code Section 10631(4) and 10631(4)(c)							
☐	Check the box if the Supplier does not pump groundwater.						
☐	Check the box if all or part of the groundwater described below is desalinated.						
Groundwater Type	Water Type	Location or Basin Name	2021 (AF)	2022 (AF)	2023 (AF)	2024 (AF)	2025 (AF)
Alluvial Basin	Potable	San Simeon Creek Basin	383	360	401	357	372
Alluvial Basin	Potable	Santa Rosa Creek Basin	155	148	109	154	148
		Total	538	508	510	511	520

6.2.3 Surface Water

CCSD has no surface water source and does not withdraw water from streams, lakes, or reservoirs as part of its water supply.

6.2.4 Stormwater

CCSD does not regulate or manage stormwater within its service area, as that responsibility rests with San Luis Obispo County and the Regional Water Quality Control Board. However, CCSD is a signatory member agency of the County's Integrated Regional Water Management (IRWM) Planning Memorandum of Understanding. This relationship could lead to the development of future projects that integrate stormwater with improvements to the water supply.

Communities are increasingly implementing opportunities to beneficially use stormwater to meet local water supply demands. These actions are motivated by constrained local water resources, new regulations, and the need to relieve strain on overburdened stormwater infrastructure. Beneficial uses can include blending with other water supplies for groundwater recharge, redirecting it into constructed wetlands or landscaping, and

[31] The San Simeon and Van Gordon Creeks Instream Flow Study: https://www.cambriacsd.org/files/b8152790e/San%20Simeon%20Instream%20Flow%20Final%20Report_with%20Appendices.pdf

[32] Water Master Plan (2008): http://www.cambriacsd.org/files/163905228/05.01-land-use.pdf

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diverting it to a treatment facility for subsequent reuse. CCSD is not currently using its stormwater but could consider doing so in the future.

6.2.5 Wastewater and Recycled Water

Per Water Code 10633, the UWMP shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the Supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the Supplier's service area, and shall include all of the following:

- A description of wastewater collection and treatment systems in the Supplier's service area.
- A description of the quantity of treated wastewater meeting recycled water standards that is discharged or otherwise available for recycled water use.
- A description of the recycled water currently being used in the Supplier's service area, including, but not limited to, the type, place, and quantity of use.
- A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.
- The projected use of recycled water within the Supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.
- A description of actions, including financial incentives, which may be taken to encourage use of recycled water, and projected results of these actions in terms of acre-feet of recycled water used per year.

Municipal recycled water is municipal wastewater that has been treated to a specified quality to enable it to be used again for a beneficial purpose. The term "recycled water" is defined in the Water Code more broadly than "municipal recycled water." For purposes of the UWMP, "recycled water" means only municipal recycled water, that is, water that has been treated and discharged from a municipal wastewater facility.

The two requirements that treated municipal wastewater must meet to be classified as recycled water are as follows:

1. It must be reused beneficially, in a manner consistent with Title 22.
2. It must be reused in accordance with a Regional Water Quality Control Board permit such as the National Pollutant Discharge Elimination System, waste discharge requirement, or water recycling requirement.

Table 6-2 and Table 6-3 show wastewater collected and treated to recycled water standards per Title 22, while Table 6-6 shows the discharge methods. For the purposes of this section, CCSD uses the definition of recycled water from earlier in this section and has placed the discussion of the IPR water produced by the WRF in Section 6.2.2.

CCSD discharges all treated wastewater effluent into percolation ponds on CCSD's property along the lower reach of the San Simeon Creek aquifer, downgradient from its San Simeon aquifer potable wells, to minimize potable groundwater losses at the aquifer/ocean interface. Essentially, all of CCSD's percolated wastewater effluent is used to create a seawater intrusion barrier by forming a groundwater mound, which helps slow freshwater flow towards the ocean while preventing seawater from intruding inland. Some of the percolated wastewater effluent is also used as source water for CCSD's WRF when the facility is operating. During 2015 and 2016, 92 AF of highly treated indirect potable reuse recycled water from the WRF was reinjected into the San Simeon Creek aquifer by CCSD. Based on modeling estimates by WRF's geohydrologist, approximately 60% of the reinjected water would enter the San Simeon Well Field, resulting in a net recovery of 55 AF. All reinjected

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water is put to beneficial use as gradient control, regardless of the volume eventually extracted as potable drinking water.

The percolated seawater intrusion barrier and the WRF are the only two recycled water use projects as of 2025. A 2004 Recycled Water Master Plan,[33] commissioned by CCSD, developed a recycled water distribution system backbone for future use of treated wastewater effluent for outdoor, non-potable irrigation. Of the entire recommended recycled water distribution system, two segments totaling roughly seven tenths (0.7) of a mile were installed in two distinct sections that have yet to be connected to a recycled water source. Because only a limited number of accounts can use recycled water, it is not cost-effective at this time to treat, transport, and deliver it. However, it is under consideration, and potential recycled water development volumes and timelines are included in this UWMP because recycled water offers an opportunity to improve water supply reliability/resilience by offsetting some current and future potable water use. CCSD's capital improvement plans will continue to review the potential for water recycling and options for financial incentives to support the development of recycled water. The anticipated volume of use is included in the projected normal and dry year supply-and-use tables.

Recycled Water Coordination

There are no plans to coordinate efforts with any other agency or group to develop recycled water.

Wastewater Collection, Treatment, and Disposal

Per Water Code Section 10633(a), a Supplier must provide a general description of wastewater collection, treatment, and disposal within the service area. This information is reported in Table 6-2 and Table 6-3.

CCSD is responsible for collecting and treating wastewater within its urban service boundary, as well as through a contract with State Parks to treat wastewater from the Hearst San Simeon Creek campground. CCSD maintains approximately 62 miles of sanitary sewers and force mains, 10 lift stations, a wastewater treatment plant, a 2.5-mile-long effluent discharge pipeline, and four effluent percolation ponds to provide these services. CCSD's wastewater collection system serves roughly 90% of CCSD's total service area, with the remaining 10% using septic systems for wastewater treatment. CCSD's wastewater treatment plant (WWTP) provides secondary treatment and was recently upgraded to a Modified Ludzak-Ettinger activated sludge process to further reduce nitrate concentration in the effluent. CCSD does not treat wastewater from outside its service area, except for the Hearst San Simeon Creek campground.

Wastewater Collected Within the Service Area

CCSD owns and operates a wastewater collection system, detailed in the previous subsection, which serves roughly 90% of CCSD's service area. The remaining 10% uses septic tanks for wastewater disposal. Table 6-2 includes the volume of wastewater collected in the service area, which includes some amount of inflow and infiltration.

Wastewater Treatment and Discharge Within the Service Area

CCSD's WWTP treats wastewater to a secondary treatment level through a Modified Ludzak-Ettinger activated sludge process before discharging it at CCSD's wastewater percolation ponds, which are located outside CCSD's service area, downgradient from the San Simeon Well Field, and next to San Simeon Creek where it flows into the San Simeon Lagoon. No volume of treated wastewater was recycled or disposed of within the CCSD service area. Table 6-3 identifies the volume of treated wastewater disposed of or recycled.

[33] Recycled Water Master Plan: https://www.cambriacsd.org/water-master-plan#docaccess-76724ee5b54ae7086430b8e21f716d905b5404c222429b541aed18f7e70dc620

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Recycled Water System Description

The 2004 Recycled Water Master Plan[34] developed a backbone distribution system, which was laid out to be reasonably close to the most significant outdoor irrigation customers. These included a planned community park on the east Fiscalini Ranch property, an existing commercial nursery, and the middle and elementary schools. To date, of the recommended recycled water distribution system, two segments totaling roughly seven tenths (0.7) of a mile have been installed in two distinct sections that have yet to be connected to a recycled water source. No recycled water use was projected in the 2020 UWMP, and none has occurred to date. As of 2025, there is no recycled water use within the CCSD service area, as reported in Table 6-4, Table 6-8, and Table 6-9.

[34] Recycled Water Master Plan: https://www.cambriacsd.org/water-master-plan#docaccess-76724ee5b54ae7086430b8e21f716d905b5404c222429b541aed18f7e70dc620

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Table 6-2. Wastewater Collected Within Service Area in 2025

Submittal Table 6-2 Retail: Wastewater Collected Within Service Area in 2025 - Water Code Section 10633(a)				
☐	Check the box if there is no wastewater collection system. Proceed to the next table.			
Wastewater Collection			**Recipient of Collected Wastewater**	
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated?	Wastewater Volume Collected from UWMP Service Area 2025 (AF)	Name of Wastewater Treatment Plant (WWTP) and Place ID Number	Is WWTP Located Within UWMP Area?
Cambria Community Services District	Metered	482	Cambria CSD WWTP, Place ID 212858	Yes
Total Wastewater Received from UWMP Service Area in 2025:		482		

Table 6-3. Wastewater Treatment and Outcomes Within Service Area in 2025

Submittal Table 6-3 Retail: Wastewater Treatment and Outcomes Within UWMP Service Area in 2025 - Water Code Section 10633(a)														
☐	**Check the box if no wastewater is treated or disposed of within the UWMP service area.** Proceed to the next table.													
Wastewater Treatment Plant Name and Place ID Number	Does This Plant Treat Wastewater Generated Outside the UWMP Service Area?	2025 Volume of Wastewater Received from UWMP Service Area (AF)	Total 2025 Volume of Water Treated (AF)	**2025 Outcomes of Treated Wastewater**										
				Water Recycled Within UWMP Service Area		**Water Recycled Outside of UWMP Service Area**		**Effluent Discharge that is not a Permitted Recycled Water Use**		**Required Discharge for Instream Flow**		**Delivered to Another Entity for Additional Treatment**		
				Treatment Level	Vol. (AF)	Treatment Level	Vol. (AF)	Treatment Level	Vol. (AF)	Treatment Level	Vol. (AF)	Treatment Level	Vol. (AF)	Name of other entity
Cambria CSD WWTP, Place ID 212858	No	482	482	Secondary, Undisinfected	0	N/A	0	Secondary, Undisinfected	482	N/A	0	N/A	0	N/A
Total		482	482		0		0		482		0		0	

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Current, Potential, and Projected Recycled Water Use

In accordance with methodology recommended in the 2025 DWR UWMP Guidebook, Table 6-5 compares recycled water use from the 2020 UWMP estimate with actual 2025 use. This shows that treated wastewater percolated into the groundwater basin at the lower reach of the San Simeon Creek aquifer remains the most significant use. The volume of wastewater effluent decreased substantially after potable water conservation measures were adopted in January 2014 in response to the drought and water shortage emergency. In 2014, CCSD completed the WRF project, which included indirect potable reuse of a portion of the percolated wastewater effluent.

As of 2025, there is no recycled/reclaimed water use within the CCSD service area, because there is currently no recycled-water treatment or distribution infrastructure. The development of recycled water facilities has been determined not to be cost-effective at this time. However, it is under consideration, and potential volumes and a potential timeline for development are included here because it offers an opportunity to improve water supply reliability/resilience by offsetting some potable water use with recycled water. Recycled water would also be allowed for landscaping during Stage 4 and higher droughts, when potable water for landscape use is restricted or prohibited. Development of recycled water would be a significant infrastructure project requiring substantial grant funding or other funding.

Table 6-4 contains information on the current, projected, and potential beneficial use of recycled water in the CCSD service area for each of the five-year planning increments.

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Table 6-4. Recycled Water Direct Beneficial Uses Within Service Area

Submittal Table 6-4 Retail: Recycled Water Direct Beneficial Uses Within Service Area - Water Code Section 10633 (c)(e)									
	Check box if recycled water is not used and is not planned for use within the service area of the Supplier.								
Use Type	Water Type (after treatment if treated)	Additional Information (as needed)	2025	2030	2035	2040	2045	2050 (opt)	Potential Recycled Water Use
			(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	Volume (AFY)
Seawater intrusion barrier	Non-potable	Use of existing percolation pond system	482	482	456	431	458	486	482
Landscape irrigation (except golf courses)	Non-potable	Year 2035 includes the conversion of existing potable water irrigation customers to non-potable irrigation demands. 2035-2050 represents future non-potable demands.	0	0	50	100	100	100	0
		Total	482	482	506	531	558	586	482

NOTES: For 2025, the volume of water for the seawater intrusion barrier is the amount of wastewater collected from the service area which is based on metered effluent data reported to the State Water Board in CCSD's annual self-monitoring report. In addition to indoor metered water use, this value includes infiltration and inflow into the collection system. For subsequent years, the volume of wastewater collected from the service area is estimated to grow 1% per year in line with increases in water consumption due to population growth, with the assumption that inflow and infiltration will remain constant. All wastewater collected is used as a seawater intrusion barrier via the existing wastewater percolation pond system, for CCSD's WRF (an indirect potable reuse project constructed in 2014), or for landscape irrigation with recycled water. Beginning in 2035, approximately 50 AF per year of no-net-increase in diversion from aquifer recycled water use is anticipated by converting existing CCSD customers from potable groundwater use to non-potable outdoor irrigation using recycled water. From 2040 onward, an additional 50 AF of outdoor irrigation with recycled water is estimated to meet future project demands. Landscape irrigation feasibility is based on the 2004 Recycled Water Master Plan and will be driven by available funding and potential downstream habitat concerns. Because of potential downstream habitat concerns, the 2004 Recycled Water Master Plan bifurcated recycled water demands between converting existing groundwater-based customer uses and potential future project demands. The Potential Recycled Water Use volume is based on 2025 actual use for both the seawater intrusion barrier and the landscape irrigation rows as this represents the supply's reality until 2035 when the 1% growth is projected to begin and when the recycled water is planned to come online.

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Table 6-5. 2020 UWMP Recycled Water Use Projection Compared to 2025 Actual

Submittal Table 6-5 Retail: 2020 UWMP Recycled Water Use Projection Compared to 2025 Actual - Water Code 10633 (e)		
☐ Check box if recycled water was not used in 2025 nor previously projected for use in 2020.		
Use Type	2020 Projection for 2025	2025 Actual Use
	(AF)	(AF)
Seawater Intrusion Barrier	475	482
Total	475	482

Actions to Encourage and Optimize Future Recycled Water Use

Per Water Code Section 10633, the UWMP shall provide information on recycled water and its potential for use as a water source in the service area of the Supplier, and shall include a plan for optimizing the use of recycled water in the Supplier service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

Table 6-6 details the methods planned to expand future recycled water use in the CCSD service area. Based on the 2004 Recycled Water Master Plan, the estimated potential recycled water use within CCSD's service area is 100 AFY. Possible actions to encourage the use of recycled water include implementing a mandatory-use ordinance requiring its use for CII landscapes and CII toilet and urinal flushing when available. The ordinance would also require the use of non-potable water to the extent possible as a condition of approval for any future major remodels of CII properties or post-moratorium CII development. As mentioned in the previous section, recycled water would also be allowed for landscaping use during Stage 4 and higher droughts when potable water for landscape use is restricted or prohibited. Development of recycled water would be a significant infrastructure project requiring substantial grant funding or other funding. At this time, it is predicted that 2035 will be the first year in which recycled water will be available.

Table 6-6 summarizes potential methods to encourage future recycled water use. The actions listed provide a summary of potential measures to encourage future end-use of recycled water.

Table 6-6. Methods to Encourage Future Recycled Water Use

Submittal Table 6-6 Retail: Methods to Encourage Future Recycled Water Use - Water Code Section 10633 (f)			
Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use
			(AF)
Mandatory use ordinance/project conditions of approval	None of these actions have been adopted as policy. Regardless, they are memorialized here for future reference and discussion.	2035	50
Mandatory use ordinance/project conditions of approval	None of these actions have been adopted as policy. Regardless, they are memorialized here for future reference and discussion.	2040	50
	Total	(AF)	100
		Unit Conversion to AF	100

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6.2.6 Desalinated Water Opportunities

Historically, CCSD had a Desalination Project Cooperation Agreement[35] in place with the Army Corps of Engineers to complete a water supply project, which was authorized under Section 219 of the federal Water Resources Development Act. This effort lost momentum following the federal ban on earmarking of project funds. Additionally, on December 9, 2011, the California Coastal Commission voted unanimously to object to the Army Corps' consistency determination regarding a proposed geotechnical investigation for desalination intake wells near Santa Rosa State Beach in Cambria.[36] Regardless, the Army Corps completed a study identifying various long-term water supply alternatives in 2013.[37] This study found that treating brackish water near San Simeon Creek Road was the most technically feasible alternative. The WRF was the more feasible alternative when compared to the brackish water alternative as described in the 2013 Army Corps study. To date, federal funding and subsequent environmental analyses remain to be completed to rekindle the earlier Army Corps efforts, and the remaining funds from the Water Resources Development Act have been returned to the Army Corps.

Currently, and for this UWMP analysis, CCSD has determined that it will not consider desalinated water as a source of supply due to economic infeasibility and potential environmental damage. The cost of treating desalinated water would be prohibitive, leading to unsustainable rate increases for customers.

6.2.7 Water Exchanges and Transfers

This section details information regarding CCSD's transfers and/or exchanges. Per Water Code section 10631(c), this section describes the opportunities for exchanges or transfers of water on a short-term or long-term basis.

CCSD has no existing water exchanges or transfers, nor any planned future ones.

Exchanges

CCSD does not have any existing water exchange agreements in place with other agencies. A major factor is the remote location of Cambria relative to the State Water Project and the Nacimiento Water Project pipelines, which are farther inland and east of the rugged Santa Lucia Mountains. However, earlier water master planning had investigated the potential for a water transfer agreement with certain member agencies of the Whale Rock Commission, which use the Whale Rock Reservoir located approximately 13 miles south of Cambria near Cayucos. The Whale Rock Reservoir exchange alternative would involve CCSD reaching an agreement with certain Whale Rock Commission member agencies that have entitlements to Nacimiento Reservoir water in exchange for the use of an equivalent allocation from the Whale Rock Reservoir. Currently, there are no planned future water exchanges.

Transfers

A water transfer can be a temporary or permanent sale of water or a water right by the water right holder, a lease of the right to use water from the water right holder, or a sale or lease of a contractual right to water supply. Water transfers can also take the form of long-term contracts to improve long-term supply reliability. There is potential to form voluntary exchange agreements with local agricultural interests. Such agreements

[35] Desalination Project Agreement, within Board Packet: https://www.cambriacsd.org/files/6ec373698/2010%2B0819%2BREG%2BBOD%2BMTG%2BAgenda%2BPacket.pdf

[36] December 9, 2011 Coastal Commission hearing rejecting the Army Corps' consistency determination for geotechnical investigation at Santa Rosa State Beach. https://www.us-ltrcd.org/files/a64815a77/SRCWMP_FINAL_Feb2012_Compiled.pdf

[37] Cambria Water Supply Alternatives – Engineering Technical Memorandum (November 27, 2013), identifying and evaluating long-term water supply alternatives for Cambria. https://www.cambriacsd.org/files/cb0db88c2/final-11_27_2013-cambria-water-supply-alts-tech-memo-by-cdm-smith.pdf

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may include fallowing certain irrigated areas during drought periods in exchange for compensation resulting from the loss of income-producing crops. Currently, CCSD has no transfer agreements in place

Emergency Interties

Emergency water interties are connections between water systems that allow the exchange or delivery of water on a short-term emergency basis. CCSD has no emergency interties for catastrophic situations.

6.2.8 Supply from Storage

If a Supplier removes water from either surface storage or underground storage (surface water) for use during the reporting year, the Supplier should report this as a "supply from storage" in Tables 6-8 R and 6-9. This section does not apply to CCSD, as it has neither storage infrastructure nor a diversion-to-storage permit.

6.2.9 Future Water Projects

Per Water Code Section 10631(f), this section describes all water supply projects and water supply programs that may be undertaken to meet the total projected water use.

Past CCSD water master planning recommended a three-pronged approach to achieving a long-term, reliable water supply: water conservation, recycled water for non-potable irrigation, and seawater desalination. This supply approach, along with distribution system improvements to enhance fire flow and storage, was incorporated into a Water Master Plan Program Environmental Impact Report (WMP PEIR), which was certified by CCSD on August 21, 2008.[38] The California Environmental Quality Act (CEQA) allows tiering from such PEIRs[39] to further address project-specific environmental concerns. Therefore, subsequent supply projects may incorporate the earlier WMP PEIR while addressing project-specific environmental concerns within project-specific environmental clearances. CCSD has abandoned desalination as a potential source.

The planned future water projects being undertaken to meet the total projected water use include evaluating potential water supply projects, updating the Water Master Plan (including studying the feasibility of recycled water as a component), updating the Water Conservation Plan, and finalizing the regular Coastal Development Permit for the WRF. CCSD doesn't have any planned capital improvements being undertaken to meet projected water use, though the CCSD CIP does address water system component replacement and rehabilitation. These water projects are identified in CCSD's Strategic Plan as updated by CCSD's Board of Directors on March 12, 2026.[40]

[38] CCSD WMP PEIR: http://www.cambriacsd.org/files/163905228/05.01-land-use.pdf

[39] California Environmental Quality Act (CEQA) Guidelines, Section 15152 – Tiering (use of broader EIRs, including program EIRs, for later project-level environmental review). https://www.law.cornell.edu/regulations/california/14-CCR-15152

[40] Cambria Community Services District, Strategic Plan: https://www.cambriacsd.org/strategic-plan

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Table 6-7. Expected Future Water Supply Projects or Programs

6.2.10 Submittal Table 6-7 Retail: Expected Future Water Supply Projects - Water Code Section 10631 (f)

Name of Future Projects or Programs	Joint Project with other suppliers?	Additional Description (as needed)	Water Type (after treatment if treated)	Planned Implementation Year	Planned for Use in Year Type	Expected Increase in Water Supply (AF)
Recycled Water	No		Non-Potable	2035	All Year Types	50-100
Water Reclamation Facility	No	Indirect Potable Reuse	Potable	2028	All Year Types	21-150
NOTES: Per the application submitted for the WRF's regular Coastal Development Permit (CDP), an estimated 21 AF of WRF production is estimated to occur during a normal year, which is based on a nine-hour daily runtime up to four working days per week for a minimum of eight weeks per year at a product water reinjection rate of 400 gpm. Should the IPR system operate continuously over a six-month dry season, its total production would be approximately 250 AFY; however, 150 AF from the WRF is at the upper end of realistic production levels. A start year of 2030 has been chosen as a conservative estimate for growth assumptions.						

6.2.11 Summary of Existing and Planned Sources of Water

Per Water Code Section 10631, this section will identify and quantify the existing and planned water sources available over five-year increments and provide supporting and related information.

Table 6-8 lists the actual water volume supplied to CCSD's customers in 2025. Each supply source is listed and quantified separately, to the extent practicable. The WRF was not operated for gradient maintenance in 2025 and therefore has a volume of zero. The projected amount of reasonably available potable supply shown in Table 6-9 is based on analyses of different year types and historical production amounts. Additional details regarding this analysis are available in Section 7.2.

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Table 6-8. Water Supplies – 2025 Actual

Submittal Table 6-8 Retail: Water Supplies — 2025 Actual - Water Code Section 10631 (b)				
Water Supply	Additional Description	**2025**		
		Water Type	**Actual Volume**	**Total Entitlement**
			(AF)	(AF)
Groundwater (not desalinated)	San Simeon Basin	Potable	372	799
Groundwater (not desalinated)	Santa Rosa Basin	Potable	148	218
Recycled Water	Saline Water Intrusion Barrier – use of existing percolation pond operation	Non-Potable	482	482
Recycled Water	Water Reclamation Facility – indirect potable reuse	Potable	0	150
		Subtotal Potable	520	1,167
		Subtotal Non-Potable	482	482
		Total	1,002	1,649

NOTES: California Coastal Commission Coastal Development Permit 428-10 limits the annual diversion from both groundwater basins to 1,230 AFY. Per CCSD's State Water Board diversion licenses, allowable diversions are limited to 218 AFY from CCSD's Santa Rosa Creek aquifer wells (based on calendar year 2008 pumpage); and 799 AFY from CCSD's San Simeon Creek aquifer wells (based on calendar year 2000 pumpage). These potable amounts total 1,017 AFY and are exclusive of riparian water use. For 2025, the volume of water for the seawater intrusion barrier is the amount of wastewater collected from the service area, which is based on metered effluent data reported to the State Water Board in CCSD's annual self-monitoring report. In addition to indoor metered water use, this value includes infiltration and inflow into the collection system. The saline water intrusion barrier "Total Entitlement" volume is based on 2025 actual use for both the seawater intrusion barrier and the landscape irrigation rows as this represents the supply's reality until 2035 when the 1% growth is projected to begin and when the recycled water is planned to come online.

Table 6-9 summarizes CCSD water supply projections by source from 2030 through 2050, including existing groundwater supplies, planned augmentation projects to improve potable supply reliability during dry periods, and planned future use of recycled water for non-potable irrigation. The WRF is designed to create a groundwater mound to protect the San Simeon aquifer during times of shallow SS4-9P2 gradient or times of lower San Simeon Well Field groundwater levels, with 60% of the reinjected water that migrates toward the San Simeon Well Field addressing any shortfall between demand and supply (not to provide additional supply). A WRF annual supply of 150 AF provides enough to cover any shortfall between demand and available supplies even during a multi-year drought.

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Table 6-9. Water Supplies – Projected

Submittal Table 6-9 Retail: Water Supplies — Projected - Water Code Section 10631 (b)

Water Supply	Additional Detail on Water Supply	Water Type (after treatment if treated)	Projected Water Supply (Report to the Extent Practicable)									
			2030		2035		2040		2045		2050 (opt)	
			Reasonably Available Volume	Total Entitlement	Reasonably Available Volume	Total Entitlement	Reasonably Available Volume	Total Entitlement	Reasonably Available Volume	Total Entitlement	Reasonably Available Volume	Total Entitlement
			(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)
Groundwater (not desalinated)	San Simeon Basin	Potable	349	799	345	799	370	799	445	799	472	799
Groundwater (not desalinated)	Santa Rosa Basin	Potable	150	218	150	218	150	218	150	218	150	218
Recycled Water	Water Reclamation Facility (indirect potable reuse)	Potable	21	150	21	150	21	150	21	150	21	150
Recycled Water	Saline Water Intrusion Barrier (existing use of percolation pond operation)	Non-Potable	482	482	482	482	456	456	431	431	458	458
Recycled Water	Landscape Irrigation (excludes golf courses)	Non-Potable	0	0	50	50	100	100	100	100	100	100
Subtotal Potable			520	1,167	516	1,167	541	1,167	616	1,167	643	1,167
Subtotal Non-Potable			482	482	532	532	556	556	531	531	558	558
Total			1,002	1,649	1,048	1,699	1,097	1,723	1,147	1,698	1,201	1,725

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NOTES for Table 6-9:
1. Santa Rosa Basin groundwater supplies are typically pumped to approximately 150 AF, with the remaining entitlement withheld in case of later-season operational needs. All normal-year potable demand balances will be met by groundwater pumped from the San Simeon Basin.
2. WRF supply is not typically needed in a normal year, but the facility should be run for training and operations for at least one month each year, yielding approximately 21 AF of supply, while the 150 AF from the WRF is at the upper end of realistic production levels.
3. The current volume of water for the seawater intrusion barrier is the amount of wastewater collected from the service area which is based on metered effluent data reported to the State Water Board in CCSD's annual self-monitoring report. In addition to indoor metered water use, this value includes infiltration and inflow into the collection system. For subsequent years, the volume of wastewater collected from the service area is estimated to grow 1% per year in line with increases in water consumption due to population growth, with the assumption that inflow and infiltration will remain constant. All wastewater collected is used as a seawater intrusion barrier via the existing wastewater percolation pond system, for CCSD's WRF (an indirect potable reuse project constructed in 2014) or for landscape irrigation with recycled water. Beginning in 2035, approximately 50 AF per year of no-net-increase in diversion from aquifer recycled water use is anticipated by converting existing CCSD customers from potable groundwater use to non-potable outdoor irrigation using recycled water. From 2040 onward, an additional 50 AF of outdoor irrigation with recycled water is estimated to meet future project demands. Landscape irrigation feasibility is based on the 2004 Recycled Water Master Plan and will be driven by available funding and potential downstream habitat concerns. Total recycled irrigation entitlements represent amount available for use.

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6.3 Energy Use

Water energy intensity is the total amount of energy, calculated on a whole-system basis, which is required for the use of a given amount of water in a specific location. For the purposes of the required water-energy reporting for UWMPs, Suppliers are expected to report on the energy intensity associated with water management processes under their operational control. Any energy embedded in water supplies by an upstream Supplier (such as a water wholesaler) is not intended to be included in the energy intensity reported. The energy intensity of water supplies within CCSD's operational control[41] for extraction, diversion, conveyance, placement into storage, treatment, and distribution for a one-year period is reported in the following tables.

The "Total Utility Approach," as defined by DWR in the 2025 UWMP Guidebook, is used to report water-related energy consumption data for CCSD's water system energy use, which includes treating, pumping, and distributing drinking water. Calendar year 2025 is selected as the one-year reporting period, and utility bills for the associated period are used as the source for energy consumption data. Total energy consumed by the CCSD water department in calendar year 2025, based on reported utility bills, was 392,361 kilowatt-hours (kWh). Table O-1B shows the energy consumed for every million gallons of water entering the distribution system.

The total volume of wastewater collected and treated by CCSD in 2025 was 482 AF. Table O-2 lists the wastewater department's total energy use in 2025 of 1,151,380 kWh. The energy intensity of the combined wastewater collection and treatment processes is 3,665 kWh/million gallons (MG).

[41] Operational control in this context is defined as authority over normal business operations at the operational level.

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Table O-1B. Recommended Energy Intensity – Total Utility Approach

Optional Submittal Table O-1B: Recommended Energy Reporting - SINGLE DELIVERY PRODUCT - TOTAL UTILITY APPROACH				
Water Delivery Product drop down list (If delivering more than one type of product recommend using Table O-1C)	Retail Potable Deliveries	**Only for Water Delivery Products Under the Urban Water Supplier's Operational Control**		
Start Date of Reporting Period	1/1/2025	**Sum of All Water Management Processes**	**Non-Consequential Hydropower**	
End Date of Reporting Period	12/31/2025			
Is upstream embedded energy in the values reported?	No			
Units of Measure for Water	AF	**Total Utility** See DWR NOTES	**Hydropower**	**Net Utility**
Volume of Water Entering Process		520	-	520
Energy Consumed (kWh)		392,361	-	392,361
Energy Intensity (kWh/vol. converted to MG)		2,316	-	2,316
DWR NOTES: Total Utility: The volume of water entered in the "Total Utility" column should equal the volume of water entering the distribution system (excluding recycled water); in most cases, this is the total volume calculated in UWMP Table 4-1: 2025 Actual Total Uses for Potable and Non-Potable Water. Note: if recycled water is included in your Submittal Table 4-1, you must exclude it from your volume in this table.				
Quantity of Self-Generated Renewable Energy				
0	kWh			
Data Quality (Estimate, Metered Data, Combination of Estimates and Metered Data)				
Metered Data				
Data Quality Narrative:				
Total energy usage from each electric meter associated with the potable water system was included.				
Narrative:				
The energy used in the process is used to extract water from groundwater wells, treat the water, move it from the well fields to the distribution system, and move it throughout the distribution system to customers' homes.				
NOTES: None.				

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Table O-2. Recommended Energy Reporting – Wastewater & Recycled Water

Optional Submittal Table O-2: Recommended Energy Reporting - WASTEWATER AND RECYCLED WATER					
Start Date of Reporting Period		Only for Water Delivery Products Under the Supplier's Operational Control			
End Date of Reporting Period					
Is upstream embedded energy in the values reported?	No	Water Management Process			
Units of Measure for Water	(AF)	Collection / Conveyance	Treatment	Discharge / Distribution	Total
Volume of Wastewater Entering Process (volume units selected above)		482	482	0	964
Wastewater Energy Consumed (kWh)		98408	1052972	0	1151380
Wastewater Energy Intensity (kWh/volume)		626.6	6704.3	0.0	3665.4
Volume of Recycled Water Entering Process (volume units selected above)		0	0	0	0
Recycled Water Energy Consumed (kWh)		0	0	0	0
Recycled Water Energy Intensity (kWh/volume converted to MG)		0.0	0.0	0.0	0.0
Quantity of Self-Generated Renewable Energy related to recycled water and wastewater operations					
0	kWh				
Data Quality (drop down)					
Metered Data					
Data Quality Narrative:					
The electricity usage data comes from the billed usage via the electric meters.					
Narrative:					
The energy used in the process powers the sewer lift stations and the wastewater treatment plant. Each sewer lift station has its own electric meter, and the wastewater treatment plant has a single electric meter. The power used for discharge/distribution is included in the “Treatment” category, as the electricity for treatment and for discharge/distribution is metered at a single meter.					
NOTES: None.					

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7 WATER SERVICE RELIABILITY AND DROUGHT RISK ASSESSMENT

Lay Description

This chapter assesses the reliability of CCSD's water supplies, with a specific focus on potential constraints, including water supply availability, water quality, and climate change. The intent of this chapter is to identify any potential constraints that could affect the reliability of CCSD's supply during a normal year, single dry year, and multiple dry year hydrological conditions.

As part of the water supply analysis, this chapter includes a water service reliability and risk assessment of the San Simeon and Santa Rosa basins to understand the effects of short-term and long-term water management decisions. This water supply analysis focuses on characterizing each water asset to assess reliability and risk. The more accurate and detailed this characterization is, the better prepared CCSD will be to manage its water assets, assess supply reliability, perform its Drought Risk Assessment (DRA), and prepare and implement its Water Shortage Contingency Plan (WSCP). In addition to the long-term reliability assessment, this chapter presents a DRA to evaluate CCSD's supply risks during a severe drought lasting the next five consecutive years (through 2030).

7.1 Introduction

This chapter describes the long-term reliability of CCSD's water supplies. Short-term reliability planning that may require immediate action, such as a drought or a catastrophic supply interruption, is addressed in the Water Shortage Contingency Plan (Chapter 8).

This analysis looks beyond CCSD's past experience and considers what could be reasonably foreseen in the future. The UWMP requires CCSD to develop a drought risk assessment (DRA) that evaluates its risk under a severe drought period lasting for the next five consecutive years. The DRA is an important element for selecting CCSD's Demand Management Measures (DMMs, Chapter 9) and for planning projects for a reliable water supply. The DRA and DMMs are part of CCSD's WSCP (Appendix H). Potential impacts from new development and climate change are long-term variables in CCSD's supply planning.

CCSD incorporates the current information to present its water supply and potential cutbacks – its water supply reliability – under the following hydrologic conditions:

- Normal hydrological conditions
- A single dry year
- Five consecutive years of drought

The analysis is conducted in five-year increments to project what conditions may look like for the next 25 years. Although it is not possible to predict specific future regulatory and development variables, to the extent they can be addressed, they are discussed in this chapter. The water supply for Cambria is vulnerable to drought because it relies solely on groundwater in the Santa Rosa and San Simeon basins, which have limited storage capacity. Storage is small relative to average annual groundwater pumping, and during dry years, CCSD must rely on the limited storage for a longer period.

The 2014 drought underscored this vulnerability when projected supplies fell short of demand, prompting the CCSD Board to declare a drought emergency. The 2014 emergency declaration led to swift action by CCSD, including mandatory conservation measures, the restoration of CCSD's lower Santa Rosa Well SR3 and its iron and manganese removal treatment filter, and the completion of the WRF (section 6.2.2). With this background in mind, the following sections describe CCSD's water supply reliability and drought planning, groundwater supply reliability, and related drought analyses and actions.

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Another notable dry year was the relatively recent 2021 year, with below-average rainfall and an earlier-than-average cessation of San Simeon Creek flow, coupled with increased demand from higher-than-usual occupancy in Cambria during the COVID-19 pandemic.

7.2 Water Service Reliability Assessment

Every Supplier is required to conduct a Water Service Reliability Assessment projection for a normal year, a single dry year, and five consecutive dry years. CCSD has completed an assessment of the water service reliability based on its current water supplies. The Water Service Reliability Assessment considered hydrological variability, climate conditions, and other factors that have the potential to affect CCSD's ability to meet its water demands.

"Reliability" of a water source is defined as the percentage of a full contractual annual amount that was historically delivered or is modeled to be delivered in the future. Assessment of water supply reliability is complex and depends on several factors, including the number of water sources, regulatory and legal constraints, climate change, and expected growth. Given that CCSD relies on supplies from the San Simeon and Santa Rosa groundwater basins, a discussion about the potential impacts on those basins is warranted and presented below.

As noted in Section 6.2.2, CCSD receives all its water as groundwater pumped from the Santa Rosa and San Simeon groundwater basins. The reliability of both groundwater basins and their supplies is analyzed in Section 7.2. At this time, and at the expected level of consumption analyzed here, the Santa Rosa and San Simeon groundwater basins, with the San Simeon basin supplemented with the WRF during exceptional drought conditions, provide sufficient supply to CCSD to meet its full demand (i.e., guarantee 100% reliability of supply).

A basis for the water year data for CCSD's two water sources is presented in Table 7-1. Base years were selected by identifying the year of each water year type within the historical sequence with reliability most closely matching the average reliability of the Water Year Type over the historical sequence.

7.2.1 Service Reliability – Constraints on Water Sources

The amount of water available for CCSD is constrained by climate, hydrology, facilities, and the institutional parameters that allocate the water supply. Climate change may affect precipitation hydrology (the timing, amount, and rate of precipitation), which in turn may affect the amount and timing of water availability in the future, given the constraints of the groundwater basins.

Constraints on CCSD supplies are discussed in more detail in Chapters 3, 4, and 6. The main long-term constraints on supplies are due to climate change, facilities, and regulatory changes. Key factors impacting water supply for both groundwater basins include:

- Changes in precipitation patterns, such as the timing, amount, intensity, and duration of rainfall.
- Changes in water quality as a result of changes in precipitation patterns and storage.
- Changes in regulatory requirements mandating additional water be reserved for environmental use.
- Regulatory requirement to cease pumping from the Santa Rosa aquifer when the monitoring well levels in Windsor Bridge East and Windsor Bridge West fall below 3.0 feet above mean sea level.

CCSD has historically relied upon its two local coastal groundwater aquifers for its water supply. The relatively small storage capacity in these aquifers makes them dependent on seasonal rain for recharge. When such rainfall occurs over only a portion of the wet season or in low amounts, the aquifers dip in elevation to the point that the threat of seawater intrusion, subsidence, and a reversal in the hydraulic gradient between percolated wastewater and potable wells (the 9P2-SS4 Gradient) becomes a key concern. The WRF was designed to address the gradient concern. This was the case in 2013-2014, when weather patterns steered the storm track away

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from and around the central coast, resulting in annual rainfall well below average. A different situation with similar effects on groundwater quantity occurred in 2021, when a late January storm brought almost half of the seasonal rainfall in a single 36-hour period, leaving little time for it to percolate into the ground.

As in many areas throughout the state, CCSD's water is a limited, shared resource among municipal, agricultural, and environmental needs. The area's two creeks have been inhabited by listed species, such as the south-central coast steelhead, tidewater goby, southwestern pond turtle, and California red-legged frog. Therefore, compliance with the Endangered Species Act is a key driver in decision-making about the use of coastal streams as water resources. Offshore concerns include the area sharing common ground with the southern extent of the federal Monterey Bay National Marine Sanctuary and the California State Marine Parks. Agricultural operations along the two coastal valleys include cattle ranching, truck crops, avocado orchards, and vineyards. Municipal water needs include providing service to visitor-serving uses such as hotels, motels, and campgrounds, as well as residential needs.

CCSD has evaluated numerous potential sources of additional water, including pipelines to other sources, reservoirs, groundwater storage, and desalination. All those alternatives analyzed proved to be too expensive or otherwise infeasible.

The community's isolated location along the coast and its distance to regional water supplies has made it difficult to connect to those supplies, like the State Water Project and the Nacimiento Water Project. For many years, CCSD pursued seawater desalination as a means to diversify and secure a more reliable supply source. However, the regulatory climate (including denials by state agencies), the area's environmental sensitivity, and concerns about growth-inducing effects associated with seawater desalination have, along with costs, proven to be a formidable deterrent to completing a seawater desalination project. During the 2014 drought, when supplies were limited, CCSD considered using a brackish water well at its wastewater effluent percolation ponds. This led to the design and construction of the WRF, which met indirect potable reuse regulations for recycled water, allowing the highly treated brackish water to be reinjected into the San Simeon Creek aquifer near CCSD's potable well field. In addition to the WRF, CCSD also restored a well along the lower reach of Santa Rosa Creek (Well SR3), which allowed access to deeper groundwater in this portion of the aquifer.

7.2.2 Year Type Characterization

Scenarios for analysis of supply reliability are based on deliveries in historic water years characterized as "normal" or "average" water years, "single dry" water years, and combinations of these into "consecutive dry water years."

CCSD categorizes water years as dry or normal based on the duration of streamflow at Palmer Flats and the date flow ceases, as well as the groundwater levels measured as a percent of normal at the beginning of April, when the vast majority of the wet season rain has fallen. Rainfall totals, rate, and timing during the season are the primary drivers of when streamflow ceases, with consistent moderate-to-low rainfall rates, measured in inches per day and occurring throughout the wet season—particularly late in the season—having an outsized effect on streamflow duration.

Per the UWMP Guidebook 2025, the water service reliability assessment includes three unique year types:

- A normal hydrologic year represents the water supplies available under normal conditions; this could be an average range of years or a single representative year.
- A single dry year represents the lowest available water supply.
- A five-year consecutive drought for the DRA is the driest five-year historical sequence for the water supply (Water Code Section 10612). For the Water Service Reliability Assessment, CCSD is using 2012 as its base year. As recommended by DWR, CCSD uses the five-year sequence 2026–2030 for its Water Service Reliability Assessment. Note that CCSD derived the five-year consecutive drought based on the

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driest five-year sequence in the hydrologic record. Water Code Section 10612 requires this supply condition.

7.2.3 Types of Years

DWR uses the terms “normal” and “average” interchangeably when referring to the water year type. DWR requires, as part of the water service reliability assessment in the DRA, that water Suppliers include three types of years with specific hydrologic conditions. These include:

- Normal Year – This condition represents the normal/average water supplies from the two aquifer systems (San Simeon Creek Basin and Santa Rosa Creek Basin).
- Single Dry Year – The single dry year represents the year with the lowest water supply available from the two aquifer systems to CCSD.
- Five-Consecutive-Year Drought – The five-consecutive year drought for the DRA is the driest five-year historical sequence for the water supply (Water Code Section 10612).

Recharge into CCSD’s local groundwater aquifers is dominated by net stream percolation. In most years, stream flow far exceeds the amount required to replenish the aquifer storage depleted during the previous dry season (both streams are intermittent and cease flowing for several months in summer and fall). Wet years do not provide additional storage reserves because once the basins are full, any additional stream recharge is rejected. This rejection also happens when rainfall occurs in high-intensity events, as the resulting runoff and streamflow do not have time to percolate into the aquifer. As a result, the amount of groundwater in storage at the beginning of the dry season is essentially the same over a broad range of hydrologic year types, ranging from slightly dry to wet.

Droughts in the two aquifer systems are very threshold dependent. For progressively smaller amounts of annual rainfall and stream flow, the annual amount of available groundwater remains about the same until the point at which winter stream flow is inadequate to fully replenish the basins. Statistical analysis of San Luis Obispo County rainfall and local stream discharge data was combined with groundwater modeling to determine that incomplete recharge occurs when annual rainfall is less than 10.31-10.95 inches, and the average recurrence interval of rainfall less than that amount is approximately 18-25 years (Konyenburg & Yates, 1998). For even smaller amounts of annual rainfall, water supply conditions worsen up to the point at which there is no stream flow (and no recharge) at all. Beyond that point, further decreases in rainfall do not worsen water supply conditions. Zero streamflow occurs with 9.78-9.85 inches of annual rainfall (slightly different between the two basins), corresponding to an average recurrence interval of 31-32 years.

Rainfall increases substantially with elevation in the San Simeon and Santa Rosa watersheds. This is due to the Santa Lucia Mountains being east of Cambria, and the predominantly inland, west-to-east direction of storm paths off the Pacific. Because storm clouds hold less moisture as they increase in elevation, precipitation totals will typically increase with rising elevations along the area’s western-facing mountain slopes. The Rocky Butte weather station data was also compared to the San Luis Obispo County Santa Rosa at Main rainfall gage. The Rocky Butte station is at the top of the San Simeon Creek watershed, at the top of the Santa Lucia Mountains, and the Santa Rosa at Main station is located within the CCSD services area boundary at the Corner of Santa Rosa Creek Road and Main Street in Cambria.

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Figure 7-1. Rainfall Totals from Santa Rosa at Main Station[42]

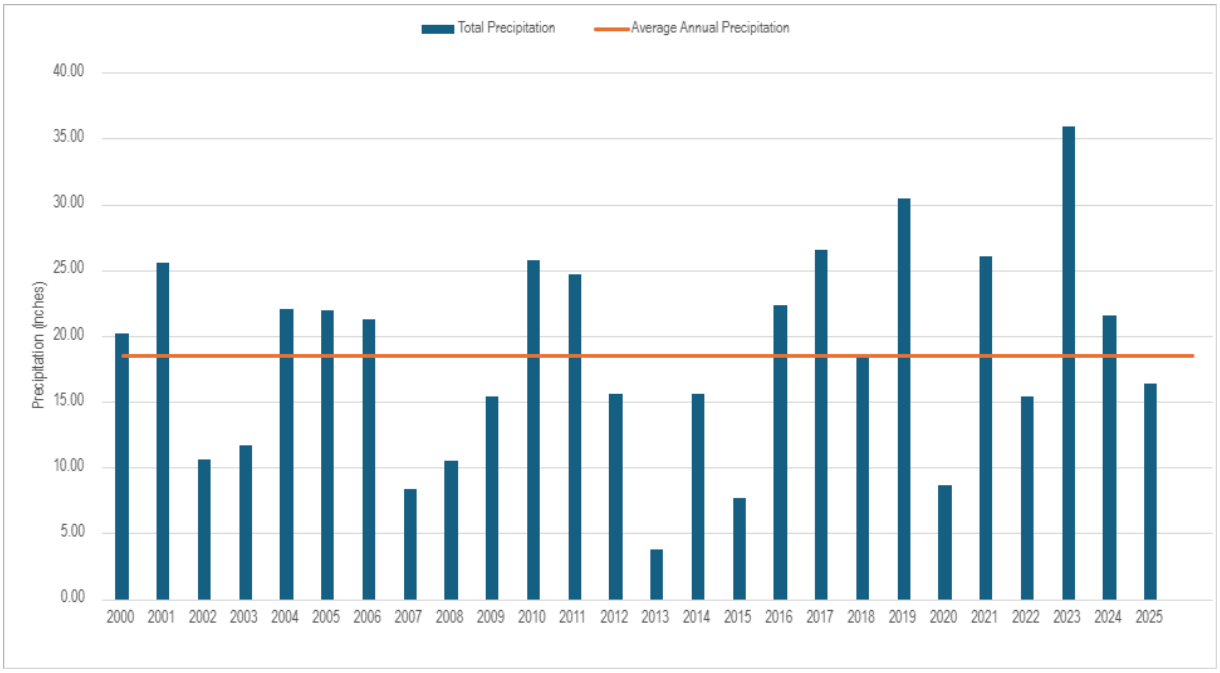
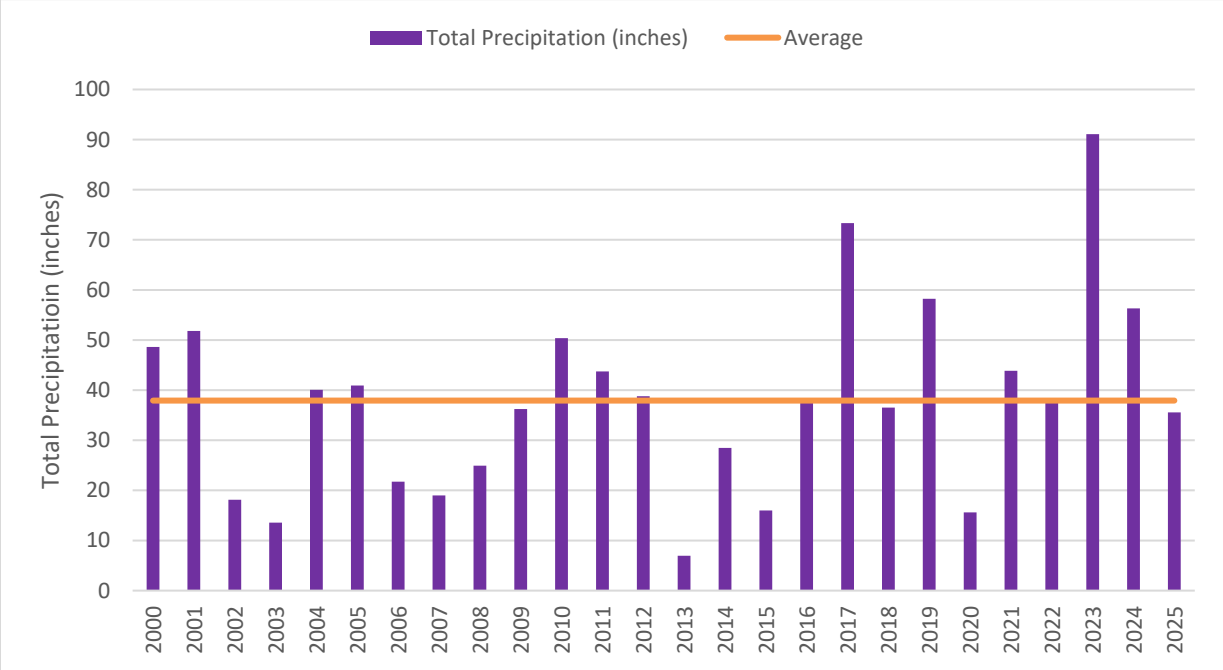


Figure 7-2. Rainfall Totals from Rocky Butte[43]



[42] San Luis Obispo County Public Works Department, Santa Rosa at Main Precipitation Data – Site 717: https://www.slocounty.ca.gov/departments/public-works/forms-documents/water-resources/monthly-precipitation-reports/santa-rosa-at-main-precipitation-data-site-717

[43] San Luis Obispo County Public Works Department, Rocky Butte Precipitation Data – Site 703: https://www.slocounty.ca.gov/departments/public-works/forms-documents/water-resources/monthly-precipitation-reports/rocky-butte-precipitation-data-site-703

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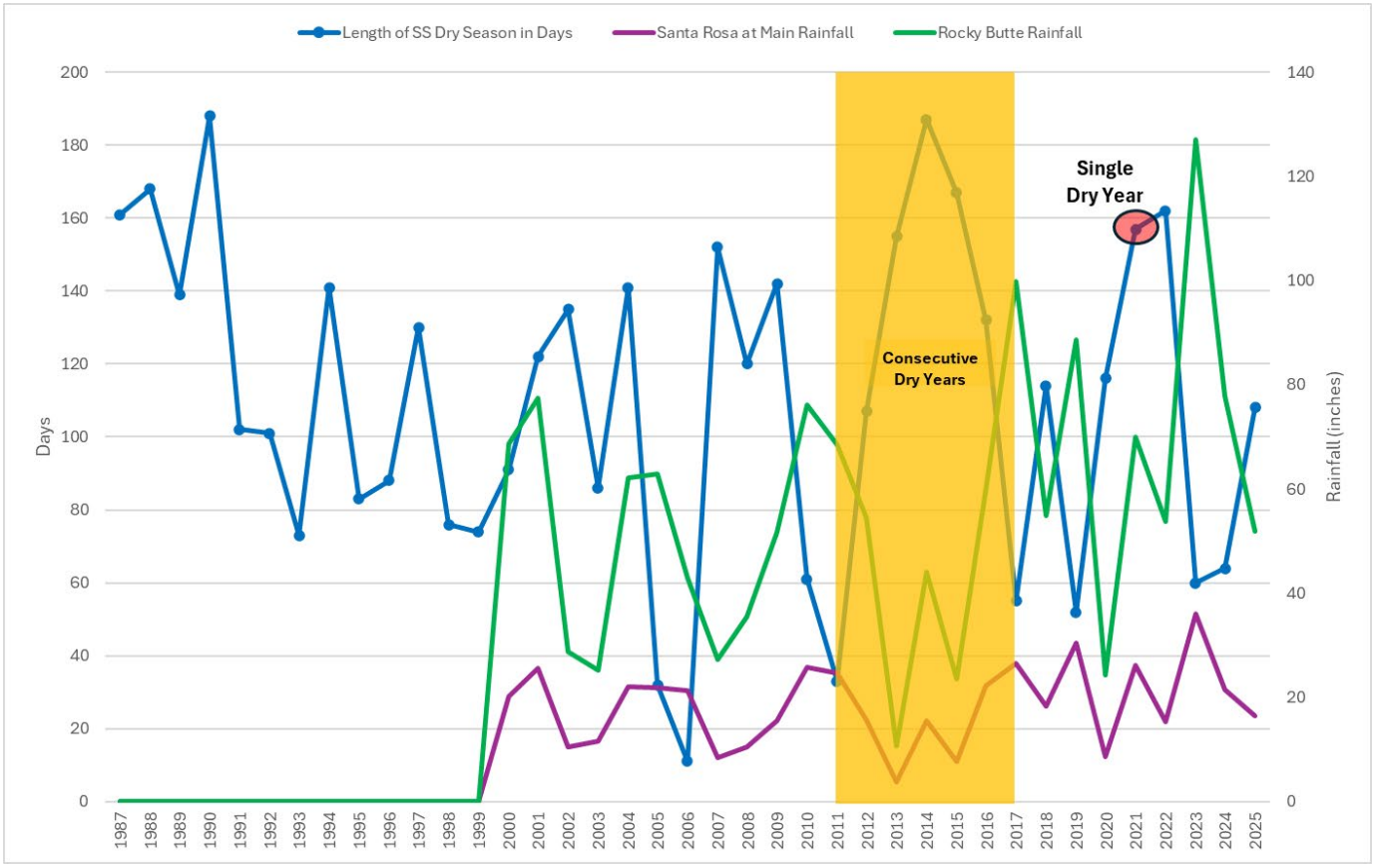
CCSD production limits are tied to wet- and dry-season production periods. Water Rights Licenses issued by the State Water Board to CCSD allow a maximum of 799 AF annually from the San Simeon aquifer, while limiting dry season pumping to 370 AF maximum from the time that the creek ceases flow at the Palmer Flats gauging station until October 31. The Santa Rosa Creek State Water Board Water Rights Licenses limit Santa Rosa aquifer pumping to 218 AF annually, with a dry season limit of 155.3 AF from May 1 to October 31. Because of its Water Rights Licenses, CCSD tracks the length of the dry season from the time that the creek ceases flow at the Palmer Flats gauging station until October 31 each year. The length of the dry season was used to identify the base years described in this chapter.

The base years were developed using the historical length of the San Simeon dry season from 1987-2025, as shown in Figure 7-3. A normal or average year represents the average water supply available to the Supplier. The average length of a dry season is 117 days, corresponding to a dry season starting near the beginning of July, as occurred in 2012.

The single dry year is the year that represents the lowest water supply available to the Supplier. Long dry seasons occurred in 1990 (188 days), 2014 (187 days), and 2021 (157 days). The single-dry year selected was 2021 due to it being a relatively recent year with below-average rainfall and earlier-than-average cessation of San Simeon Creek flow, coupled with increased demand from higher-than-usual occupancy in Cambria during the COVID-19 pandemic.

The five-consecutive-year drought is defined as the driest five-year historical sequence for the Supplier (CWC Section 10612). For consecutive dry years, the maximum five-year average dry season length was used, which was 2012-2016. The base years are summarized in Table 7-1.

Figure 7-3. Length of Dry Season



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The hydrologic consequences of a year with zero stream recharge were simulated by the United States Geological Survey (USGS) using groundwater flow models of the two aquifers (Yates and Van Konyenburg, 1998). Groundwater levels did not recover at all during the winter without stream flow because rainfall recharge was also zero under those circumstances. Municipal and agricultural pumping were assumed to continue as usual during the second dry season, and groundwater levels continued to decline. In both basins, declines in water levels and storage during the second dry season were greatest near the upper ends of the valleys because groundwater is continually draining down-valley, with or without municipal pumping. During the second dry season, groundwater levels declined an additional 20 feet near the upstream end of the valley, an additional 15 feet near the municipal well field (to 13 feet below sea level), and an additional 6 feet near the State Park campground (to 3 feet below sea level). The two groundwater basins differ with respect to the three major impacts of excessive water-level declines: seawater intrusion, subsidence, and depletion of base stream flow and water level in the coastal lagoons.

Simulation results indicated that there would be seawater intrusion in the San Simeon basin, but not in the Santa Rosa basin. During the year prior to the winter without recharge, there were 320 AFY of groundwater outflow to the ocean. During the subsequent year, this reversed to 48 AFY of seawater intrusion. Additional simulations were not completed to estimate the pumping reduction needed to eliminate seawater intrusion. Subsidence would probably occur in the Santa Rosa basin during the dry season following a winter without recharge, but the risk is probably smaller in the San Simeon basin. Subsidence occurred in the Santa Rosa basin during the 1976-1977 drought, when groundwater levels in Cambria dropped to 14-20 feet below sea level (Cleveland, 1980). If a basin contains compressible sediments, subsidence typically occurs when groundwater levels fall substantially below their historical minimum levels, and simulated groundwater levels in Cambria were 25 feet below sea level by the end of the second dry season. Dry season water level declines are approximately proportional to the total amount of dry-season pumping.

Sources for Water Data

CCSD records the length of the dry season as part of its compliance monitoring. The length of the dry season was used to identify the base years in the reliability assessment. Supply availability for the different base year types was estimated based on historical production values for those years, as shown in Table 7-1.

Normal Year

This condition represents the water supplies a Supplier considers available during normal conditions. This could be a single year or an average range of years that most closely represents the average water supply available to the Supplier. In the 2025 Guidebook and this UWMP, the terms average and normal are used interchangeably when addressing the water year type.

Single Dry Year

The single dry year is the year that represents the lowest water supply available to the agency.

Five-Consecutive-Year-Drought

The five-consecutive-year drought for the DRA would be the driest five-year historical sequence for the Supplier (Water Code Section 10612). For the Water Service Reliability Assessment, Suppliers are encouraged to use the same five-year sequence. However, they may choose to use a different five-year dry period, such as the lowest average water supply available to the Supplier over five years. Suppliers are encouraged to characterize the five-year drought in a manner that is best suited for understanding and managing their water service reliability. Multiple dry years are defined as five or more consecutive dry years with minimal rainfall within a period of average precipitation.

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The multiple dry year period is the period that represents the lowest average water supply availability to the agency, generally considered to be the lowest average runoff for a consecutive multiple year period (five years or more) for a watershed since 1903.

Table 7-1 shows the groundwater supply reliability for the defined water year scenarios. Groundwater dry-year supplies are based on pumping during historical dry years, with supplemental WRF supply from 21 AF to 150 AF as needed. Recycled water supplies can meet irrigation demands up to 100 AF in all year types once fully developed in 2035. WSCP supply augmentation and use reduction savings benefits are available as presented in Chapter 8 but are not needed in any dry year projection scenarios. The seawater intrusion barrier use and supply will be the amount of wastewater collected from the service area (based on metered effluent data reported to the State Water Board in CCSD's annual self-monitoring report). In addition to indoor metered water use, this value includes infiltration and inflow into the collection system.

Table 7-1. Basis of Water Year Data (Reliability Assessment)

OPTIONAL Submittal Table 7-1. Retail: Basis of Water Year Data (Reliability Assessment) - Groundwater			
Year Type	**Base Year**	**Available Supplies if Year Type Repeats**	
		Quantification of available supplies is provided in this table as either volume only, percent only, or both.	
		Volume Available	**% of Average Supply**
		MG	
Average Year	2012	725	100%
Single-Dry Year	2021	538	74%
Consecutive Dry Years 1st Year	2012	725	100%
Consecutive Dry Years 2nd Year	2013	733	101%
Consecutive Dry Years 3rd Year	2014	467	64%
Consecutive Dry Years 4th Year	2015*	467	64%
Consecutive Dry Years 5th Year	2016*	494	68%

NOTES: Groundwater dry year supplies are based on operational pumping in historical single and multiple dry years. The 2012 to 2016 period was used for the multiple dry years because it was the most recent period of three or more consecutive dry years. It is likely that future multiple dry-year groundwater supplies would exceed the volume pumped in 2014-2016 due to the availability of the WRF and the extreme water conservation measures the community implemented, the latter of which may or may not be implemented (or implemented to a lesser degree) in future droughts. WRF supplies are available in all year types up to approximately 150 AF. Recycled water supplies can meet demands up to 100 AF in all year types once fully developed in 2035. This table does not include WRF supplies in normal and dry years, which reasonably range from 21 AF to 150 AF. Year 2021 was chosen as the single-dry year due to it being a relatively recent year with below-average rainfall and earlier-than-average cessation of San Simeon Creek flow, coupled with increased demand from higher-than-usual occupancy in Cambria during the COVID-19 pandemic. Years 2014 and 2015 were not used as the lowest historic single years of supply since their matching low volumes don't necessarily represent what groundwater amount was available, but rather how much was used. In 2014 and 2015, after multiple dry years, there was significant conservation conducted by the community and the demand response was greatly reduced as compared to 2012 and 2013; 2014 did not reveal less groundwater supply availability. *WRF supply was first available in 2015 and was used in dry years 2015 and 2016, reducing the groundwater pumping needed to meet demands.

7.2.4 Water Service Reliability Assessment

This section describes the supply and demand projections for normal, single-dry, and consecutive dry water years. The supply totals are from Table 6-9, which includes production from the CCSD potable wells, flows from

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the WRF, percolated treated wastewater used for a seawater intrusion barrier, and future recycled water that may be used for outdoor irrigation. The demand totals assume the current drought-reduced production will increase slightly but will not return to pre-drought levels. Demand totals include CCSD customer potable demands, percolated treated wastewater used for a seawater intrusion barrier, and the recycled water that will be used for irrigation. The WRF is designed as a gradient control measure to protect the San Simeon aquifer and maximize its reliability. Per the application submitted for the WRF's regular CDP, an estimated 21 AF of WRF production is estimated to occur during a normal year, which is based on a nine-hour daily runtime up to four working days per week for a minimum of eight weeks per year at a product water reinjection rate of 400 gpm. Should the WRF operate continuously over a six-month dry season, its theoretical total production would be approximately 250 AFY; however, the 150 AF from the WRF is at the upper end of realistic production levels and will be the assumed maximum annual volume of supply.

Water Supply Reliability Assessment Supply and Demand Comparison

The Water Service Reliability Assessment combines the details of CCSD's water use analysis in Chapter 4 and its water supply analysis in Chapter 6. A comparison of supplies and demands provides CCSD with a complete picture of both its short-term and long-term water service reliability.

Water Service Reliability – Normal Year

Table 7-2 shows the normal year supply-and-use comparison. CCSD's supply is projected to meet the anticipated demand. CCSD will also be able to operate within the pumping limits described in its Water Rights License based on a dry season length that corresponds with a normal year.

In Table 7-2, DWR requests Suppliers to provide their normal year supply and demand for comparison, in five-year increments through at least 2045.

Table 7-2. Normal Year Supply and Demand Comparison

Submittal Table 7-2 Retail: Normal Year Supply and Use Comparison - Water Code Section 10635 (a)					
	2030	2035	2040	2045	2050 (Opt)
	(AF)	(AF)	(AF)	(AF)	(AF)
Supply totals *(from Table 6-9)*	1,002	1,048	1,097	1,147	1,201
Use totals *(from Table 4-2)*	1,002	1,048	1,097	1,147	1,201
Surplus/(shortfall)	0	0	0	0	0
NOTES: 1. Groundwater supplies are pumped to meet demand, with the supplemental WRF supply ranging from 21 AF (to keep WRF as an effective operational supply) to 150 AF (a reasonable available volume from the WRF) to make up for any shortfall. 2. Recycled water supplies can meet irrigation demands up to 100 AF in all year types once fully developed in 2035. 3. The seawater intrusion barrier use and supply will be the amount of wastewater collected from the service area (based on metered effluent data reported to the State Water Board in CCSD's annual self-monitoring report). In addition to indoor metered water use, this value includes infiltration and inflow into the collection system. 4. WSCP supply augmentation and use reduction savings benefits are available as presented in Chapter 8 but are not needed in this projection scenario.					

Water Service Reliability – Single Dry Year

Comparison of the projected single dry year water supply to the projected single dry year water use over the next 25 years in five-year increments is shown in Table 7-3. The supply totals are based on the Combined Regional Supply Reliability of 100% as described in Section 7.4.1. The supply totals include an additional 150

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AF from the WRF, which will need to be operated to meet projected demands under the single-dry-year scenario. The WRF operation will also be combined with conservation measures to help narrow the gap between supply and demand. To be conservative, the demand totals below assume there would be no reduction in customer demand during a single dry year period.

Table 7-3. Single Dry Year Supply and Demand Comparison

Submittal Table 7-3 Retail: Single Dry-Year Supply and Use Comparison - Water Code Section 10635 (a)					
	2030	2035	2040	2045	2050 (Opt)
	(AF)	(AF)	(AF)	(AF)	(AF)
Supply totals	1,002	1,048	1,097	1,147	1,201
Use totals	1,002	1,048	1,097	1,147	1,201
Surplus/(shortfall)	0	0	0	0	0

NOTES:
1. Groundwater single dry year supply based on pumping in the historical dry year 2021, with supplemental WRF supply from 21 AF up to 150 AF as needed. The available supply in 2021 was 538 AF, which exceeds the anticipated 2030 demand of 520 AF.
2. Recycled water supplies can meet irrigation demands up to 100 AF in all year types once fully developed in 2035.
3. The seawater intrusion barrier use and supply will be the amount of wastewater collected from the service area (based on metered effluent data reported to the State Water Board in CCSD's annual self-monitoring report).
4. WSCP supply augmentation and use reduction savings benefits are available as presented in Chapter 8 but are not needed in this dry year projection scenario.

Water Service Reliability – Five Consecutive Dry Years

Comparison of the projected consecutive dry-year water supplies to the projected multiple dry-year water use over the next 20 years, in five-year increments, is shown in Table 7-4. The supply includes up to 150 AF from the WRF, which will need to be operated to meet projected demands starting in year three of the consecutive dry-year scenario as outlined here. The WRF operation will also be combined with conservation measures to help narrow the gap between supply and demand while limiting stressors on the groundwater aquifers by reducing production. To be conservative, the demand totals below assume no reduction in customer demand during the consecutive dry-year scenario. Based on projected water supply and demand over the next 25 years, CCSD has supply capabilities sufficient to meet expected demand through 2050 under single-dry-year and multiple-dry-year conditions, assuming the WRF is in operation. This reliability will be further established when CCSD completes the already-in-progress regular coastal development permitting process for the WRF, which will allow the WRF to be operated in a proactive manner to protect the aquifer. Additionally, the conservation and demand-reduction measures described in the Water Shortage Contingency Plan (Chapter 8) and Chapter 9 will further enhance reliability by providing additional reductions in future demand beyond those used in this section's analysis.

Comparison of the projected multiple dry-year water supplies to the projected multiple dry-year water use over the next 20 years in five-year increments is shown in Table 7-4 below. The supply totals are based upon the Combined Regional Supply Reliability of 100% as described in Section 7.4.1.

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Table 7-4. Multiple Dry Years Supply and Demand Comparison

Submittal Table 7-4: Multiple Dry Year Supply & Use Comparison - Water Code Section 10635(a)						
		2030	2035	2040	2045	2050 (Opt)
		(AF)	(AF)	(AF)	(AF)	(AF)
First year	Supply totals	1,002	1,048	1,097	1,147	1,201
	Use totals	1,002	1,048	1,097	1,147	1,201
	Surplus/(shortfall)	0	0	0	0	0
Second year	Supply totals	1,002	1,048	1,097	1,147	1,201
	Use totals	1,002	1,048	1,097	1,147	1,201
	Surplus/(shortfall)	0	0	0	0	0
Third year	Supply totals	1,002	1,048	1,097	1,147	1,201
	Use totals	1,002	1,048	1,097	1,147	1,201
	Surplus/(shortfall)	0	0	0	0	0
Fourth year	Supply totals	1,002	1,048	1,097	1,147	1,201
	Use totals	1,002	1,048	1,097	1,147	1,201
	Surplus/(shortfall)	0	0	0	0	0
Fifth year	Supply totals	1,002	1,048	1,097	1,147	1,201
	Use totals	1,002	1,048	1,097	1,147	1,201
	Surplus/(shortfall)	0	0	0	0	0

NOTES:
1. Groundwater multiple dry year supplies based on pumping in the historical dry year 2021, as well as 2012 and 2013 pumping volumes. The anticipated demand is shown and the supply available during single and multiple dry years exceeds that number.
2. Supplemental WRF supply ranging from 21 AF up to 150 AF as needed. Pumping and WRF supplies don't exceed projected potable use.
3. Recycled water supplies can meet irrigation demands up to 100 AF in all year types once fully developed in 2035.
4. The seawater intrusion barrier use and supply will be the amount of wastewater collected from the service area (based on metered effluent data reported to the State Water Board in CCSD's annual self-monitoring report).
5. WSCP supply augmentation and use reduction savings benefits are available as presented in Chapter 8 but are not needed in this dry year projection scenario.

7.2.5 Description of Management Tools and Options

As a Supplier of potable water in the Cambria area, CCSD continues to promote water conservation and water-use efficiency to make the most efficient use of the existing local groundwater supplies. CCSD also plans to maximize its use of local resources by increasing recycled water use and enhancing groundwater management. Furthermore, CCSD's projected supply exactly matches expected water use, since groundwater wells would be pumped only as needed to meet demand, even though the groundwater supply could produce more water. Existing and planned water management tools and options for CCSD's service area that also result in minimizing the need to import water are described in the following sections.

Water Loss Program: CCSD routinely monitors its water production and consumption and investigates unaccounted for water to determine water loss. Staff have also attended training offered by the California-Nevada Section of the AWWA on water-loss auditing, in response to SB 555, which was passed by the State in 2015. Per the results of previous audits, CCSD will continuously improve metering and documentation for authorized non-metered water use (e.g., assigning construction hydrants to fire trucks for use in non-emergency

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tasks such as hydrant testing) as well as estimating and documenting losses from leak repairs. CCSD field staff routinely check for and respond to water leaks and are on-call 24/7 to address them immediately and take corrective action. Water Department staff track leak repairs and associated losses using CCSD's geographic information system, Diamond Maps.

Implementation of Demand Management Measures During Dry Periods: During dry periods, water reduction methods will be applied to the public, which in turn will reduce CCSD's overall demands. CCSD's specific demand management measures are further discussed in Chapter 9; CCSD's dry year water shortage reduction measures are discussed in Chapter 8, the WSCP.

7.3 Drought Risk Assessment (DRA)

CWC Section 10635(b) requires every urban water supplier (Supplier) to include, as part of its UWMP, a drought risk assessment (DRA) for its water service area to incorporate in the development of the DMMs and water supply projects and programs. The DRA analysis allows Suppliers to consider how to manage their water supplies during stressed hydrologic conditions, considering variations in demand, and supports the evaluation of the Supplier's WSCP.

In addition to the long-term Water Service Reliability Assessment presented earlier, the DRA evaluates CCSD's supply risks under a severe drought period lasting the next five consecutive years after the assessment is completed (i.e., from 2026 through 2030). The DRA is intended to inform the demand management measures and water supply projects and programs to be included in the UWMP (see Chapters 8 and 9). The DRA is a specific planning action that assumes CCSD will experience drought over the next five years and addresses CCSD's water supply reliability under presumed drought conditions.

Water Code Section 10612 requires the DRA to be based on the driest five-year historic sequence of CCSD's water supply. However, Water Code Section 10635 also requires that the analysis consider plausible changes in projected supplies and demands due to climate change, anticipated regulatory changes, and other locally applicable criteria.

The following sections describe CCSD's methodology and results of its DRA.

7.3.1 DRA Data, Methods, and Basis for Water Shortage Condition

The DRA is based on the driest five-year historic sequence experienced by CCSD as required by CWC Section 10612. The CWC Section 10635 requires the analysis to consider plausible changes in projected supplies and demands due to climate change, anticipated regulatory changes, and other locally applicable criteria. For CCSD, the years 2012 to 2016 represent the driest five consecutive years, based on the length of the San Simeon dry season and groundwater levels in the San Simeon basin. CCSD used this five-year historical sequence to complete its DRA. CCSD has estimated unconstrained water demand for the five-year period 2026-2030. Unconstrained water demand is the expected water use in the absence of drought water-use restrictions. The characteristic five-year water demand is described in Section 4.2. The available potable water supplies assumed in the DRA are based upon the same methodology and assumptions used for the long-term Water Service Reliability Assessment (Section 7.2). The DRA shows that there is no expected shortfall in supply from either groundwater basin in the five-year multi-dry scenario.

CCSD leverages data collected through its management tools, as described previously and listed below.

- CCSD uses AMI meters to detect leaks and will notify customers if a leak is detected.
- CCSD compares water production and consumption totals to track unaccounted for water.
- CCSD implemented a points bank to offset new water demands. Points are offset by implementing water conservation measures.

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As part of normal operations, CCSD also tracks groundwater levels at the San Simeon Well Field, Santa Rosa Well Field, and monitoring wells, and flow at Palmer Flats under its existing permits.

7.3.2 DRA Individual Water Source Reliability

CCSD demand totals assume the current five-year demand average will remain static. This assumption is based on the current water connection moratorium and the significant amount of demand hardening, both of which are expected to keep total production from markedly varying. The demand totals do not include recycled water for irrigation, as that program is not anticipated to start until 2035. The demand totals do include percolated wastewater used as a seawater intrusion barrier. The WRF supply is included in the DRA supply totals to offset any difference between the expected groundwater supplies (based on historical dry-year groundwater draws) and demand, should the conditions reach the emergency conditions of the current permit.

7.3.3 DRA Total Water Supply and Use Comparison

CCSD submitted DWR Submittal Table 7-5 in the WUE portal to be in compliance with the 2025 UWMP requirements. CCSD's DRA may be revised outside of its 2025 UWMP.

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Table 7-5. (DWR Submittal Table 7-5) Five-Year Drought Risk Assessment

Submittal Table 7-5 Retail: Five-Year Drought Risk Assessment - Water Code Section 10635(b)(3)		
2026		**Total**
Total Water Use	(AF)	1,002
Total Supplies	(AF)	1,002
Surplus/Shortfall w/o WSCP Action		0
2027		**Total**
Total Water Use	(AF)	1,002
Total Supplies	(AF)	1,002
Surplus/Shortfall w/o WSCP Action		0
2028		**Total**
Total Water Use	(AF)	1,002
Total Supplies	(AF)	1,002
Surplus/Shortfall w/o WSCP Action		0
2029		**Total**
Total Water Use	(AF)	1,002
Total Supplies	(AF)	1,002
Surplus/Shortfall w/o WSCP Action		0
2030		**Total**
Total Water Use	(AF)	1,002
Total Supplies	(AF)	1,002
Surplus/Shortfall w/o WSCP Action		0

NOTES:
1. Use based on negligible projected growth from 2025 through 2030 and a subsequent conservative 1% annual growth based on infill and available parcel considerations, and the ability of the aquifer to support growth.
2. Groundwater multiple dry year supplies based on pumping in the historical dry year 2021, as well as 2012 and 2013 pumping volumes.
3. Supplemental WRF supply ranging from 21 AF up to 150 AF as needed. Pumping and WRF supplies don't exceed projected potable use.
4. Recycled water supplies can meet irrigation demands up to 100 AF in all year types once fully developed in 2035.
5. The seawater intrusion barrier use and supply will be the amount of wastewater collected from the service area (based on metered wastewater treatment plant effluent data reported to the State Water Board in CCSD's annual self-monitoring report).
6. WSCP supply augmentation and use reduction savings benefits are available as presented in Chapter 8 but are not needed in this dry year projection scenario.

7.4 Regional Supply Reliability

This section describes measures to improve supply reliability, combined regional supply reliability, and water quality impacts on supply reliability.

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7.4.1 Measures to Improve Supply Reliability

Measures CCSD is taking to improve supply reliability are presented in section 6.2.9. Since CCSD's only current source of water is groundwater, CCSD is committed to promoting water-use efficiency (discussed in Chapters 8 and 9) and to utilizing the WRF to improve the San Simeon aquifer reliability as described previously in this chapter.

7.4.2 Combined Regional Supply Reliability

Full allocations from each CCSD supply are presented in Table 6-9. To combine the reliability of the sources, reliabilities are converted to expected deliveries, combined, and compared to the expected normal year delivery amount from the supplies as presented in Table 7-1. CCSD concluded that if projected supplies are developed as planned, no shortages are anticipated within CCSD's service area under normal year, single dry year, or multiple dry water years through 2050 (i.e., the combined reliability of CCSD's water sources is 100%). However, as a safeguard and for due diligence, CCSD is continuing to explore other potential water supply options.

7.4.3 Water Quality Impacts on Supply Reliability

The water quality in the CCSD service area is particularly good. The San Simeon Creek aquifer wells have been CCSD's primary water supply since they were installed in 1979. The San Simeon aquifer groundwater is also of higher quality than that of the Santa Rosa aquifer, primarily because it has lower hardness and lower concentrations of iron and manganese. The USGS Report 98-4061 (Appendix F) provides a more detailed discussion on the water quality of these two basins. CCSD has the water treatment capability to treat its groundwater to the required drinking water quality standards, regardless of drought conditions, especially given the WRF's role in protecting the San Simeon aquifer. The state-required annual water quality reports, also known as the Consumer Confidence Report, reflect compliance with all drinking water quality standards. Chlorine is added to the domestic water supply to disinfect the water and to provide residual disinfection in the distribution system tanks and pipelines.

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8 WATER SHORTAGE CONTINGENCY PLAN

Lay Description

This chapter describes the Cambria Community Services District's (CCSD's) Water Shortage Contingency Plan (WSCP), including shortage stages and shortage response actions. The California Water Code Section 10632 requires every Supplier that serves more than 3,000 acre-feet per year or has more than 3,000 connections to prepare and adopt a standalone WSCP as part of its UWMP. The WSCP is required to allow Suppliers to plan for a greater than 50% supply shortage and is due to be updated every five years. Water shortage contingency planning is a strategic planning process in which CCSD engages to prepare for and respond to water shortages, which occur when available water supply is insufficient to meet normally expected customer water use. A shortage may occur due to a number of reasons, such as water supply quality changes, climate change, drought, and catastrophic events (e.g., earthquake). CCSD WSCP provides real-time water supply availability assessment and structured steps designed to respond to actual conditions. This level of detailed planning and preparation will help maintain reliable supplies and reduce the impacts of supply interruptions. This WSCP must be updated, based on new requirements, every five years and was adopted as a current update for submission to the California Department of Water Resources by July 1, 2026. The WSCP is provided as a separate document for 2025, included in this UWMP as Appendix L; however, the tables are also included here in the UWMP.

Table 8-1. Water Shortage Contingency Plan Levels

Submittal Table 8-1: Cross-reference for Standard vs Supplier Shortage Levels - Water Code 10632(a)(3)(B)	
☑	Check the box if Supplier uses Standard six levels of water shortage. Proceed to next table.

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Table 8-1a. Standard Supplier Shortage Levels for CCSD

Standard Shortage Level	Water Resources Criteria	Percent Shortage Range	Summary of Shortage Response Actions
1	**Baseline - Water Use Efficiency is a Way of Life** Dry season starts in June or later **As of April 1st:** Rainfall at 86-100% of normal Average SS well levels at or above 100% of normal (≥20.1 ft) WBE and WBW well levels at or above 100% of normal (WBE is ≥5.6 ft and WBW is ≥5.6 ft) 9P2-SS4 gradient at or above 100% of normal (≥3.0 ft)	Up to 10%	"**Water Conservation as a Way of Life**" - Inform customers of existing conservation ordinances and incentive programs; water waste prohibitions always in effect - If Stage 2 is imminent, then schedule Board Hearing at least 14 days prior to Stage 2 action Refer to Table 8-3 for detailed Demand Reduction Actions
2	**Drought Watch** Dry season starts in June or later **As of April 1st:** Rainfall at 71-85% of normal Average SS well levels at 91-100% of normal (18.2-20.1ft) WBE and WBW well levels at 91-100% of normal (WBE is 5.2-5.6 ft and WBW is 5.1-5.6 ft) 9P2-SS4 gradient at 91-100% of normal (2.8-3.0 ft)	Up to 20%	"**Water Shortage Watch**" - Citations for violations of shortage response actions - Commence public outreach campaign - If Stage 3 is imminent, then schedule Board Hearing at least 14 days prior to Stage 3 action Refer to Table 8-3 for detailed Demand Reduction Actions

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Standard Shortage Level	Water Resources Criteria	Percent Shortage Range	Summary of Shortage Response Actions
3	**Water Shortage Warning** Dry season starts in May or later **As of April 1st:** Rainfall at 56-70% of normal Average SS well levels at 81-90% of normal (16.1-18.1ft) WBE and WBW well levels at 81-90% of normal (WBE is 4.6-5.1 ft and WBW is 4.6-5.0 ft) 9P2-SS4 gradient at 81-90% of normal (2.5-2.7 ft)	Up to 30%	"**Water Shortage Warning**" - All of the above, plus increased restrictions on use of potable water - Increase public outreach campaign to include weekly Farmer's Market booth and product giveaways or demos - If Stage 4 is imminent, schedule Board Hearing at least 14 days prior to action Refer to Table 8-3 for detailed Demand Reduction Actions
4	**Drought Emergency** Dry season starts in April or later **As of April 1st:** Rainfall at 41-55% of normal Average SS well levels at 71-80% of normal (14.1-16.0ft) WBE and WBW well levels at 71-80% of normal (WBE is 4.1-4.5 ft and WBW is 4.0-4.5 ft) 9P2-SS4 gradient at 71-80% of normal (2.2-2.4 ft)	Up to 40%	"**Water Shortage Emergency**" - All of the above, and establish water use allocations - Board meeting second month of billing cycle - recommend remaining in Stage 4 or moving to Stage 5, 3, 2, or 1 - Prepare WRF for operation Refer to Table 8-3 for detailed Demand Reduction Actions

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Standard Shortage Level	Water Resources Criteria	Percent Shortage Range	Summary of Shortage Response Actions
5	**Extreme Drought Emergency** Dry season starts in March or earlier **As of April 1st:** Rainfall at 26-40% of normal Average SS well levels at 61-70% of normal (12.1-14.0 ft) WBE and WBW well levels at 61-70% of normal (WBE is 3.5-4.0 ft and WBW is 3.4-3.9 ft) 9P2-SS4 gradient at 61-70% of normal (1.9-2.1 ft)	Up to 50%	"**Extreme Water Shortage Emergency**" - All of the above, and reduce allocation, enforce excess use penalty - Mandatory audits for customers exceeding allocation - Board Meeting at second month of enforcement billing cycle, recommend remaining at Stage 5, move to Stage 6, 4, 3, 2, or 1 - Operate WRF as needed Refer to Table 8-2 for Supply Augmentation Actions and Table 8-3 for Demand Reduction Actions for additional information
6	**Exceptional Drought Emergency** Dry season starts in March or earlier **As of April 1st:** Rainfall <25% of normal Average SS well levels at <60% of normal (≤12.0 ft) WBE and WBW well levels at <60% of normal (WBE is ≤3.4 ft and WBW is ≤3.3 ft) 9P2-SS4 gradient at <60% of normal (≤1.8 ft)	>50%	"**Exceptional Water Shortage Emergency**" - Continue allocation enforcement; potable water for human health, sanitation, and fire protection only - Board Meeting at second month of enforcement billing cycle, recommend remaining at Stage 6, or move to Stage 5, 4, 3, 2, or 1 - Operate WRF as needed Refer to Table 8-2 for Supply Augmentation Actions and Table 8-3 for Demand Reduction Actions for additional information
NOTES: Refer to Table 8-2 for Supply Augmentation Actions and Table 8-3 for Demand Reduction Actions for additional information.			

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Table 8-2. Supply Augmentation and Other Actions

Submittal Table 8-2 Retail: Supply Augmentation and Other Actions – Water Code Section 10632(a)(4)(A),(C) and (E)				
Yes	Is the Supplier completing this table using the standard six levels? (yes/no)			
Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier	How much is this going to reduce the shortage gap?		Additional Explanation or Reference
		Volume or Percentage	Shortage Gap Reduction Value (AF)	
5	Other Actions (describe)	Volume	21-250	21 to 250 AF of indirect potable reuse water reinjected using the Water Reclamation Facility
6	Other Actions (describe)	Volume	21-250	21 to 250 AF of indirect potable reuse water reinjected using the Water Reclamation Facility
NOTES: 250 AF would require the WRF to be run nonstop and therefore though reported as such in this table, is not presented this high in previous supply reliability tables, but rather at 150 AF per year which, in this planning period, is more than sufficient to meet future use.				

Table 8-3. Actions – Demand Reduction Actions

Submittal Table 8-3 Retail: Demand Reduction Actions - Water Code Section 10632(a)(4)(B) and (E)					
Yes	Is the Supplier completing this table using the standard six levels? (yes/no)				
Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)	Penalty, Charge, or Other Enforcement?
		Volume or Percentage Drop down	Shortage Gap Reduction (MG)		
All	Expand Public Information Campaign	Percentage	0-3%	Inform customers of existing water conservation ordinances and incentive programs.	No
All	Landscape - Restrict or prohibit runoff from landscape irrigation	Percentage	0-3%	CCSD Municipal Code 4.08.030 (1) prohibits the watering of landscaping, which allows excess water runoff.	Yes
All	Landscape - Limit landscape irrigation to specific times	Percentage	13-35%	CCSD Municipal Code 4.08.030 (2.b)	Yes
All	CII - Restaurants may only serve water upon request	Percentage	0-3%	CCSD Municipal Code 4.08.030 (5) prohibits the serving of water to customers by any eating establishment except when specifically requested.	Yes

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Submittal Table 8-3 Retail: Demand Reduction Actions - Water Code Section 10632(a)(4)(B) and (E)					
Yes	Is the Supplier completing this table using the standard six levels? (yes/no)				
Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)	Penalty, Charge, or Other Enforcement?
		Volume or Percentage Drop down	Shortage Gap Reduction (MG)		
All	Other - Prohibit use of potable water for washing hard surfaces	Percentage	0-3%	CCSD Municipal Code 4.08.030 (2) prohibits the washing of driveways, sidewalks, and other hard-surfaced areas by direct hosing.	Yes
All	Other - Require automatic shut of hoses	Percentage	0-3%	CCSD Municipal Code 4.08.030 (7) prohibits the washing of vehicles by use of an unrestrained hose.	Yes
All	Other - Prohibit use of potable water for construction and dust control	Percentage	0-3%	CCSD Municipal Code 4.08.030 (8) prohibits the use of potable water from CCSD's water supply for compacting or dust control purposes.	Yes
All	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Percentage	10-15%	CCSD Municipal Code 4.08.030 (4)	Yes
Stage 2	Expand Public Information Campaign	Percentage	2-5%	CCSD Municipal Code 4.12.040 (A) Expand public information campaign on water shortage through announcements at Board and Committee meetings, website, email, physical banners and signs, and billing inserts.	No
Stage 2	Landscape - Limit landscape irrigation to specific days	Percentage	0-5%	3 days per week, with a maximum runtime of 15 minutes per day.	Yes
Stage 3	Expand Public Information Campaign	Percentage	3-7%	CCSD Municipal Code 4.12.050 (A) Expand public information campaign on water shortage by staffing a booth at the weekly farmers market in addition to announcements at Board and Committee meetings, website, email, physical	No

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Submittal Table 8-3 Retail: Demand Reduction Actions - Water Code Section 10632(a)(4)(B) and (E)					
Yes	Is the Supplier completing this table using the standard six levels? (yes/no)				
Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)	Penalty, Charge, or Other Enforcement?
		Volume or Percentage Drop down	Shortage Gap Reduction (MG)		
				banners and signs, and billing inserts.	
Stage 3	Landscape - Limit landscape irrigation to specific days	Percentage	3-8%	2 days per week, with a maximum runtime of 15 minutes per day.	Yes
Stage 3, 4, 5, & 6	Offer Water Use Surveys	Percentage	3-7%	Offer Water Efficiency Walkthroughs on a voluntary basis.	No
Stage 3, 4, 5, & 6	Water Features - Restrict water use for decorative water features, such as fountains	Percentage	0-3%	CCSD Municipal Code 4.12.CA. 1	Yes
Stage 3, 4, 5, & 6	Other	Percentage	0-3%	CCSD Municipal Code 4.12.CA. 1 prohibits the use of potable water for fire drills at drought stage 3 and higher.	Yes
Stage 4	Expand Public Information Campaign	Percentage	5-10%	CCSD Municipal Code 4.12.060 (B) Expand public information campaign on water shortage by staffing a booth at the weekly farmers market with conservation giveaways and information in addition to announcements at Board and Committee meetings, website, email, physical banners and signs, and billing inserts. In-person informational outreach to the highest 10% of water consumers for each customer class.	No
Stage 4	Implement or Modify Drought Rate Structure or Surcharge	Percentage	15-30%	1. Each residential customer account is allotted three (3) units per month. Permanent residents are limited to 3 units per individual per month. 2. Commercial accounts are	No

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Submittal Table 8-3 Retail: Demand Reduction Actions - Water Code Section 10632(a)(4)(B) and (E)					
Yes	Is the Supplier completing this table using the standard six levels? (yes/no)				
Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)	Penalty, Charge, or Other Enforcement?
		Volume or Percentage Drop down	Shortage Gap Reduction (MG)		
				limited to 3 units per Equivalent Dwelling Unit (EDU) of fraction thereof per month or the average of the last 12 months' water use, whichever is less. 3. Vacation rentals are limited to 3 units per month.	
Stage 4, 5, & 6	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	Percentage	0-5%		Yes
Stage 4, 5, & 6	Increase Frequency of Meter Reading	Percentage	0-5%	CCSD Municipal Code 4.12.060 (C) monthly water meter reading. Billing remains bi-monthly.	No
Stage 4, 5, & 6	Landscape - Prohibit certain types of landscape irrigation	Percentage	10-30%	CCSD Municipal Code 4.12.060 (A) prohibits the irrigation of gardens and landscaping with potable water at drought stages 4, 5, and 6 except for landscaping deemed necessary to protect public health and safety.	Yes
Stage 5	Expand Public Information Campaign	Percentage	5-10%	CCSD Municipal Code 4.12.060 (B) Expand public information campaign on water shortage by staffing a booth at the weekly farmers market with conservation giveaways and information in addition to announcements at Board and Committee meetings, website, email, physical banners and signs, and billing inserts. In-person informational outreach to the highest 10% of water consumers for each customer class. Inspections of consistent violators of water	No

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Submittal Table 8-3 Retail: Demand Reduction Actions - Water Code Section 10632(a)(4)(B) and (E)					
Yes	Is the Supplier completing this table using the standard six levels? (yes/no)				
Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)	Penalty, Charge, or Other Enforcement?
		Volume or Percentage Drop down	Shortage Gap Reduction (MG)		
				use allocations under 4.16.080.	
Stage 5 & 6	Implement or Modify Drought Rate Structure or Surcharge	Percentage	15-30%	CCSD Municipal Code 4.12.070 (D) 1. Each residential customer account is allotted two (2) units per month. Permanent residents are limited to 2 units per individual per month. 2. Commercial accounts are limited to 2 units per EDU or fraction thereof per month or 75% of the average of the last 12 months' water use, whichever is less. 3. Vacation rentals are limited to 2 units per month. Stages 5 and 6 – penalty chargers for violation of water use allocations. Water use that exceeds allocation by less than 25% will be subject to a 500% surcharge levied on all usage above a customer's allocation. Water use that exceeds allocation more than 25% will be subject to a 1000% surcharge levied on all usage above a customer's allocation.	Yes
Stage 5 & 6	Landscape - Prohibit all landscape irrigation	Percentage	>35%	CCSD Municipal Code 4.12.060 (A) prohibits the irrigation of gardens and landscaping with potable water at drought stages 4, 5, and 6 except for landscaping deemed necessary to protect public health and safety.	Yes

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Submittal Table 8-3 Retail: Demand Reduction Actions - Water Code Section 10632(a)(4)(B) and (E)					
Yes	Is the Supplier completing this table using the standard six levels? (yes/no)				
Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)	Penalty, Charge, or Other Enforcement?
		Volume or Percentage Drop down	Shortage Gap Reduction (MG)		
Stage 6	Expand Public Information Campaign	Percentage	10-15%	CCSD Municipal Code 4.12.060 (B) Expand public information campaign on water shortage by staffing a booth at the weekly farmers market with conservation giveaways and information in addition to announcements at Board and Committee meetings, website, email, physical banners and signs, and billing inserts. In-person informational outreach to the highest 10% of water consumers for each customer class. Mandatory inspections of consistent violators of water use allocations under CCSD Municipal Code 4.16.080.	No

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9 DEMAND MANAGEMENT MEASURES

Lay Description

As the primary Supplier for the community of Cambria, CCSD continues to aggressively promote water conservation to make the most efficient use of the existing local groundwater supplies. This section describes CCSD's retail Demand Management Measures (DMMs), their implementation over the past five years, and planned conservation measures to ensure CCSD continues to meet or exceed water-use reduction goals.

CCSD's conservation program is guided by a mix of agency and District policy directives, as well as state and local water-efficiency requirements that have evolved over time. On the state level, these shifted from meeting Best Management Practices (BMPs) to the state per capita water reduction targets set by the Water Conservation Action of 2009 (SB X7-7) to new water efficiency targets mandated by Assembly Bill (AB) 1668 and Senate Bill (SB) 606. Suppliers will need to meet these new mandates starting in 2027. CCSD has been implementing conservation measures for decades. Through continued efforts to promote conservation and educate its residents on efficient and appropriate uses of water, CCSD was able to exceed their SB X7-7 target. As discussed in Chapter 5, CCSD's 2020 confirmed gallons per capita per day (GPCD) target was 105. However, its actual 2020 GPCD was 80, which was well below its state SB X7-7 per capita use target.

CCSD is a member of the California Water Efficiency Partnership (CalWEP) and continues to implement numerous DMMs through conservation programs, most of which build on and meet the goals of CalWEP's predecessor, the California Urban Water Conservation Council's (CUWCC's) foundational and programmatic BMPs.

This section describes the planned efforts of CCSD in implementing various conservation measures to meet its water-use targets, as well as its future plans for achieving its water-use objectives.

9.1 Implementation Over the Past Five Years

The nature and extent of each measure that has been implemented by CCSD over the past five years, from 2020 through 2025, are presented by measure in the subsequent sections.

Water conservation implementation over the past five years has included CCSD's continuing efforts in its retrofit-upon-resale and retrofit-upon-remodel programs, offering water-efficiency walkthroughs, rebates for smart water systems such as the Flume Smart Water Monitor, and free water-efficient devices, including high-efficiency showerheads and automatic shut-off hose nozzles. CCSD has historically maintained a points bank to track conservation measures used to offset demands from any future water connections within its serviced area. Essentially, this program determines the number of retrofit-in-lieu points required based on the proposed development, which are then purchased and withdrawn from the points bank. As conservation measures occur, points are added back into the bank.

Previous efforts from before the five-year window included CCSD commissioning Maddaus Water Management to complete a Water Use Efficiency Plan (WUEP) in 2013.[44] This effort resulted in an update to the number of points required based on the review demands of various-sized residential homes, using the 90th percentile of those findings as the basis. The WUEP effort resulted in the CCSD Board adopting Program B in February 2013. The process used to develop the WUEP included analyzing conservation measures and programs using a Water Demand Management Decision Support System Model (DSS Model).

[44] Cambria Community Services District Water Use Efficiency Plan (WUEP): https://www.cambriacsd.org/files/349093640/2013%2B0228%2BFinal%2BBOARD%2BAPPVD%2BCambria%2BWater%2BUse%2BEfficiency%2BPlan.pdf

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9.2 Implementation to Achieve Water Use Targets

CCSD's Fiscal Year 2026/2027 projected budget includes line-items for direct expenditures to implement DMMs, such as the EyeOnWater customer portal and water loss reduction and leak detection efforts, with an additional amount allocated for staff effort to implement those DMMs, in a manner consistent with the last five years of participation and budget. Any unspent funds are placed in reserves for when additional funds beyond a single year's budget are needed. Future budgets will take into account the level of water conservation effort needed to achieve CCSD's water conservation and water use efficiency goals.

Beginning in 2023, Suppliers were required to calculate and report their annual urban water use objective (UWUO), submit validated water audits annually, and to implement and report best management practice (BMP) CII performance measures.

Urban Water Use Objective

A Supplier's UWUO is based on efficient water use of the following:

- Aggregate estimated efficient indoor residential water use
- Aggregate estimated efficient outdoor residential water use
- Aggregate estimated efficient outdoor irrigation landscape areas with dedicated irrigation meters or equivalent technology in connection with CII water use
- Aggregate estimated efficient water losses
- Aggregate estimated water use for variances approved by the State Water Board
- Allowable potable reuse water bonus incentive adjustments

CCSD offers a suite of programs, described in detail throughout this chapter, which will help CCSD meet and calculate its UWUO.

The following table describes CCSD's programs that will assist them in meeting their UWUO through both direct measures: programs/activities that result in directly quantifiable water savings; and indirect means: programs that provide resources promoting water efficiencies to the public, both customers and visitors, that are impactful but not directly measurable.

DWR has provided CCSD with residential outdoor landscape measurements; however, Suppliers are responsible for measuring landscape areas that are irrigated/irrigable by dedicated irrigation meters. Services may include, but are not limited to:

- Accounting/database cleanup and meter reclassification (e.g., analyzing consumption patterns to determine dedicated irrigation customers).
- Field visits and geolocation of dedicated irrigation meters.
- In-field measurements.
- GIS/Aerial imagery measurements.
- Transformation of static/paper maps to digital/GIS maps.

CCSD will organize these services and/or update their databases to determine which accounts are dedicated irrigation meters and provide landscape area measurements for those accounts. These data points are integral when calculating the UWUO.

9.3 Required Demand Management Measures

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This section presents CCSD's efforts to promote water conservation and reduce water use. The following measures are required to be reported upon.

9.3.1 Water Waste Prevention Ordinance

A water waste ordinance explicitly states that the waste of water is prohibited. The ordinance may prohibit specific actions that waste water, such as excessive runoff from landscape irrigation, or the use of a hose outdoors without a shut-off nozzle. A water waste prevention ordinance is always in place and does not depend on a water shortage for implementation. However, it may include increasingly restrictive prohibitions for implementation during shortages.

CCSD prohibits water waste through the enforcement of Chapter 4.08 of its Municipal Code. The prohibition on water waste is an ongoing requirement that applies during drought and non-drought conditions. Enforcement is achieved through coordinated efforts of CCSD's water and billing departments.

CCSD has complied with this Best Management Practice since 2000, when the first version of the Water Waste Prevention Ordinance was adopted.

Past Five Years: The Water Waste Prevention Ordinance has been enforced through a combination of citizen notifications of suspected water waste and CCSD field staff-identified cases. Suspected water waste violators are first offered information on water waste and best practices to avoid water waste. Subsequent or repeat violations result in fines. In 2022, there were 3 instances that resulted in fines.

Current Efforts: CCSD continues to enforce the Water Waste Prevention Ordinance by responding to citizen notifications and complaints of suspected water waste, as well as field-staff-identified cases.

Estimated Water Savings: While it may be possible to quantify the water savings associated with the prohibitions listed above, assumptions must be made about the equipment's performance and the number of affected pieces of equipment and fixtures.

9.3.2 Metering

All CCSD's service area accounts are metered. Metering and monitoring of municipal uses is critical to fully assessing water use within CCSD. Quantifying distribution system water loss, leaks, revenue, and future water use projections are examples of metering benefits.

Past Five Years: CCSD performed an AMI pilot program to test the AMI system and verify that the AMI components would function properly with the existing meters. In 2025, the CCSD completed retrofitting all its water meters with new registers and cellular antennas to make them advanced metering infrastructure (AMI) meters, though 84 automated meter reading (AMR) radio-read meters remain in areas with insufficient cell coverage.

Current Efforts: CCSD is using the AMI system to track usage and notify customers of suspected leaks. The AMI meters record water usage in 15-minute increments with the data uploaded four (4) times per day to a secure database, which can be accessed by CCSD staff, and which includes an electronic flagging feature that notifies staff when leaks are suspected on the downstream, customer-side of the meter. CCSD's billing department coordinates with the water department in notifying customers of suspected leaks. Depending on the specific circumstances, such notification may be followed by an on-site inspection to assist customers in determining the cause of their leak and facilitating repair. CCSD plans to replace the brass bodies of the water meters over the next several years, as those in service were installed in 2005 and are nearing the end of their lifespans.

Method for Evaluation of Effectiveness: CCSD evaluates metering effectiveness by analyzing water usage from its different customer categories and comparing usage with previous timeframes, as well as comparing metered consumption to net production.

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9.3.3 Conservation Pricing

CCSD has a tiered water rate structure that encourages water conservation (unit rates increase with higher use). In addition, surcharges apply during Stage 5 or Stage 6 levels of water conservation when use exceeds established limits. See Chapter 8 for further details.

Past Five Years: CCSD has had conservation pricing and updated its water rates in 2020.

Current Efforts: CCSD is continuing conservation pricing and will support that practice through its rate studies.

9.3.4 Public Education and Outreach

Public Information

Past Five Years: CCSD significantly upgraded its website[45] from 2019 to 2022, adding extensive water conservation information, including 'how-to' guides for reading meters and checking for leaks, as well as other water conservation tips and resources.

Current Efforts: The CCSD website contains 'how-to' information on reading meters and checking for leaks, as well as other water conservation tips and resources. CCSD water bills include information on customers' past use to enable a quick assessment of water consumption trends. The CCSD also informs the public about necessary water conservation efforts through local media. All CCSD customers have access to the Badger "EyeOnWater" Portal, where they can view their water consumption in near real time and set their own leak alerts. CCSD has placed added emphasis on testing pressure-regulating valves on residential homes based on experience from residential surveys. To facilitate testing, pressure gauges are loaned to customers free of charge. CCSD's website also contains information explaining pressure-regulating valve testing. CCSD is also a member agency of the CalWEP and the Alliance for Water Efficiency (AWE), which provides water use efficiency resources and programming, including the annual Peer2Peer training and networking event. Tent cards on water conservation are also provided to restaurants and motels.

Method for Evaluation of Effectiveness: The popularity of public programs is a measure of the program's effectiveness.

Estimated Water Savings: Quantifying water savings is difficult. The reduction in CCSD's overall water use in recent years, particularly during recent dry years, can be partly attributed to public information efforts.

9.3.5 Programs to Assess and Manage Distribution System Real Loss

CCSD routinely monitors its water production and consumption and investigates identified water losses. Staff have also attended training offered by the California-Nevada Section of the AWWA on water loss auditing, in response to SB 555, which was passed by the State in 2015. Per the results of previous audits, CCSD will continuously improve metering and documentation for authorized non-metered water use (e.g., assigning construction hydrants to fire trucks for use in non-emergency tasks such as hydrant testing) as well as estimating and documenting losses from leak repairs. CCSD field staff routinely check for and respond to water leaks and are on call continuously to address them immediately and take corrective action.

Past Five Years: For the last five years, CCSD has had an active leak detection and repair program. In 2020, Water Department staff began tracking leak repairs and associated losses using CCSD's geographic information system, Diamond Maps. Additionally, starting in 2020, leak-detection services were contracted to perform acoustic leak detection across about 2/3 of the system each year.

[45] www.cambriacsd.org

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Prior Work: Pursuant to the requirements of SB 555 and following the American Water Works Association's Manual of Water Supply Practice M36, Water Audits and Loss Control Programs[46], CCSD conducts a validated Water System Audit annually to help identify the highest priorities for addressing water losses. The highest priority focus is addressing the non-revenue water in order to recover revenue issues, which in turn assist with paying for some anticipated repairs and upgrades anticipated. CCSD investigated potential sources for real (leaks, tank overflows, etc.) or apparent losses (billing errors, inaccurate meter readings, etc.), to determine the best course of action to address chronic water loss. Apparent losses can be treated as an operational expense, and water loss reductions as a capital expense.

The list below presents information on the progress of the water loss program since the 2020 UWMP.

- Water main leaks have been repaired, and the main lines are still within their useful lifetimes. The repair history does not yet indicate the need for a program to proactively replace them.
- Water service lines that leak are scheduled for replacement. The repair history does not yet indicate the need for a program to proactively replace service lines.
- The water meters were upgraded to cellular-based AMI meters.

Current Efforts: In 2025, CCSD contracted with a satellite-based leak detection service for a two-year term to provide system scans and traditional acoustic leak detection to identify potential leaks to pinpoint for repair.

Planned Projects and Implementation Schedule:

- Replace 25% of the water meters each year starting in 2027
- Create District Metered Areas starting in 2027

Method for Evaluation of Effectiveness: According to the American Water Works Association's *Manual of Water Supply Practice, M36,* in order to achieve best practices in water loss control each year, CCSD will conduct a Water System Audit based on the production, metered demand, and other appropriate data to determine the water losses (AWWA, 2009). It is expected that the non-revenue water will decline as more water is accounted for and real and apparent water losses are addressed. Based on the results of the previous year's audit and available funding, CCSD will set the priorities for the coming year.

Estimated Water Savings: Actual water savings from individual leaks are difficult to measure or estimate because the leaks have been running for an indeterminate period. Water savings for this measure will be estimated based on the results of the annual water system audit. It is anticipated that the audit will show a declining non-revenue water component, indicating that real or apparent water losses have been reduced, or, alternatively, measurements of reductions in real losses due to actions taken (e.g., leak repairs, main replacement). It is envisioned that implementing this water loss control program could yield the greatest water savings of all CCSD's water-conserving measures.

9.3.6 Water Conservation Program Coordination and Staffing Support

The Utilities Department administers CCSD's water conservation and water use efficiency program, which includes rebates, giveaways, outreach, water-loss auditing, water-efficiency walkthroughs (WUEs), and the administration of the retrofit and demand offset programs. Future training for staff who share these duties will be obtained from CalWEP and other sources. The Utilities Department Program Manager must obtain a Grade I Water Use Efficiency Practitioner certification from AWWA. The planned water conservation and water use efficiency measures over the next five years include continuing programs already in place, fully implementing

[46] AWWA Manual of Practice M36: Water Audits and Loss Control Programs. https://store.awwa.org/M36-Water-Audits-and-Loss-Control-Programs-Fifth-Edition-PDF?whence=

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the DMMs mentioned in Section 9.9, and continuing research into new technologies, methods, and programs for water conservation and water use efficiency.

The Utilities Department administers CCSD's water conservation program, which includes rebates, giveaways, outreach, water-loss auditing, water-use-efficiency walk-throughs, and administration of the retrofit program and demand offset program. Future training of staff who will share these duties will be sought from CalWEP and other sources. The Utilities Department Program Manager is required to obtain a Grade I Water Use Efficiency Practitioner certification through the AWWA.

This section includes the contact information of CCSD's water conservation representative as well as a description of the support staff and program funding. The current water conservation representative is:

Program Manager
Cambria Community Services District Utilities Department
2150 Main St #1-A
Phone: (805) 927-6223
Email: engineering (at) Cambriacsd.org
Website: www.Cambriacsd.org

Additional internal staff and outside consultants are added as needed to assist CCSD in meeting its commitment to achieving its water conservation targets, goals, and objectives.

9.3.7 Other Demand Management Measures

CCSD recognizes the need to explore additional opportunities to increase water conservation savings. The following efforts have been implemented on a limited basis or are planned for implementation, and their effectiveness will be evaluated.

Retrofit-Upon-Resale and Retrofit-Upon-Remodel Programs

CCSD requires all properties to be retrofitted to the current CCSD Code upon sale, remodel, or change of use.

Past Five Years: CCSD completed 50 retrofit verifications in 2021, 31 in 2022, 30 in 2023, 27 in 2024, and 33 in 2025.

Current Efforts: CCSD will continue to require properties to be retrofitted to the current CCSD Code upon sale, remodel, or change of use, and will continue to expand the reach of inspections to include all properties.

The Cistern Requirement

CCSD requires all new construction and remodel projects on parcels greater than 8,000 square feet to install non-potable water cisterns, rainwater collection systems to fill the cistern, and non-potable distribution systems.

Marketing Strategy: The program is marketed through the CCSD website, the CCSD Municipal Code, and as a condition of approval for building permits and land-use permits.

Method for Evaluation of Effectiveness: CCSD evaluates the program by assessing the number of new cistern installations

Estimated Water Savings: Water savings for this category are difficult to quantify. CCSD could estimate conservation values by comparing pre-cistern metering data with post-cistern metering data, but variables affect the savings calculations, such as changes in the efficiency of the indoor plumbing fixtures, changes in the irrigated landscaped area, behavioral changes due to the drought or increased awareness of water use, and the property owner's understanding and use of the cistern and non-potable distribution system.

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Water Use Efficiency Walkthrough Programs for Single-Family and Multifamily Residential Customers

CCSD offers a comprehensive Water Use Efficiency Walkthrough program, in place for when CCSD is in Stage 2 and higher, which is free to its customers. The program includes both single-family and multifamily account holders. A Water Conservation Representative provides on-site checks for leaks and indoor plumbing flow rates, evaluates irrigation system efficiency, and advises on irrigation scheduling and irrigation timer adjustments. In addition, water conservation information and water-efficient plumbing devices are distributed to homeowners.

Past Five Years: CCSD staff completed 3 walkthroughs in 2021, 28 walkthroughs in 2022, and 2 walkthroughs in January of 2023. The CCSD has been in Stage 1 since January 2023, so there have been no water-use-efficiency walkthroughs since then.

Current Efforts: CCSD will continue to offer water efficiency walkthroughs at Stage 2 and above.

Marketing Strategy: The program is marketed through the CCSD website and utility billing inserts, as well as at the CCSD public outreach booth at the Cambria Farmers' Market when in Stage 3 or higher.

Method for Evaluation of Effectiveness: CCSD evaluates the program by assessing the participation and the acceptance of the program by residents.

Estimated Water Savings: Water savings for this category are difficult to quantify. CCSD could estimate conservation values by comparing pre-survey metering data with post-survey metering data, but variables affect the savings calculations such as changes in weather patterns, behavioral changes due to the drought or increased awareness of water use, and the homeowner's willingness to implement the survey recommendations.

Rebates for Smart Water Systems

Past Five Years: CCSD obtained a grant through the United States Bureau of Reclamation's WaterSMART program in 2020 to fund a rebate program to partially offset the cost of a Flume Smart Water Monitor. The CCSD distributed 191 of the devices through the program.

Current Efforts: CCSD will continue to explore offering a rebate for smart water systems, such as the Moen house shutoff valve, the Flume Smart Water Monitor, or other smart water system devices for leak detection, consumption notification, or pressure reduction.

Method for Evaluation of Effectiveness: CCSD evaluates the program by assessing the participation and acceptance of the program by residents.

Estimated Water Savings: CCSD would estimate conservation values by comparing pre-smart water system water-use data with post-smart water system water-use data.

Water-Saving Devices for Single-Family and Multifamily Residences

The distribution of water-saving devices to single-family and multifamily homes occurs on a year-round basis. The program includes the distribution of indoor plumbing kits, each containing a water efficient showerhead, shower shut-off valve, kitchen and bathroom faucet aerators, and a toilet leak detection dye tablet, all free of charge.

Past Five Years: CCSD staff have given away water-saving device kits and individual water-saving items at public outreach events to customers who request them.

Current Efforts: CCSD will continue to offer water-saving device kits and individual water-saving items to those customers who request them.

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Marketing Strategy: Indoor kits are available no-cost to Cambria residents, marketed through the CCSD website, billing inserts, billing notices, and public announcements, as well as the farmer's market information booth during Stage 3 and higher.

Tracking of Participation: The number of devices given away and the number of customers engaged are tracked.

Planned Implementation Schedule and Budget: This is currently being implemented. A budget is allocated each year, and any unspent funds are placed in reserve for when additional funds beyond a single year's budget are needed.

Method for Evaluation of Effectiveness: CCSD evaluates the effectiveness by assessing the level of popularity of the devices. The distribution of water conservation kits over a period of many years demonstrates a strong willingness by residents to install the devices and conserve water.

Estimated Water Savings: Water savings can be estimated if the total number of units distributed is multiplied by the projected water savings for the device being replaced, although consideration must be given for unknown factors such as the performance of the older devices being replaced, the willingness of the homeowner to install the devices, and behavioral changes in water use due to the drought or increased awareness of water use.

Large Landscape Surveys and Water Use Efficiency Consultation

CCSD offers free large landscape site surveys for commercial and institutional accounts with dedicated irrigation meters or mixed-use meters. The surveys are conducted by a certified irrigation consultant and include an evaluation of water use and irrigation system performance, with recommendations given to improve irrigation efficiency. Landscaped areas are measured from aerial photos or by hand. Water budgets are then developed by comparing actual water use with local evapotranspiration (ETo)[47] rates.

Marketing Strategy: The program is marketed to owners of large landscapes during drought Stage 2 and higher.

Tracking of Participation: The number of large landscape surveys conducted is utilized to track participation, assess outcomes, and form a component of a water savings formula. The surveys performed demonstrated that significant water savings were possible; CCSD reviews pre-survey and post-survey customer account metered water use.

Planned Implementation Schedule and Budget: CCSD will continue implementing its large landscape conservation programs and incentives. CCSD continues to increase outreach efforts to gain greater participation among its customer base. Grant opportunities to enhance the program will be explored.

Method for Evaluation of Effectiveness: CCSD evaluates the effectiveness of large landscape audits and incentives by making site visits and comparing metering data between pre-survey customer usage and post-survey usage. Follow-up visits to surveyed sites are conducted.

Estimated Water Savings: Pre-audit metering data are compared with post-audit data to estimate water savings. The final audit large landscape audit reports, prepared by consultants, also estimate potential water savings.

Commercial, Industrial, and Institutional Conservation Programs

CCSD implements a water conservation program for its CII customers.

Marketing Strategy: CCSD conducts outreach and researches grants to strengthen its programs. As of 2026, marketing components include:

- Making telephone calls and site visits to CII customers
- Generating and distributing flyers that advertise the program

[47] ETo is defined to be the amount of water needed by well-watered cool season turf grass, normally expressed as inches/week or per month or per year.

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- Conducting audits as requested

Tracking of Participation: CCSD tracks the number of customers participating in its CII programs, and CII projects are thoroughly monitored.

Planned Implementation Schedule and Budget: CCSD plans to continue implementing the CII program.

Method for Evaluation of Effectiveness: The effectiveness of the program is determined by reviewing the numbers of participants, analyzing costs versus benefits, and estimating water savings.

Estimated Water Savings: CCSD can estimate water savings from CII programs by comparing pre-installation and post-installation water demand. However, there are many variables in CII customers' water use patterns, and CII customers have reduced water use due to the drought and increased awareness of water use, especially outdoor irrigation, making water-savings estimates challenging.

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10 PLAN ADOPTION, SUBMITTAL, AND IMPLEMENTATION

Lay Description

The following chapter describes the steps taken to adopt and submit the UWMP and to make it publicly available. This chapter will also include a discussion of the agency's plan to implement the UWMP.

CCSD has included all requisite 2025 data in the development of this UWMP and the 2025 WSCP. This chapter details the processes CCSD followed for review and adoption of the 2025 UWMP, including notification of the surrounding cities, counties, and water suppliers; public notification, availability, and review; public hearing and adoption; submission to DWR and implementation of CCSD's 2025 UWMP and WSCP; and the processes for a potential amendment of an adopted UWMP.

Procedures for adopting and implementing the UWMP in a transparent and stakeholder-accessible manner are important for good governance of water resources. The procedures are designed to provide customers with the opportunity to understand water supply management, planning, and reliability, as well as to provide input into the process through public commenting and revision suggestions. Adequate notifications and public hearings allow for the interested public to affect reliability and future investments in local water management. An adopted UWMP is often important for justifying investment decisions and potential rate restructuring.

This 2025 UWMP was presented to CCSD's Board of Directors for review and adoption and supersedes the 2020 UWMP. It was filed with the Water Efficiency Office in the Department of Water Resources and with the California State Library, as required by law, and will be used by CCSD staff during the five-year planning cycle. As required by Section 10621 (a) of the Water Code, CCSD will update the UWMP again for the 2030 UWMP process.

This 2025 UWMP also includes a Water Shortage Contingency Plan included as Appendix L, as required under provisions of AB 11X (1991), and addresses changes required by subsequent legislation, including the Water Conservation Act of 2009 (SB X7-7). The WSCP also incorporates water conservation initiatives that CCSD has implemented. If any update is made to this 2025 UWMP or WSCP, CCSD will follow the amendment process outlined in Section 10.8 of this UWMP.

10.1 Notice of Plan Preparation

On March 13, 2026, CCSD notified all cities and counties within the service area of its intent to update the UWMP and WSCP by July 1, 2026. This notification served as the 60-day notice required by the CWC. A copy of this letter is included in Appendix B. Per Government Code 6066, the public hearing was noticed in the local newspaper on April 29, 2026, and noticed again on May 6, 2026. The hearing notices are attached as Appendix C. The public hearing was held on May 14, 2026, at the Board of Directors meeting prior to the UWMP and WSCP adoption. Table 10-1 shows the notification provided to the surrounding cities and counties.

Table 10-1. Notification to Cities and Counties

Submittal Table 10-1 Retail: Notification to Cities and Counties - Water Code Section 10621(b) and 10642		
District Name	60 Day Notice	Notice of Public Hearing
San Simeon Community Services District	Yes	Yes
County Name	60 Day Notice	Notice of Public Hearing
San Luis Obispo County	Yes	Yes

10.2 Notice of Public Hearing

A public hearing to consider adoption of the final UWMP was held by the Board of Directors at the regularly scheduled meeting on May 14, 2026. Per Government Code 6066, publication of notice to the public pursuant to this chapter shall be once a week for two successive weeks. The public hearing was first noticed in the local paper on April 29, 2026, and again on May 6, 2026. The hearing notices are in Appendix C.

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The public was notified at least 14 days prior to the public hearing that CCSD would be reviewing and considering amendments to the UWMP. The public hearing was placed in a local newspaper for two successive weeks (14 calendar days), as prescribed in Government Code Section 6066.[48] This notice included the time and place of the hearing as well as the location where the UWMP was available for public inspection. Notification came via the San Luis Obispo Tribune newspaper and by posting the 2025 UWMP on the following website by April 29, 2026:

- Cambria Community Services District: https://www.cambriacsd.org/urban-water-management-plan

The notice from the San Luis Obispo Tribune newspaper is shown in Appendix C.

10.3 Public Hearing and Adoption

The 2025 Draft UWMP and WSCP were agendized, noticed, and reviewed in a public hearing at the regularly scheduled Board meeting on May 14, 2026. This hearing provided the cities, counties, and other members of the public with a chance to review the staff report and attend the hearing to provide comments. The public hearing took place before the adoption, allowing an opportunity for the report to be modified in response to public input prior to adoption. Following the public hearing, the 2025 UWMP was adopted by the Board on [DATE].

A copy of the Resolution of Plan Adoption signed by the Board of Directors and the attached cover letter addressed to DWR is included as Appendix L of the UWMP. The UWMP includes all applicable information necessary to meet the requirements of CWC Division 6, Part 2.6 (Urban Water Management Planning). The 2025 UWMP and WSCP were submitted to the California Department of Water Resources (DWR) by [DATE] (within 30 days of adoption).

10.3.1 Public Hearing

The public hearing allowed for community input, consideration of economic impacts, and adoption of a method for determining CCSD's urban water use target. As part of the public hearing, CCSD provided information on its baseline values, water use targets and compliance, and implementation plan as required per the Water Conservation Act of 2009.

10.3.2 Adoption

The plan was adopted on [DATE], at CCSD's regular Board meeting. A copy of the resolution adopting the 2025 UWMP is provided in Appendix I.

10.4 Plan Submittal

CCSD's Final 2025 UWMP and WSCP were formally adopted by CCSD's Board of Directors on [DATE]. A copy of the adoption resolution is included in Appendix I. To satisfy California Water Code Sections 10635(c), 10644(a)(1) and (2), and 10645(a) and (b), within 30 days of adoption, CCSD submitted a copy of the 2025 UWMP and WSCP to DWR (electronically using the WUEdata reporting tool), the California State Library Government Publications Section (Sacramento), and all surrounding cities and counties within 30 days of adoption.

10.4.1 Submitting a UWMP and WSCP to DWR

To satisfy DWR requirements, all UWMPs and WSCPs must be submitted to DWR within 30 days of adoption and prior to July 1, 2026. CCSD submitted the documents within 30 days of the adoption date of [DATE].

[48] California State Legislature. (1949). Government Code Section 6066. http://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=GOV&sectionNum=6066

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10.4.2 Electronic Data Submittal

CCSD submitted its 2025 UWMP and WSCP to DWR electronically. Documentation confirming its 2025 UWMP and WSCP submittal can be found in Appendix J.

10.4.3 Submitting a UWMP to the California State Library

CCSD submitted a CD or hard copy of its adopted 2025 UWMP to the California State Library within 30 days of adoption.

10.4.4 Submitting a UWMP to Cities and Counties

CCSD submitted a copy of its adopted 2025 UWMP to San Luis Obispo County within 30 days of adoption.

10.5 Public Availability

Within 30 days after filing the 2025 UWMP and WSCP with DWR, the documents were made available for public review during normal business hours at CCSD's main office at 2150 Main Street #1-A, Cambria, CA, 93428.

To fulfill the requirements of Water Code Section 10642 of the UWMP Act, CCSD made the Final 2025 UWMP available online (www.cambriacsd.org) and at CCSD's public office, between the hours of 9:00 am and 4:00 pm, for public review on [DATE], within 30 days of adoption.

10.6 Notification to Public Utilities Commission

Per Water Code Section 10621(c), Suppliers that are regulated by the California Public Utilities Commission (CPUC) must submit their UWMP and WSCP to the CPUC as part of its general rate case filings. Since this was not applicable to CCSD, the plans were not submitted to the CPUC.

10.7 Plan Implementation

CCSD will implement this adopted plan pursuant to this chapter in accordance with the schedule set forth in this plan.

10.8 Amending an Adopted UWMP or WSCP

Amendments to CCSD's 2025 UWMP and WSCP will be made on an as-needed basis. Should CCSD amend the adopted 2025 UWMP or WSCP, it will hold a public hearing for review of the proposed amendments to the document(s). CCSD will send a 60-day notification letter to all cities and counties within its service area and notify the public in the same manner as set forth in Chapter 2 of this UWMP. Once the amended document is adopted, a finalized version will be sent to the California State Library, DWR (electronically using the WUEdata reporting tool), and all cities and counties within CCSD's service area within 30 days of adoption. The finalized version will also be made available to the public both online on CCSD's website and in person at CCSD's public office during normal business hours.

Should any changes be made to the 2025 UWMP and/or the WSCP, per Water Code Sections 10621(d) and 10644(a)(1), within 30 days after adoption, CCSD will submit copies of the amendments or changes to DWR, the California State Library, and any district or county to which CCSD supplies water.

10.8.1 Amending a UWMP

If CCSD amends the adopted 2025 UWMP, each of the steps for notification, public hearing, adoption, and submittal will be followed for the amended UWMP.

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10.8.2 Amending a WSCP

Specific to Water Code Section 10644(b), if CCSD revises its WSCP after DWR has approved the 2025 UWMP, CCSD will submit to DWR an electronic copy of the revised WSCP within 30 days of adoption.

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APPENDIX A – UWMP CHECKLIST

2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2025 UWMP Location
Chapter 1	10615	A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities.	Introduction and overview	Section 1.6
Chapter 1	10630.5	Each plan shall include a simple description of the Supplier's plan including water availability, future requirements, a strategy for meeting needs, and other pertinent information. Additionally, a Supplier may also choose to include a simple description at the beginning of each chapter.	Plan preparation	Start of Each Chapter
Section 2.1	10620(b)	Every person that becomes a Supplier shall adopt UWMP within one year after it has become a Supplier.	Plan preparation	Chapter 1 and Section 2.2
Section 2.5	10644	Supplier shall report the Public Water Systems number, volume of delivered water, and number of connections that are included in this UWMP.	Plan preparation	Section 2.2
Section 2.5	10644	Supplier shall report if this UWMP is an individual UWMP and whether the Supplier belongs to a regional UWMP or regional alliance.	Plan preparation	Section 2.4
Section 2.5	10644	Supplier shall report whether the data is in fiscal or calendar years and the units of measure used for reporting water volumes.	Plan preparation	Section 2.5
Section 2.4	10642	Provide supporting documentation that the Supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan and contingency plan.	Plan preparation	Section 2.6

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2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2025 UWMP Location
Section 2.4.2	10620(d)(3)	Coordinate the preparation of its plan with other appropriate agencies in the area, including other Suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	Plan preparation	Section 2.6
Section 2.4.1	10631(h)	Retail Suppliers will include documentation that they have provided their Wholesale Supplier(s)—if any—with water use projections from that source.	Plan preparation	2-4 R
Chapter 3.0	10631(a)	Describe the Supplier service area.	System description	Section 3.1
Section 3.3	10631(a)	Describe the climate of the Supplier's service area.	System description	Section 3.3
Section 3.4.1	10631(a)	Provide the current and projected service area populations for 2030, 2035, 2040, 2045, and optionally 2050.	System description	3-1
Section 3.4.2	10631(a)	Describe other social, economic, and demographic factors affecting the Supplier's water management planning.	System description	Section 3.4
Section 3.5	10631(a)	Describe the land uses within the service area… include the current and projected land uses within the existing or anticipated service area affecting the Supplier's water management planning. Describe the land uses within the service area.	System description and baselines	Section 3.5
Sections 4.2.3 and 4.2.4	10631(d)(1)	Quantify past, current, and projected water use, identifying the uses among water use sectors.	System water use	4-1 and 4-2

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2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2025 UWMP Location
Section 4.3.1	10631(d)(3)(A)	Report the distribution system water loss for each of the five years preceding the plan update.	System water use	4-5
Section 4.3.2	10631(d)(3)(C)	Retail Suppliers shall provide data to show the distribution loss standards were met.	System water use	4-6
Section 4.2.5.4	10631.1(a)	Include projected water use needed for lower income housing projected in the service area of the Supplier.	System water use	4-3 and 4-3b
Section 4.2.5.3	10631(d)(4)(A)	In projected water use, include estimates of water savings from adopted codes, plans, and other policies or laws.	System water use	Section 4.2
Section 4.2.5.3	10631(d)(4)(B)	Provide citations of codes, standards, ordinances, or plans used to make water use projections.	System water use	4-3
Section 4.2.5.3	10631(d)(4)(B)(ii)	To the extent that a Supplier reports the information described in subparagraph (A), an urban water Supplier shall… Indicate the extent that the water use projections consider savings from codes, standards, ordinances, or transportation and land use plans. Water use projections that do not account for these water savings shall be noted of that fact.	System water use	4-3
Section 4.2.5.6	10635(b)	Demands under climate change considerations must be included as part of the drought risk assessment.	System water use	Section 4.4
Section 5.2	10608.4	Retail Suppliers shall report on their compliance in meeting their water use targets. Reporting requirements will vary depending on whether the Supplier: - Was considered an urban retail	Baselines and targets	5-1

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2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2025 UWMP Location
		water supplier in 2020, - Met its 2020 target in 2020, or - Was part of a merger or consolidation since 2020. Chapter 5 Subsections 5.2.1, 5.2.2, and 5.2.3 address each of these situations.		
Section 6.1	10631(b)(2)	When multiple sources of water supply are identified, describe the management of each supply in relationship to other identified supplies.	System supplies	Section 6.2
Sections 6.1 and 6.2	10631(b)(1)	Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought, including changes in supply due to climate change.	System supplies	Sections 7.2 and 7.3
Section 6.2.2	10631(b)(4)(C)	Indicate whether groundwater is an existing or planned source of water available to the Supplier. If groundwater is identified as an existing or planned source of water… (include) a detailed description and analysis of the location, amount and sufficiency of groundwater pumped by the Supplier for the past five years.	Water supplies and recycled water	6-1
Section 6.2 .2	10631(b)(4)(A)	Indicate whether a groundwater sustainability plan or groundwater management plan has been adopted by the Supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	System supplies	6.2, Appendix G
Section 6.2.2	10631(b)(4)(B)	Describe the groundwater basin.	System supplies	Section 6.2

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2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2025 UWMP Location
Section 6.2.2	10631(b)(4)(B)	Indicate if the basin has been adjudicated and include a copy of the court order or decree and a description of the amount of water the Supplier has the legal right to pump.	System supplies	Section 6.2
Section 6.2.2	10631(b)(4)(B)	For unadjudicated basins… (include) information as to whether DWR has identified the basin as a high- or medium-priority basin in the most current official departmental bulletin…	Water supplies and recycled water	Section 6.2
Section 6.2.2	10631(b)(4)(B)	For unadjudicated basins… describe efforts by the Supplier to coordinate with sustainability or groundwater agencies to achieve sustainable groundwater conditions.	Water supplies and recycled water	Section 6.2
Section 6.2.2.	10631(b)(4)(C)	If groundwater is identified as an existing or planned source of water… (include) a detailed description and analysis of the location, amount and sufficiency of groundwater pumped by the Supplier for the past five years.	System supplies	Section 6.2
Section 6.2.2	10631(b)(4)(D)	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	System supplies	Section 6.2, 6-1
Section 6.1	10631(b)	Identify and quantify the existing and planned sources of water available for 2025, 2030, 2035, 2040, 2045 and optionally 2050.	System supplies	6-8 and 6-9
Section 6.2.7	10631(c)	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	System supplies	Section 6.2
Section 6.2.5	10633(a)	Describe the wastewater collection and treatment systems in the Supplier's service area with quantified amount of collection and treatment and the disposal	System supplies (recycled water)	6-2, Section 6.2

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2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2025 UWMP Location
		methods.		
Section 6.2.5	10633(b)	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	System supplies (recycled water)	Section 6.2
Section 6.2.5	10633(c)	Describe the recycled water currently being used in the Supplier's service area.	System supplies (recycled water)	6-4
Section 6.2.5	10633(d)	Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses.	System supplies (recycled water)	Section 6.2
Section 6.2.5	10633(e)	Describe the projected use of recycled water within the Supplier's service area at the end of 5, 10, 15, and 20 years, and describe the actual use of recycled water in comparison to uses previously projected.	System supplies (recycled water)	6-9
Section 6.2.5	10633(f)	Describe the actions that may be taken to encourage the use of recycled water and the projected results of these actions in terms of acre-feet of recycled water used per year.	System supplies (recycled water)	Section 6.2
Section 6.2.5	10633(g)	Provide a plan for optimizing the use of recycled water in the Supplier's service area.	System supplies (recycled water)	Section 6.2
Section 6.2.6	10631(g)	Describe desalinated water project opportunities for long-term supply.	System supplies	Section 6.2

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2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2025 UWMP Location
Section 6.2.10	10631(f)	Describe the expected future water supply projects and programs that may be undertaken by the water Supplier to address water supply reliability in average, single-dry, and for a period of drought lasting five consecutive water years.	System supplies	Section 6.2
Section 6.3 and Appendix O	10631.2(a)	The UWMP must include energy information, as stated in the code, that a Supplier can readily obtain.	System suppliers, energy intensity	Section 6.3
Section 7.1	10634	Provide information on the quality of existing sources of water available to the Supplier and the manner in which water quality affects water management strategies and supply reliability.	Water supply reliability assessment	Section 7.4
Section 7.2	10635(a)	Service Reliability Assessment: Assess the water supply reliability during normal, dry, and a drought lasting five consecutive water years by comparing the total water supply sources available to the Supplier with the total projected water use over the next 20 years.	Water supply reliability assessment	7-2, 7-3, and 7-4
Section 7.2.3	10620(f)	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	Water supply reliability assessment	Section 7.4
Section 7.3	10635(b)	Provide a drought risk assessment as part of information considered in developing the demand management measures and water supply projects.	Water supply reliability assessment	Section 7.3
Section 7.3	10635(b)(1)	Include a description of the data, methodology, and basis for one or more supply shortage conditions that are necessary to conduct a drought risk assessment for a drought period that lasts five consecutive years.	Water supply reliability assessment	Section 7.3

Docusign Envelope ID: CD1B5FD8-CD5C-8D03-8169-6EA25443FA19

2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2025 UWMP Location
Section 7.3	10635(b)(2)	Include a determination of the reliability of each source of supply under a variety of water shortage conditions.	Water supply reliability assessment	Section 7.3
Section 7.3	10635(b)(3)	Include a comparison of the total water supply sources available to the Supplier with the total projected water use for the drought period.	Water supply reliability assessment	7-5
Section 7.3	10635(b)(4)	Include considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.	Water supply reliability assessment	Section 7.2
Chapter 8	10632(a)	Provide a water shortage contingency plan (WSCP) with specified elements below.	Water shortage contingency planning	Chapter 8, WSCP
Chapter 8	10632(a)(1)	Provide an analysis of water supply reliability (from Guidebook Chapter 7) in the WSCP.	Water shortage contingency planning	WSCP Section 3.1
Section 8.2	10632(a)(2)(A)	Provide the written decision-making process and other methods that the Supplier will use each year to determine its water reliability.	Water shortage contingency planning	WSCP Section 3.2
Section 8.2	10632(a)(2)(B)	Provide data and methodology to evaluate the Supplier's water reliability for the current year and one dry year pursuant to factors in the code.	Water shortage contingency planning	WSCP Section 3.2
Section 8.3	10632(a)(3)(A)	Define six standard water shortage levels of 10%, 20%, 30%, 40%, 50% shortage, and greater than 50% shortage. These levels shall be based on supply conditions, including percent reductions in supply, changes in groundwater levels, changes in surface elevation,	Water shortage contingency planning	WSCP Section 3.3

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2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2025 UWMP Location
		or other conditions. The shortage levels shall also apply to a catastrophic interruption of supply.		
Section 8.3	10632(a)(3)(B)	Suppliers with an existing WSCP that uses different water shortage levels must cross reference their categories with the six standard categories.	Water shortage contingency planning	8-1
Section 8.4	10632(a)(4)(A)	Suppliers with WSCPs that align with the defined shortage levels must specify locally appropriate supply augmentation actions.	Water shortage contingency planning	8-2
Section 8.4	10632(a)(4)(B)	Specify locally appropriate demand reduction actions to adequately respond to shortages.	Water shortage contingency planning	8-3
Section 8.4	10632(a)(4)(C)	Specify locally appropriate operational changes.	Water shortage contingency planning	8-2
Section 8.4	10632(a)(4)(D)	Specify additional mandatory prohibitions against specific water use practices that are in addition to State-mandated prohibitions are appropriate to local conditions.	Water shortage contingency planning	WSCP Section 3.4
Section 8.4	10632(a)(4)(E)	Estimate the extent to which the gap between supplies and demand will be reduced by implementation of the action.	Water shortage contingency planning	8-2 and 8-3
Section 8.4.6	10632.5	The UWMP shall include a seismic risk assessment and mitigation plan.	Water shortage contingency plan	WSCP Section 3.13
Section 8.5	10632(a)(5)(A)	Suppliers must describe that they will inform customers, the public and others regarding any current or predicted water shortages.	Water shortage contingency planning	WSCP Section 3.5, Appendix C

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2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2025 UWMP Location
Section 8.5	10632(a)(5)(B), 10632(a)(5)(C)	Suppliers must describe that they will inform customers, the public and others regarding any shortage response actions triggered or anticipated to be triggered and other relevant communications.	Water shortage contingency planning	WSCP Section 3.5, Appendix C
Section 8.6	10632(a)(6)	Retail Supplier must describe how it will ensure compliance with and enforce provisions of the WSCP.	Water shortage contingency planning	WSCP Section 3.6
Section 8.7	10632(a)(7)(A)	Describe the legal authority that empowers the Supplier to enforce shortage response actions.	Water shortage contingency planning	WSCP Section 3.7
Section 8.7	10632(a)(7)(B)	Provide a statement that the Supplier will declare a water shortage emergency per Water Code Chapter 3. *Water Shortage Emergencies*.	Water shortage contingency planning	WSCP Section 3.4
Section 8.7	10632(a)(7)(C)	Provide a statement that the Supplier will coordinate with any city or county within which it provides water for the possible proclamation of a local emergency.	Water shortage contingency planning	WSCP Section 3.4
Section 8.8	10632(a)(8)(A)	Describe the potential revenue reductions and expense increases associated with activated shortage response actions.	Water shortage contingency planning	WSCP Section 3.8
Section 8.8	10632(a)(8)(B)	Provide a description of mitigation actions needed to address revenue reductions and expense increases associated with activated shortage response actions.	Water shortage contingency planning	WSCP Section 3.4
Section 8.8	10632(a)(8)(C)	Retail Suppliers must describe the cost of compliance with Water Code Chapter 3.3, *Excessive Residential Water Use During Drought*.	Water shortage contingency planning	WSCP Section 3.6

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2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2025 UWMP Location
Section 8.9	10632(a)(9)	Retail Suppliers must describe the monitoring and reporting requirements and procedures that ensure appropriate data are collected, tracked, and analyzed for purposes of monitoring customer compliance.	Water shortage contingency planning	WSCP Section 3.9
Section 8.10	10632(a)(10)	Describe reevaluation and improvement procedures for monitoring and evaluation the WSCP to ensure risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented.	Water shortage contingency planning	WSCP Section 3.10
Section 8.11	10632(b)	Analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas.	Water shortage contingency planning	WSCP Section 3.11
Section 8.12	10632(c)	Make available the WSCP to customers and any city or county where it provides water within 30 days after adoption of the plan.	Water shortage contingency planning	WSCP Section 3.12
Sections 9.1	10631(e)(1)	Retail Suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in code.	Demand management measures	Section 9.1
Chapter 10	10608.26(a)	Retail Suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets (recommended to discuss compliance).	Plan adoption, submittal, and implementation	Section 10.3
Section 10.2.1	10621(b)	Notify, at least 60 days prior to the public hearing, any city or county within which the Supplier provides water that the Supplier will be reviewing the UWMP and	Plan adoption, submittal, and implementation	Section 10.2, 10-1

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2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2025 UWMP Location
		considering amendments or changes to the plan.		
Section 10.4	10621(f)	Each urban water Supplier shall update and submit its 2025 plan to DWR by July 1, 202 6.	Plan adoption, submittal, and implementation	Section 10.4
Sections 10.2.2, 10.3, and 10.5	10642	Provide supporting documentation that the Supplier made the UWMP and WSCP available for public inspection, published notice of the public hearing, and held a public hearing about the UWMP and WSCP.	Plan adoption, submittal, and implementation	Section 10.4
Section 10.2.2	10642	The Supplier is to provide the time and place of the hearing to any city or county within which the Supplier provides water.	Plan adoption, submittal, and implementation	10-1
Section 10.3.2	10642	Provide supporting documentation that the UWMP and WSCP have been adopted as prepared or modified.	Plan adoption, submittal, and implementation	Section 10.8
Section 10.4	10644(a)	Provide supporting documentation that the Supplier has submitted their UWMP to the California State Library.	Plan adoption, submittal, and implementation	Section 10.4
Section 10.4	10644(a)(1)	Provide supporting documentation that the Supplier has submitted their UWMP to any city or county within which the Supplier provides water no later than 30 days after adoption.	Plan adoption, submittal, and implementation	Section 10.4
Sections 10.4.1 and 10.4.2	10644(a)(2)	The UWMP, or amendments to the UWMP, submitted to DWR shall be submitted electronically.	Plan adoption, submittal, and implementation	Section 10.8
Section 10.7.2	10644(b)	If revised, submit a copy of the WSCP to DWR within 30 days of adoption.	Plan adoption, submittal, and implementation	Section 10.8
Section 10.5	10645(a)	Provide supporting documentation	Plan adoption,	Section 10.5

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2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2025 UWMP Location
		that, not later than 30 days after filing a copy of its UWMP with DWR, the Supplier has or will make the plan available for public review during normal business hours.	submittal, and implementation	
Section 10.5	10645(b)	Provide supporting documentation that, not later than 30 days after filing a copy of its WSCP with DWR, the Supplier has or will make the plan available for public review during normal business hours.	Plan adoption, submittal, and implementation	Section 10.5
Section 10.6	10621(c)	If Supplier is regulated by the Public Utilities Commission, include its plan and contingency plan as part of its general rate case filings.	Plan adoption, submittal, and implementation	Section 10.6

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APPENDIX B – NOTICE OF INTENT TO UPDATE UWMP

CAMBRIA COMMUNITY SERVICES DISTRICT

DIRECTORS:
HARRY FARMER, President
KAREN DEAN, Vice President
TOM GRAY, Director
DEBRA SCOTT, Director
MICHAEL THOMAS, Director

OFFICERS:
MATTHEW MCELHENIE, General Manager
TIMOTHY J. CARMEL, District Counsel

2150 Main Street #1A • P.O. Box 65 • Cambria, CA 93428
Telephone (805) 927-6223 • Facsimile (805) 927-5584

Delivered via E-mail to:
John Diodati
1050 Monterey St., Room 206 San Luis Obispo, CA 93408
jdiodati@co.slo.ca.us

Cambria Community Services District 2025 Urban Water Management Plan 60-Day Public Hearing Notice

Cambria Community Services District (CCSD) is in the process of preparing and updating its 2025 Urban Water Management Plan (UWMP) in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. An update of the CCSD's UWMP is required every five (5) years.

The 2025 UWMP Update will reflect new information since the adoption of the 2020 UWMP, forecasted demands within the CCSD's service area, the CCSD's plan to reliably meet the water needs within its service area, and compliance with the SB X7-7 and the Urban Water Use Objective. As part of the new requirements, the CCSD is also adopting a Water Shortage Contingency Plan (WSCP), which must be included as part of the 2025 UWMP. This document will describe how the CCSD will respond to foreseeable and unforeseeable water shortages.

Water Code section 10621(b) requires an urban water supplier updating its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing. This letter serves as the CCSD's official notice of preparation and intent to adopt the UWMP and WSCP before the July 1, 2026, deadline.

A copy of the CCSD's draft 2025 UWMP and WSCP will be available for review on the CCSD's website (https://www.cambriacsd.org/) in April of 2026, and the CCSD will subsequently hold a noticed public hearing on the 2025 UWMP and WSCP in advance of its proposed adoption. The CCSD invites you to submit comments and consult with the CCSD regarding these plans.

The CCSD's website will have updates on the 2025 UWMP and WSCP, including notice of the date, time, and place of the public hearing when adoption will be considered by the CCSD Board of Directors. If you have any questions, comments, or input, please contact James Green, Utilities Department Manager, via email at JGreen@cambriacsd.org or by phone at (805) 927-6119.

Sincerely,

James R. Green
Utilities Department Manager
Cambria Community Services District

Cambria Community Services District

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CAMBRIA COMMUNITY SERVICES DISTRICT

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2150 Main Street #1A • P.O. Box 65 • Cambria, CA 93428
Telephone (805) 927-6223 • Facsimile (805) 927-5584

Delivered via E-mail to:
San Simeon Community Services District
111 Pico Avenue
San Simeon, CA 93452

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Sincerely,

James R. Green
Utilities Department Manager
Cambria Community Services District

Cambria Community Services District

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CAMBRIA COMMUNITY SERVICES DISTRICT

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Trevor Keith
Director of Planning and Building
976 Osos Street, Room 200
San Luis Obispo, CA 93408
tkeith@co.slo.ca.us

Cambria Community Services District 2025 Urban Water Management Plan 60-Day Public Hearing Notice

Cambria Community Services District (CCSD) is in the process of preparing and updating its 2025 Urban Water Management Plan (UWMP) in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. An update of the CCSD's UWMP is required every five (5) years.

The 2025 UWMP Update will reflect new information since the adoption of the 2020 UWMP, forecasted demands within the CCSD's service area, the CCSD's plan to reliably meet the water needs within its service area, and compliance with the SB X7-7 and the Urban Water Use Objective. As part of the new requirements, the CCSD is also adopting a Water Shortage Contingency Plan (WSCP), which must be included as part of the 2025 UWMP. This document will describe how the CCSD will respond to foreseeable and unforeseeable water shortages.

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Sincerely,

James R. Green
Utilities Department Manager
Cambria Community Services District

Cambria Community Services District

Docusign Envelope ID: CD1B5FD8-CD5C-8D03-8169-6EA25443FA19

APPENDIX C – NOTICE OF PUBLIC HEARING

Notice of Public Hearing published in The San Luis Obispo Tribune newspaper on April 29, 2026, and May 6, 2026. A Public Hearing was held on May 14, 2026.

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Classification: Legals & Public Notices
Package: SLO - Legal Ads
Order Cost: $220.00

Account Details

CAMBRIA COMMUNITY SERVICE DISTRICT IP
PO BOX 65
CAMBRIA, CA 93428
805-927-6223

CAMBRIA COMMUNITY SERVICE DISTRICT

Schedule for ad number IPL03303680

Wed Apr 29, 2026
The Tribune (San Luis Obispo) Print Publication *All Zones*

Wed May 6, 2026
The Tribune (San Luis Obispo) Print Publication *All Zones*

Notice of Public Hearing

The Cambria Community Services District (CCSD) is updating its current Urban Water Management Plan (UWMP) and Water Shortage Contingency Plan and will hold a Public Hearing to receive public feedback and suggestions. Updates to the UWMP are required every five (5) years in accordance with the California Water Code. This effort helps ensure the CCSD can provide Cambria with a safe and reliable supply of high-quality water to meet current and future demands.

The Public Hearing will be held to take public comment at the CCSD's Regular Board Meeting on May 14, 2026. The meeting begins at 10:00 AM and is held at 1000 Main Street, Cambria, CA 93428. At the conclusion of the Public Hearing, the CCSD Board will consider adopting the proposed UWMP.

The proposed UWMP will be available for review on the CCSD's website (https://www.cambriacsd.org/urban-water-management-plan). Hard copies will be available for review at the CCSD District Office, 2150 Main Street #1-A, Cambria, CA 93428, during business hours. Public comments may be submitted to boardcomment@cambriacsd.org or via the online public comment submission portal at: https://www.cambriacsd.org/written-public-comments

IPL0330368
Apr 29,May 6 2026

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APPENDIX D – CALIFORNIA DEPARTMENT OF WATER RESOURCES BULLETIN NO. 118

The California Department of Water Resources Bulletin No. 118 identifies the two sources serving CCSD as the San Simeon and Santa Rosa groundwater basins, numbers 3-35 and 3-36, respectively. Bulletin 118 (https://water.ca.gov/programs/groundwater-management/bulletin-118) describes each of the two aquifers, neither of which is listed as being in overdraft status by the State.

Appendix D can be accessed directly here: https://www.cambriacsd.org/urban-water-management-plan

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APPENDIX E – CCSD ADOPTED GROUNDWATER MANAGEMENT PLAN, NOVEMBER 19, 2015

Document is publicly available on the CCSD website: Water Plans, Programs & Studies - Cambria Community Services District or directly here: https://www.cambriacsd.org/groundwater-management-plan.

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APPENDIX F – USGS REPORT 98-4061

Document is publicly available on the CCSD website: Water Plans, Programs & Studies - Cambria Community Services District

It is also available in the Appendices section of the 2025 UWMP page here: https://www.cambriacsd.org/urban-water-management-plan

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APPENDIX G – STATE WATER RESOURCES CONTROL BOARD WATER RIGHTS LICENSES

CALIFORNIA
Water Boards

GAVIN NEWSOM
GOVERNOR

JARED BLUMENFELD
SECRETARY FOR
ENVIRONMENTAL PROTECTION

State Water Resources Control Board

MAR 1 4 2019

In Reply Refer to:
SMC:25002 & 28158

Cambria Community Services District
P.O. Box 65
Cambria, CA 93428-0065

Ladies & Gentlemen:

ISSUANCE OF WATER RIGHT LICENSES 13916 AND 13917 (APPLICATIONS 25002 AND 28158) TO APPROPRIATE WATER FROM SAN LUIS CREEK AND SAN SIMEON CREEK UNDERFLOWS IN SAN LUIS OBISPO COUNTY

The purpose of this letter is to inform you that the State Water Resources Control Board (State Water Board) has issued the enclosed water right licenses. You should carefully read the water right license to ensure that you understand and comply with any requirements for diversion and beneficial use of water.

The State Water Board maintains the electronic Water Rights Information Management System (eWRIMS), a computer database where you may view the current information related to your water rights. The database can be accessed at the following website:

http://www.waterboards.ca.gov/ewrims

If you have any questions, please contact me at scott.mcfarland@waterboards.ca.gov or (916) 341-5390. Written correspondence or inquiries should be addressed as follows: State Water Resources Control Board, Division of Water Rights, Attn: Scott McFarland, P.O. Box 2000, Sacramento, CA, 95812-2000.

Sincerely,

Scott McFarland, P.E.
Senior Water Resource Control Engineer
Petition and Licensing Unit
Division of Water Rights

Enclosures: 1) Licenses
2) Maps

cc: See next page.

E. JOAQUIN ESQUIVEL, CHAIR | EILEEN SOBECK, EXECUTIVE DIRECTOR

1001 I Street, Sacramento, CA 95814 | Mailing Address: P.O. Box 100, Sacramento, CA 95812-0100 | www.waterboards.ca.gov

RECYCLED PAPER

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MAR 1 4 2019

cc (w/o enclosures): Annette Tenneboe
Central Region
California Department of Fish and Wildlife
1234 E. Shaw Ave.
Fresno, CA 93710

cc (w/enclosures): Cambria Community Services District
P.O. Box 65
Cambria, CA 93428-0065

ec (w/enclosures): Annette Tenneboe
Central Region Region
California Department of Fish and Wildlife
Annette.tenneboe@wildlife.ca.gov

Sean Wendell
Water Branch
California Department of Fish and Wildlife
Sean.wendell@wildlife.ca.gov

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STATE OF CALIFORNIA
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
STATE WATER RESOURCES CONTROL BOARD

DIVISION OF WATER RIGHTS

RIGHT TO DIVERT AND USE WATER

APPLICATION 25002 PERMIT 17287 LICENSE 13916

Right Holder: Cambria Community Services District
P.O. Box 65
Cambria, CA 93428-0065

The State Water Resources Control Board (State Water Board) authorizes the diversion and use of water by the right holder in accordance with the limitations and conditions herein SUBJECT TO PRIOR RIGHTS. The priority of this right dates from **February 23, 1976**. This right is issued in accordance with the State Water Board delegation of authority to the Deputy Director for Water Rights (Resolution 2012-0029) and the Deputy Director for Water Rights redelegation of authority dated October 19, 2017. This right supersedes any previously issued right on **Application 25002**. The right holder has made proof, to the satisfaction of the State Water Board, of the quantities of water put to beneficial use during the authorized development schedule.

Right holder is hereby granted a right to divert and use water as follows. No water shall be diverted or used under this water right unless right holder is in compliance with the terms and conditions herein:

1. Source of water: **San Simeon Creek Underflow**

tributary to: **Pacific Ocean**

within the County of **San Luis Obispo**

2. Location of points of diversion

By California Coordinate System of 1983 in Zone 5	40-acre subdivision of public land survey or projection thereof	Section (Projected)*	Township	Range	Base and Meridian
Well SS1 **(1) North 2,419,152 feet and East 5,637,517 feet**	**NE¼ of SE¼**	**9***	**27S**	**8E**	**MD**
Well SS2 **(2) North 2,419,397 feet and East 5,637,463 feet**	**NW¼ of SE¼**				
Well SS3 **(3) North 2,419,439 feet and East 5,636,957 feet**	**NW¼ of SE¼**				

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3. Purpose of use	4. Place of use		
	Townships	Range	Base and Meridian
Municipal	**27S & 28S**	**8E**	**MD**
	Within the Cambria Community Services District as shown on map.		

The place of use is shown on map filed on February 4, 1976 with the State Water Board.

5. The water appropriated under this right shall be limited to the quantity which can be beneficially used and shall not exceed **1.43 cubic feet per second** by direct diversion to be diverted from January 1 to December 31 of each year. The maximum amount diverted under this right shall not exceed **799 acre-feet per year.** The maximum amount diverted under this right shall not exceed 370 acre-feet between the date that surface flow ceases at Palmer Flats (where San Simeon Creek Road crosses San Simeon Creek - CCS83, Zone 5, N. 2,421,503 ft. and E. 5,643,001 ft.) and October 31 of each year. As used in this right, "the date when surface flow ceases" refers to the date of cessation of seasonal run-off during the winter or spring months. Any question regarding the date of cessation of seasonal run-off in a particular year shall be resolved by the Deputy Director for the Division of Water Rights upon request of any legal user of water from San Simeon Creek. Licensee shall monitor and document the day water ceases to flow in San Simeon Creek at the above referenced location and report that date to the Division of Water Rights in the annual report of licensee. Any water supplied for satisfaction of riparian rights on San Simeon Creek shall not be considered as water appropriated under this license.

(0000005A)

6. The equivalent of such continuous flow allowance for any 30-day period may be diverted in a shorter time provided there is no interference with other rights and instream beneficial uses and provided further that all terms or conditions protecting instream beneficial uses are observed.

(0000027)

7. No water shall be diverted under this right unless right holder is operating in accordance with a compliance plan, satisfactory to the Deputy Director for Water Rights. Said compliance plan shall specify how right holder will comply with the terms and conditions of this right. Right holder shall comply with all reporting requirements in accordance with the schedule contained in the compliance plan.

(0000070)

8. Right holder shall comply with the measuring and monitoring requirements as specified in the terms of this right or any reporting requirements by statute, order, policy, regulation, decision, judgment or probationary designation. The more stringent requirement shall control in each instance where there is a conflict or inconsistency between the requirements. Right holder shall comply with the measuring and monitoring requirements of chapter 2.8, title 23, California Code of Regulations.

(000000R)

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9. No water shall be diverted or used under this right for commercial and applicable personal medical use cannabis cultivation unless the water right holder is in compliance with all applicable conditions, including the numeric and narrative instream flow requirements, of the current version of the State Water Board's *Cannabis Cultivation Policy – Principles and Guidelines for Cannabis Cultivation*, which is available online at: https://www.waterboards.ca.gov/water_issues/programs/cannabis/docs/policy.pdf

(0000120)

10. Licensee shall maintain water levels in the lower basin to sustain stream flow to the lagoon at the mouth of San Simeon Creek to maintain fish and wildlife habitat.

(0500014)

11. Licensee shall provide and operate as necessary, irrigation facilities to maintain riparian vegetation within the district owned properties.

(0500040)

12. This water right is specifically subject to the diversion of water by Jon Pedotti, Willis Warren, Susan Keller, and Clyde Warren and their successors in interest under valid claim of riparian right in accordance with the following conditions:

    a. At such time as licensee is diverting water authorized under this water right and the water level in well 9K1 reaches a depth which renders the well unusable, licensee shall deliver water from its point of diversion to the riparian place of use served by well 9K1 in amounts necessary to meet the reasonable riparian needs of Warren and his successors in interest.

    b. At such time as licensee is diverting water authorized under this water right and the water in any replacement well for well 10F1 reaches a depth which renders the well unusable, licensee shall, at its option, take one or more of the following actions to supply water to the riparian place of use served by well 10F1 in amounts to meet the reasonable riparian needs of Warren and his successors in interest:

        (1) Make improvements to well 10F1 or its replacement well;
        (2) Install a new well;
        (3) Deliver water from licensee's point of diversion to the riparian place of use served by well 10F1.

    c. At such time as licensee is diverting water authorized under this water right and the water level in well 10G1 reaches a depth which renders the well unusable, licensee shall, at its option, take one or more of the following actions to supply water to the riparian place of use served by well 10G1 in the amounts necessary to meet the reasonable riparian needs of Pedotti and his successors in interest:

        (1) Install a new well;
        (2) Deliver water from licensee's point of diversion to the riparian place of use served by well 10G1.

        This requirement shall apply only in the event that the owner of the well 10G1 has cleaned the well perforations using an acid wash and has lowered the level of the pump intake to as near the bottom of the well as feasible.

    d. At such time as licensee is diverting water authorized under this water right and the water level in well 11C1 reaches a depth which renders the well unusable, licensee shall, at its option, take one or more of the following actions to supply water to the riparian place of use served by well 11C1

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in the amounts necessary to meet the reasonable riparian needs of Pedotti and his successors in interest:

(1) Make improvements to well 11C1;
(2) Install a new well;
(3) Deliver water from licensee's point of diversion to the riparian place of use served by well 11C1;
(4) Such other action as is mutually agreeable to the licensee and Pedotti or his successors in interest.

(0300054)

13. The State Water Board reserves continuing authority in the public interest to modify the terms and conditions of this license, including imposition of requirements to alter project facilities or operations and to modify instream flow releases, in the event of unforeseen adverse impacts to fish or wildlife. State Water Board action will be taken only after notice to interested parties and opportunity for hearing.

(000M001)

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THIS RIGHT IS ALSO SUBJECT TO THE FOLLOWING TERMS AND CONDITIONS:

A. Right holder is on notice that: (1) failure to timely commence or complete construction work or beneficial use of water with due diligence, (2) cessation or partial cessation of beneficial use of water, or (3) failure to observe any of the terms or conditions of this right, may be cause for the State Water Board to consider revocation (including partial revocation) of this right. (Cal. Code Regs., tit. 23, § 850.)

(0000016)

B. Right holder is on notice that when the State Water Board determines that any person is violating, or threatening to violate, any term or condition of a right, the State Water Board may issue an order to that person to cease and desist from that violation. (Wat. Code, § 1831.) Civil liability may be imposed administratively by the State Water Board pursuant to Wat. Code, § 1055, or may be imposed by the superior court. The Attorney General, upon the request of the board, shall petition the superior court to impose, assess, and recover those sums. (Wat. Code, § 1846.)

(0000017)

C. Right holder is not authorized to make any modifications to the location of diversion facilities, place of use or purposes of use, or make other changes to the project that do not conform with the terms and conditions of this right, prior to submitting a change petition and obtaining approval of the State Water Board.

(0000018)

D. Right holder shall measure the amount of water beneficially used under this right using devices and/or methods satisfactory to the Deputy Director for Water Rights.

In order to demonstrate compliance with the beneficial use monitoring requirements of this right, right holder shall provide evidence that the devices and/or methods are functioning properly, in a manner satisfactory to the Deputy Director of Water Rights, within thirty days of first use of the device and/or method, with the reports required by chapter 2.7, title 23, California Code of Regulations, and whenever requested by the Division of Water Rights.

(0000015)

E. Right holder shall comply with the reporting requirements as specified in the terms of this right or any reporting requirements by statute, order, policy, regulation, decision, judgment or probationary designation. The more stringent requirement shall control in each instance where there is conflict or inconsistency between the requirements.

Right holder shall comply with the reporting requirements of chapter 2.7, title 23, California Code of Regulations.

Right holder shall promptly submit any reports, data, or other information that may reasonably be required by the State Water Board, including but not limited to documentation of water diversion and beneficial use under this right.

(0000010)

F. Right holder shall grant, or secure authorization through right holder's right of access to property owned by another party, the staff of the State Water Board, and any other authorized representatives of the State Water Board the following:

1. Entry upon property where water is being diverted, stored or used under a right issued by the State Water Board or where monitoring, samples and/or records must be collected under the conditions of this right;

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2. Access to copy any records at reasonable times that are kept under the terms and conditions of a right or other order issued by State Water Board;

3. Access to inspect at reasonable times any project covered by a right issued by the State Water Board, equipment (including monitoring and control equipment), practices, or operations regulated by or required under this right; and,

4. Access to photograph, sample, measure, and monitor at reasonable times for the purpose of ensuring compliance with a right or other order issued by State Water Board, or as otherwise authorized by the Water Code.

(0000011)

G. This right shall not be construed as conferring right of access to any lands or facilities not owned by right holder.

(0000022)

H. All rights are issued subject to available flows. Inasmuch as the source contains treated wastewater, imported water from another stream system, or return flow from other projects, there is no guarantee that such supply will continue.

(0000025)

I. This right does not authorize diversion of water dedicated by other right holders under a senior right for purposes of preserving or enhancing wetlands, habitat, fish and wildlife resources, or recreation in, or on, the water. (Wat. Code, § 1707.) The Division of Water Rights maintains information about these dedications. It is right holders' responsibility to be aware of any dedications that may preclude diversion under this right.

(0000212)

J. No water shall be diverted or used under this right, and no construction related to such diversion shall commence, unless right holder has obtained and is in compliance with all necessary permits or other approvals required by other agencies. If an amended right is issued, no new facilities shall be utilized, nor shall the amount of water diverted or used increase beyond the maximum amount diverted or used during the previously authorized development schedule, unless right holder has obtained and is in compliance with all necessary requirements, including but not limited to the permits and approvals listed in this term.

If construction or rehabilitation work is required for the diversion works covered by this right, right holder shall prepare and submit to the Division of Water Rights a list of, or provide information that shows proof of attempts to solicit information regarding the need for, permits or approvals that may be required for the project. At a minimum, right holder shall provide a list or other information pertaining to whether any of the following permits or approvals are required: (1) lake or streambed alteration agreement with the Department of Fish and Wildlife (Fish & G. Code, § 1600 et seq.); (2) Department of Water Resources, Division of Safety of Dams approval (Wat. Code, § 6002); (3) Regional Water Quality Control Board Waste Discharge Requirements (Wat. Code, § 13260 et seq.); (4) U.S. Army Corps of Engineers Clean Water Act section 404 permit (33 U.S.C. § 1344); and (5) local grading permits.

Right holder shall, within 30 days of issuance of any permits, approvals or waivers, transmit copies to the Division of Water Rights.

(0000203)

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K. Urban water suppliers must comply with the Urban Water Management Planning Act (Wat. Code, § 10610 et seq.). An "urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually.

Agricultural water users and suppliers must comply with the Agricultural Water Management Planning Act (Act) (Water Code, § 10800 et seq.). Agricultural water users applying for a permit from the State Water Board are required to develop and implement water conservation plans in accordance with the Act. An "agricultural water supplier" means a supplier, either publicly or privately owned, providing water to 10,000 or more irrigated acres, excluding recycled water. An agricultural water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers.

(0000029D)

L. Pursuant to Water Code sections 100 and 275 and the common law public trust doctrine, all rights and privileges under this right, including method of diversion, method of use, and quantity of water diverted, are subject to the continuing authority of the State Water Board in accordance with law and in the interest of the public welfare to protect public trust uses and to prevent waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion of said water.

The continuing authority of the State Water Board may be exercised by imposing specific requirements over and above those contained in this right with a view to eliminating waste of water and to meeting the reasonable water requirements of right holder without unreasonable draft on the source. Right holder may be required to implement a water conservation plan, features of which may include but not necessarily be limited to (1) reusing or reclaiming the water allocated; (2) using water reclaimed by another entity instead of all or part of the water allocated; (3) restricting diversions so as to eliminate agricultural tailwater or to reduce return flow; (4) suppressing evaporation losses from water surfaces; (5) controlling phreatophytic growth; and (6) installing, maintaining, and operating efficient water measuring devices to assure compliance with the quantity limitations of this right and to determine accurately water use as against reasonable water requirements for the authorized project. No action will be taken pursuant to this paragraph unless the State Water Board determines, after notice to affected parties and opportunity for hearing, that such specific requirements are physically and financially feasible and are appropriate to the particular situation.

The continuing authority of the State Water Board also may be exercised by imposing further limitations on the diversion and use of water by right holder in order to protect public trust uses. No action will be taken pursuant to this paragraph unless the State Water Board determines, after notice to affected parties and opportunity for hearing, that such action is consistent with California Constitution, article X, section 2; is consistent with the public interest; and is necessary to preserve or restore the uses protected by the public trust.

(0000012)

M. The quantity of water diverted under this right is subject to modification by the State Water Board if, after notice to right holder and an opportunity for hearing, the State Water Board finds that such modification is necessary to meet water quality objectives in water quality control plans which have been or hereafter may be established or modified pursuant to Division 7 of the Water Code. No action will be taken pursuant to this paragraph unless the State Water Board finds that (1) adequate waste discharge requirements have been prescribed and are in effect with respect to all waste discharges which have any substantial effect upon water quality in the area involved, and (2) the water quality objectives cannot be achieved solely through the control of waste discharges.

(0000013)

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N. This right does not authorize any act which results in the taking of a candidate, threatened or endangered species or any act which is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish & G. Code, § 2050 et seq.) or the federal Endangered Species Act (16 U.S.C. § 1531 et seq.). If a "take" will result from any act authorized under this right, right holder shall obtain any required authorization for an incidental take prior to construction or operation of the project. Right holder shall be responsible for meeting all requirements of the applicable Endangered Species Act for the project authorized under this right.

(0000014)

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This right is issued and right holder takes it subject to the following provisions of the Water Code:

Section 1392. Every permittee, if he accepts a permit, does so under the conditions precedent that no value whatsoever in excess of the actual amount paid to the State therefor shall at any time be assigned to or claimed for any permit granted or issued under the provisions of this division (of the Water Code), or for any rights granted or acquired under the provisions of this division (of the Water Code), in respect to the regulation by any competent public authority of the services or the price of the services to be rendered by any permittee or by the holder of any rights granted or acquired under the provisions of this division (of the Water Code) or in respect to any valuation for purposes of sale to or purchase, whether through condemnation proceedings or otherwise, by the State or any city, city and county, municipal water district, irrigation district, lighting district, or any political subdivision of the State, of the rights and property of any permittee, or the possessor of any rights granted, issued, or acquired under the provisions of this division (of the Water Code).

Section 1627. A license shall be effective for such time as the water actually appropriated under it is used for a useful and beneficial purpose in conformity with this division (of the Water Code) but no longer.

Section 1629. Every licensee, if he accepts a license, does so under the conditions precedent that no value whatsoever in excess of the actual amount paid to the State therefore shall at any time be assigned to or claimed for any license granted or issued under the provisions of this division (of the Water Code), or for any rights granted or acquired under the provisions of this division (of the Water Code), in respect to the regulation by any competent public authority of the services or the price of the services to be rendered by any licensee or by the holder of any rights granted or acquired under the provisions of this division (of the Water Code) or in respect to any valuation for purposes of sale to or purchase, whether through condemnation proceedings or otherwise, by the State or any city, city and county, municipal water district, irrigation district, lighting district, or any political subdivision of the State, of the rights and property of any licensee, or the possessor of any rights granted, issued, or acquired under the provisions of this division (of the Water Code).

Section 1630. At any time after the expiration of twenty years after the granting of a license, the State or any city, city and county, municipal water district, irrigation district, lighting district, or any political subdivision of the State shall have the right to purchase the works and property occupied and used under the license and the works built or constructed for the enjoyment of the rights granted under the license.

Section 1631. In the event that the State, or any city, city and county, municipal water district, irrigation district, lighting district, or political subdivision of the State so desiring to purchase and the owner of the works and property cannot agree upon the purchase price, the price shall be determined in such manner as is now or may hereafter be provided by law for determining the value of property taken in eminent domain proceedings.

STATE WATER RESOURCES CONTROL BOARD

Scott McFarland, for

Erik Ekdahl, Deputy Director
Division of Water Rights

Dated: MAR 14 2019

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STATE OF CALIFORNIA
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
STATE WATER RESOURCES CONTROL BOARD

DIVISION OF WATER RIGHTS

RIGHT TO DIVERT AND USE WATER

APPLICATION 28158 PERMIT 20387 LICENSE 13917

Right Holder: Cambria Community Services District
P.O. Box 65
Cambria, CA 93428-0065

The State Water Resources Control Board (State Water Board) authorizes the diversion and use of water by the right holder in accordance with the limitations and conditions herein SUBJECT TO PRIOR RIGHTS. The priority of this right dates from **June 8, 1984**. This right is issued in accordance with the State Water Board delegation of authority to the Deputy Director for Water Rights (Resolution 2012-0029) and the Deputy Director for Water Rights redelegation of authority dated October 19, 2017. This right supersedes any previously issued right on **Application 28158**. The right holder has made proof, to the satisfaction of the State Water Board, of the quantities of water put to beneficial use during the authorized development schedule.

Right holder is hereby granted a right to divert and use water as follows. No water shall be diverted or used under this water right unless right holder is in compliance with the terms and conditions herein:

1. Source of water: **Santa Rosa Creek Underflow**

tributary to: **Pacific Ocean**

within the County of **San Luis Obispo**

2. Location of points of diversion

By California Coordinate System of 1983 in Zone 5	40-acre subdivision of public land survey or projection thereof	Section (Projected)*	Township	Range	Base and Meridian
Well SR1 **(1) North 2,405,136 feet and East 5,644,286 feet**	**SW¼ of NW¼**	**26***			
Well SR3 **(2) North 2,405,741 feet and East 5,645,624 feet**	**NW¼ of NW¼**	**26***	**27S**	**8E**	**MD**
Well SR4 **(3) North 2,407,057 feet and East 5,648,418 feet**	**SE¼ of SE¼**	**23***			

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3. Purpose of use	4. Place of use		
	Townships	Range	Base and Meridian
Municipal	**27S & 28S**	**8E**	**MD**
	Within the Cambria Community Services District as shown on map.		

The place of use is shown on map filed on February 4, 1976 with the State Water Board.

5. The water appropriated under this right shall be limited to the quantity which can be beneficially used and shall not exceed **0.59 cubic foot per second** by direct diversion to be diverted from January 1 to December 31 of each year. The maximum amount diverted under this right shall not exceed **218 acre-feet per year.** The maximum amount diverted under this right shall not exceed **155.3 acre-feet** from May 1 through October 31 of each year nor shall it exceed 218 acre-feet per calendar year.

(0000005A)

6. The equivalent of such continuous flow allowance for any 30-day period may be diverted in a shorter time provided there is no interference with other rights and instream beneficial uses and provided further that all terms or conditions protecting instream beneficial uses are observed.

(0000027)

7. No water shall be diverted under this right unless right holder is operating in accordance with a compliance plan, satisfactory to the Deputy Director for Water Rights. Said compliance plan shall specify how right holder will comply with the terms and conditions of this right. Right holder shall comply with all reporting requirements in accordance with the schedule contained in the compliance plan.

(0000070)

8. During the season specified in this license, the total amount and rate of water diverted and used under this license and the licensee's claimed existing right for the place of use specified in this license shall not exceed the amount and rate of diversion and use, respectively, specified in this license. If the licensee's claimed existing right is quantified at some later date as a result of an adjudication or other legally binding proceeding, the amount and rate of diversion and use allowed under this license shall be the net of the face value of this license less the amounts of water available under the claimed existing right.

Licensee shall forfeit all rights under this license if the licensee transfers all or any part of the claimed existing right for the place of use covered by this license to another place of use without the prior approval of the State Water Board.

Licensee shall take and use water under the existing right claimed by the licensee only in accordance with law.

(0000021)

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9. For the protection of water quality from increased salinity due to sea water intrusion in the lower subbasin of Santa Rosa Creek and for the protection of instream resources, licensee shall:

   (a) Maintain monitoring wells WBE and WBW in the vicinity of well 21R3. If the well(s) need to be replaced, the location of the new well(s) shall be approved by the Deputy Director of the Division of Water Rights.

   (b) Follow water sampling protocol, as approved by the Deputy Director of the Division of Water Rights and have the water samples analyzed for electrical conductivity and chloride content in a laboratory certified by the State of California.

   (c) Measure the water level in monitoring wells WBE and WBW, or the equivalent, and cease diversions under this water right if the water level in the monitoring wells falls below 3.00 feet above mean sea level. The Deputy Director of the Division of Water Rights is authorized to adjust the water elevation requirement on the monitoring wells, if appropriate, based upon review of the hydrological analysis to be submitted by the licensee. Any such hydrologic analysis shall consider the depth of the bedrock in the monitoring well and shall determine the fresh water elevation needed to prevent seawater intrusion. Any action by the Deputy Director of the Division of Water Rights to lower the monitoring well water elevation requirements must be accompanied by a finding that the licensee as consulted with the California Department of Fish and Wildlife regarding the tidewater goby (Eucyclogobius newberryi) and that lowering the monitoring well water elevation requirement would be in compliance with applicable provisions of state and federal law.

   (0400500)
   (0110500)

10. To prevent any significant ground deformation in the lower subbasin of Sant Rosa Creek from occurring due to diversions of water under this water right, licensee shall:

   (a) Adhere to the Ground Deformation Monitoring Plan approved by the Deputy Director of the Division of Water Rights on February 11, 1991.

   (b) Monitor for vertical ground deformation on a weekly basis when the static water level in well SR1 or SR3 falls below 15 feet below mean sea level.

   (c) Cease diversion under this water right when the vertical ground deformation exceeds the limit established in the approved ground deformation monitoring program.

   (d) Prior to making any changes in the approved ground deformation program, licensee must get prior approval by the Deputy Director of the Division of Water Rights.

   (0400500)
   (0490500)

11. This water right is specifically subject to the diversion of water from the lower subbasin wells of Lloyd and Faye Junge, Joyce Bretz and Tony Williams, Bruce Black, and Rancho Pacifica and their successors in interest under valid claim of riparian right.

   At such time as licensee is diverting water authorized under this water right and the water level in the Junge, Bretz, Williams, Black, or Rancho Pacifica wells reaches a depth which renders the well unusable, licensee shall:

   (a) Deliver water from its point of diversion to the riparian place of use served by the well, or;

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(b) Take other action to provide an alternate supply of water as is mutually agreeable to the licensee and Junge, Bretz and Williams, Black, and Rancho Pacifica or their successors in interest.

Any water supplied for satisfaction of riparian rights shall not be considered as water appropriated under this water right.

In the event that licensee opts to deliver water to the riparian place of use of any of the above wells, the riparian diverter shall be liable for the estimated costs which the riparian would have incurred to pump water from the affected well. In the absence of an agreement between the parties relative to pumping costs, the costs shall be based on the average amount per acre-foot for pumping water from the affected well during the month in question over the prior three years. Licensee shall pay the cost of installing and maintaining any water conveyance facilities needed to deliver water to the riparian point of diversion or place of use.

(0280800)

12. For the maintenance of riparian vegetation, fish and aquatic resources, licensee shall use the Santa Rosa Gaging Station operated by San Luis Obispo Flood Control (County Station 716) near the intersection of Santa Rosa Creek and Main Street to monitor stream flow in Santa Rosa Creek. Licensee shall limit diversion to:

(a) A maximum of 2.0 acre-feet per day from November 1 through April 30 when the average daily flow at County Station 716 is between 3.5 and 11.0 cubic feet per second;
(b) A maximum of 1.4 acre-feet per day from November 1 through April 30 when the average daily flow at County Station 716 is less than 3.5 cubic feet per second.

If County Station 716 ceases operation or licensee can no longer obtain adequate data to determine average daily stream flow at this location, licensee is limited to a maximum daily diversion of 1.4 acre-feet per day between November 1 and April 30 under this water right.

(0140500)
(0100500)

13. Right holder shall comply with the measuring and monitoring requirements as specified in the terms of this right or any reporting requirements by statute, order, policy, regulation, decision, judgment or probationary designation. The more stringent requirement shall control in each instance where there is a conflict or inconsistency between the requirements. Right holder shall comply with the measuring and monitoring requirements of chapter 2.8, title 23, California Code of Regulations.

(000000R)

14. No water shall be diverted or used under this right for commercial and applicable personal medical use cannabis cultivation unless the water right holder is in compliance with all applicable conditions, including the numeric and narrative instream flow requirements, of the current version of the State Water Board's Cannabis Cultivation Policy – Principles and Guidelines for Cannabis Cultivation, which is available online at: https://www.waterboards.ca.gov/water_issues/programs/cannabis/docs/policy.pdf

(0000120)

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THIS RIGHT IS ALSO SUBJECT TO THE FOLLOWING TERMS AND CONDITIONS:

A. Right holder is on notice that: (1) failure to timely commence or complete construction work or beneficial use of water with due diligence, (2) cessation or partial cessation of beneficial use of water, or (3) failure to observe any of the terms or conditions of this right, may be cause for the State Water Board to consider revocation (including partial revocation) of this right. (Cal. Code Regs., tit. 23, § 850.)

(0000016)

B. Right holder is on notice that when the State Water Board determines that any person is violating, or threatening to violate, any term or condition of a right, the State Water Board may issue an order to that person to cease and desist from that violation. (Wat. Code, § 1831.) Civil liability may be imposed administratively by the State Water Board pursuant to Wat. Code, § 1055, or may be imposed by the superior court. The Attorney General, upon the request of the board, shall petition the superior court to impose, assess, and recover those sums. (Wat. Code, § 1846.)

(0000017)

C. Right holder is not authorized to make any modifications to the location of diversion facilities, place of use or purposes of use, or make other changes to the project that do not conform with the terms and conditions of this right, prior to submitting a change petition and obtaining approval of the State Water Board.

(0000018)

D. Right holder shall measure the amount of water beneficially used under this right using devices and/or methods satisfactory to the Deputy Director for Water Rights.

In order to demonstrate compliance with the beneficial use monitoring requirements of this right, right holder shall provide evidence that the devices and/or methods are functioning properly, in a manner satisfactory to the Deputy Director of Water Rights, within thirty days of first use of the device and/or method, with the reports required by chapter 2.7, title 23, California Code of Regulations, and whenever requested by the Division of Water Rights.

(0000015)

E. Right holder shall comply with the reporting requirements as specified in the terms of this right or any reporting requirements by statute, order, policy, regulation, decision, judgment or probationary designation. The more stringent requirement shall control in each instance where there is conflict or inconsistency between the requirements.

Right holder shall comply with the reporting requirements of chapter 2.7, title 23, California Code of Regulations.

Right holder shall promptly submit any reports, data, or other information that may reasonably be required by the State Water Board, including but not limited to documentation of water diversion and beneficial use under this right.

(0000010)

F. Right holder shall promptly submit any reports, data, or other information that may reasonably be required by the State Water Board, including but not limited to documentation of water diversion and use under this right and documentation of compliance with the terms and conditions of this right.

(0000010)

G. Right holder shall grant, or secure authorization through right holder's right of access to property owned by another party, the staff of the State Water Board, and any other authorized representatives of the State Water Board the following:

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1. Entry upon property where water is being diverted, stored or used under a right issued by the State Water Board or where monitoring, samples and/or records must be collected under the conditions of this right;

2. Access to copy any records at reasonable times that are kept under the terms and conditions of a right or other order issued by State Water Board;

3. Access to inspect at reasonable times any project covered by a right issued by the State Water Board, equipment (including monitoring and control equipment), practices, or operations regulated by or required under this right; and,

4. Access to photograph, sample, measure, and monitor at reasonable times for the purpose of ensuring compliance with a right or other order issued by State Water Board, or as otherwise authorized by the Water Code.

(0000011)

H. This right shall not be construed as conferring right of access to any lands or facilities not owned by right holder.

(0000022)

I. All rights are issued subject to available flows. Inasmuch as the source contains treated wastewater, imported water from another stream system, or return flow from other projects, there is no guarantee that such supply will continue.

(0000025)

J. This right does not authorize diversion of water dedicated by other right holders under a senior right for purposes of preserving or enhancing wetlands, habitat, fish and wildlife resources, or recreation in, or on, the water. (Wat. Code, § 1707.) The Division of Water Rights maintains information about these dedications. It is right holders' responsibility to be aware of any dedications that may preclude diversion under this right.

(0000212)

No water shall be diverted or used under this right, and no construction related to such diversion shall commence, unless right holder has obtained and is in compliance with all necessary permits or other approvals required by other agencies. If an amended right is issued, no new facilities shall be utilized, nor shall the amount of water diverted or used increase beyond the maximum amount diverted or used during the previously authorized development schedule, unless right holder has obtained and is in compliance with all necessary requirements, including but not limited to the permits and approvals listed in this term.

If construction or rehabilitation work is required for the diversion works covered by this right, right holder shall prepare and submit to the Division of Water Rights a list of, or provide information that shows proof of attempts to solicit information regarding the need for, permits or approvals that may be required for the project. At a minimum, right holder shall provide a list or other information pertaining to whether any of the following permits or approvals are required: (1) lake or streambed alteration agreement with the Department of Fish and Wildlife (Fish & G. Code, § 1600 et seq.); (2) Department of Water Resources, Division of Safety of Dams approval (Wat. Code, § 6002); (3) Regional Water Quality Control Board Waste Discharge Requirements (Wat. Code, § 13260 et seq.); (4) U.S. Army Corps of Engineers Clean Water Act section 404 permit (33 U.S.C. § 1344); and (5) local grading permits.

Right holder shall, within 30 days of issuance of any permits, approvals or waivers, transmit copies to the Division of Water Rights.

(0000203)

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K. Urban water suppliers must comply with the Urban Water Management Planning Act (Wat. Code, § 10610 et seq.). An "urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually.

Agricultural water users and suppliers must comply with the Agricultural Water Management Planning Act (Act) (Water Code, § 10800 et seq.). Agricultural water users applying for a permit from the State Water Board are required to develop and implement water conservation plans in accordance with the Act. An "agricultural water supplier" means a supplier, either publicly or privately owned, providing water to 10,000 or more irrigated acres, excluding recycled water. An agricultural water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers.

(0000029D)

L. Pursuant to Water Code sections 100 and 275 and the common law public trust doctrine, all rights and privileges under this right, including method of diversion, method of use, and quantity of water diverted, are subject to the continuing authority of the State Water Board in accordance with law and in the interest of the public welfare to protect public trust uses and to prevent waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion of said water.

The continuing authority of the State Water Board may be exercised by imposing specific requirements over and above those contained in this right with a view to eliminating waste of water and to meeting the reasonable water requirements of right holder without unreasonable draft on the source. Right holder may be required to implement a water conservation plan, features of which may include but not necessarily be limited to (1) reusing or reclaiming the water allocated; (2) using water reclaimed by another entity instead of all or part of the water allocated; (3) restricting diversions so as to eliminate agricultural tailwater or to reduce return flow; (4) suppressing evaporation losses from water surfaces; (5) controlling phreatophytic growth; and (6) installing, maintaining, and operating efficient water measuring devices to assure compliance with the quantity limitations of this right and to determine accurately water use as against reasonable water requirements for the authorized project. No action will be taken pursuant to this paragraph unless the State Water Board determines, after notice to affected parties and opportunity for hearing, that such specific requirements are physically and financially feasible and are appropriate to the particular situation.

The continuing authority of the State Water Board also may be exercised by imposing further limitations on the diversion and use of water by right holder in order to protect public trust uses. No action will be taken pursuant to this paragraph unless the State Water Board determines, after notice to affected parties and opportunity for hearing, that such action is consistent with California Constitution, article X, section 2; is consistent with the public interest; and is necessary to preserve or restore the uses protected by the public trust.

(0000012)

M. The quantity of water diverted under this right is subject to modification by the State Water Board if, after notice to right holder and an opportunity for hearing, the State Water Board finds that such modification is necessary to meet water quality objectives in water quality control plans which have been or hereafter may be established or modified pursuant to Division 7 of the Water Code. No action will be taken pursuant to this paragraph unless the State Water Board finds that (1) adequate waste discharge requirements have been prescribed and are in effect with respect to all waste discharges which have any substantial effect upon water quality in the area involved, and (2) the water quality objectives cannot be achieved solely through the control of waste discharges.

(0000013)

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N. This right does not authorize any act which results in the taking of a candidate, threatened or endangered species or any act which is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish & G. Code, § 2050 et seq.) or the federal Endangered Species Act (16 U.S.C. § 1531 et seq.). If a "take" will result from any act authorized under this right, right holder shall obtain any required authorization for an incidental take prior to construction or operation of the project. Right holder shall be responsible for meeting all requirements of the applicable Endangered Species Act for the project authorized under this right.

(0000014)

Docusign Envelope ID: CD1B5FD8-CD5C-8D03-8169-6EA25443FA19

This right is issued, and right holder takes it subject to the following provisions of the Water Code:

Section 1392. Every permittee, if he accepts a permit, does so under the conditions precedent that no value whatsoever in excess of the actual amount paid to the State therefor shall at any time be assigned to or claimed for any permit granted or issued under the provisions of this division (of the Water Code), or for any rights granted or acquired under the provisions of this division (of the Water Code), in respect to the regulation by any competent public authority of the services or the price of the services to be rendered by any permittee or by the holder of any rights granted or acquired under the provisions of this division (of the Water Code) or in respect to any valuation for purposes of sale to or purchase, whether through condemnation proceedings or otherwise, by the State or any city, city and county, municipal water district, irrigation district, lighting district, or any political subdivision of the State, of the rights and property of any permittee, or the possessor of any rights granted, issued, or acquired under the provisions of this division (of the Water Code).

Section 1627. A license shall be effective for such time as the water actually appropriated under it is used for a useful and beneficial purpose in conformity with this division (of the Water Code) but no longer.

Section 1629. Every licensee, if he accepts a license, does so under the conditions precedent that no value whatsoever in excess of the actual amount paid to the State therefore shall at any time be assigned to or claimed for any license granted or issued under the provisions of this division (of the Water Code), or for any rights granted or acquired under the provisions of this division (of the Water Code), in respect to the regulation by any competent public authority of the services or the price of the services to be rendered by any licensee or by the holder of any rights granted or acquired under the provisions of this division (of the Water Code) or in respect to any valuation for purposes of sale to or purchase, whether through condemnation proceedings or otherwise, by the State or any city, city and county, municipal water district, irrigation district, lighting district, or any political subdivision of the State, of the rights and property of any licensee, or the possessor of any rights granted, issued, or acquired under the provisions of this division (of the Water Code).

Section 1630. At any time after the expiration of twenty years after the granting of a license, the State or any city, city and county, municipal water district, irrigation district, lighting district, or any political subdivision of the State shall have the right to purchase the works and property occupied and used under the license and the works built or constructed for the enjoyment of the rights granted under the license.

Section 1631. In the event that the State, or any city, city and county, municipal water district, irrigation district, lighting district, or political subdivision of the State so desiring to purchase and the owner of the works and property cannot agree upon the purchase price, the price shall be determined in such manner as is now or may hereafter be provided by law for determining the value of property taken in eminent domain proceedings.

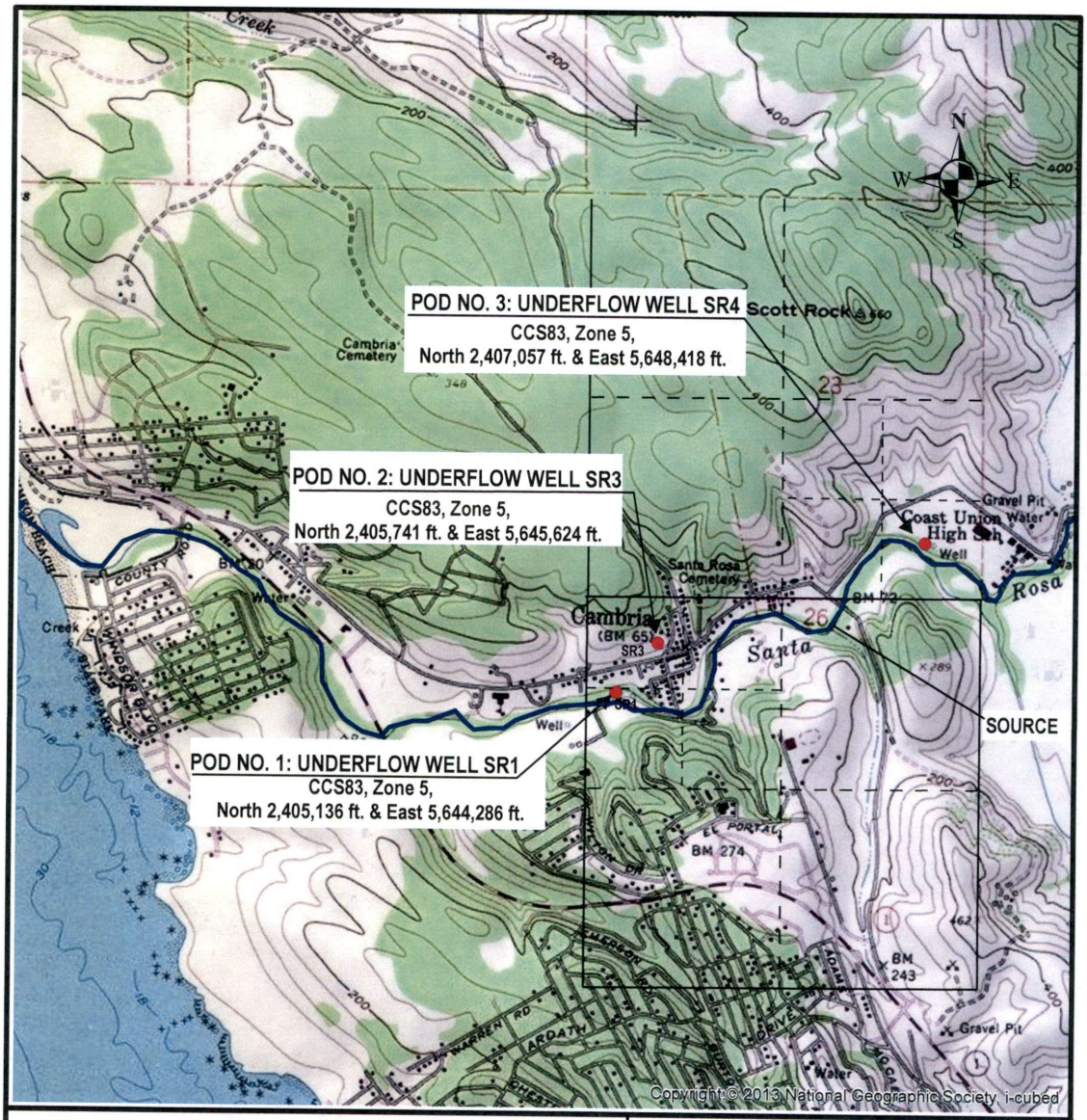
STATE WATER RESOURCES CONTROL BOARD

Scott McDonald, for

Erik Ekdahl, Deputy Director
Division of Water Rights

Dated: MAR 14 2019

Docusign Envelope ID: CD1B5FD8-CD5C-8D03-8169-6EA25443FA19



OWNER: CAMBRIA COMMUNITY SERVICES DISTRICT

SOURCE: SANTA ROSA CREEK UNDERFLOW

POINTS OF DIVERSION:

WITHIN (1) SW 1/4 OF NW 1/4, (2) NW 1/4 OF NW 1/4, (3) SE 1/4 OF SE 1/4 OF PROJECTED

SECTIONS (1) (2) 26, T27S, R8E, MDB&M
(3) 23, T27S, R8E, MDB&M

COUNTY OF SAN LUIS OBISPO

U.S.G.S. QUAD: CAMBRIA DATE: PR 1979 SCALE: 1:24,000

STATE OF CALIFORNIA
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
STATE WATER RESOURCES CONTROL BOARD
DIVISION OF WATER RIGHTS

APPLICATION NO. 28158

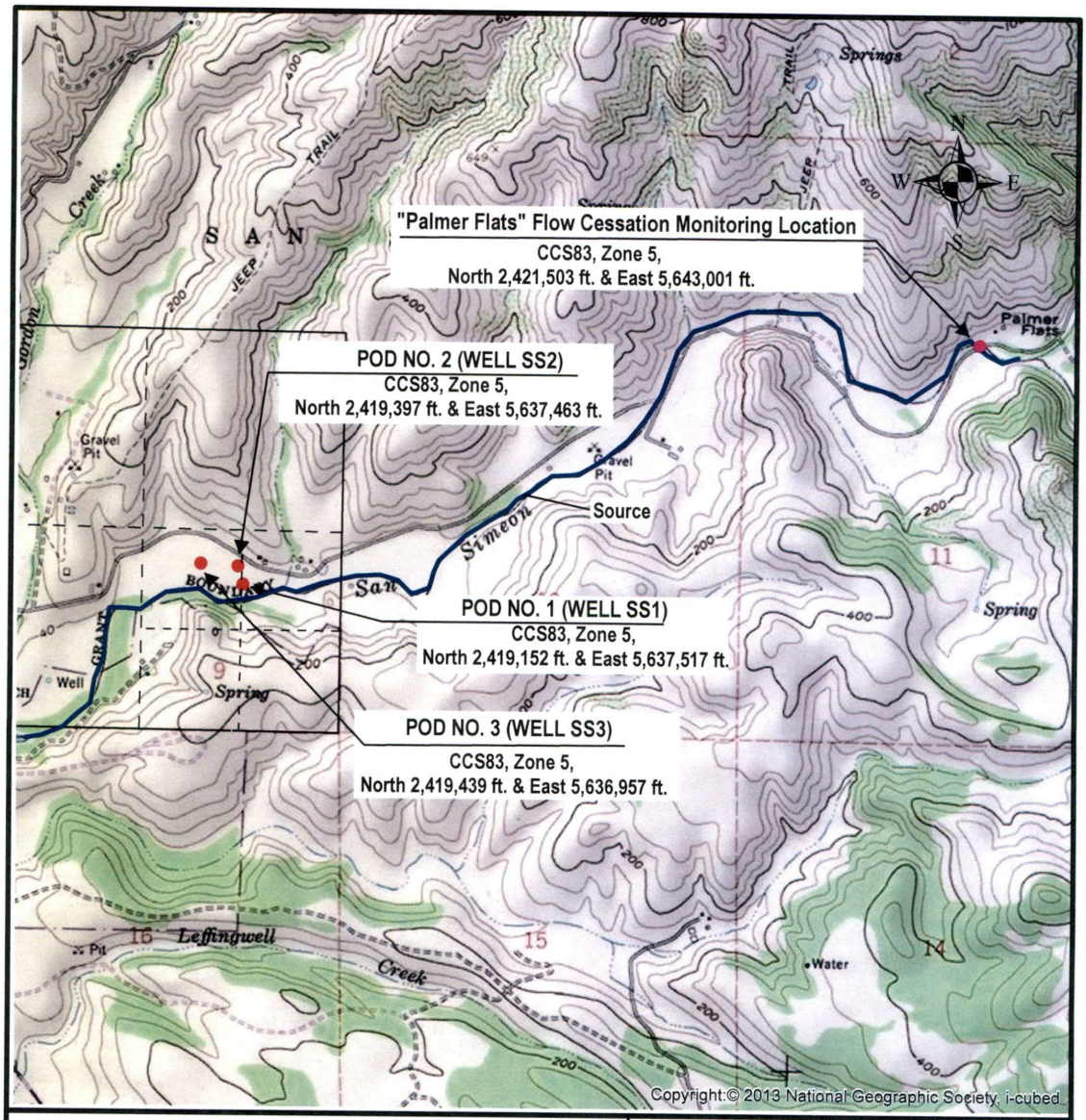
PERMIT NO. 20387

LICENSE NO. 13917

DATE:	DRAWN:	CHECKED:
2-8-2018	SMc	MAM

Note: This map does not constitute a public land survey as defined by California Business & Professions Code section 8726. It has been prepared for descriptive purposes only.

Docusign Envelope ID: CD1B5FD8-CD5C-8D03-8169-6EA25443FA19



OWNER: CAMBRIA COMMUNITY SERVICES DISTRICT

SOURCE: SAN SIMEON CREEK UNDERFLOW

POINTS OF DIVERSION:

WITHIN (1) NE 1/4 OF SE 1/4, (2) NW 1/4 OF SE 1/4, (3) NW 1/4 OF SE 1/4 OF PROJECTED

SECTION 9, T27S, R8E, MDB&M

COUNTY OF SAN LUIS OBISPO

U.S.G.S. QUAD: CAMBRIA DATE: PR 1979 SCALE: 1:24,000

STATE OF CALIFORNIA
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
STATE WATER RESOURCES CONTROL BOARD
DIVISION OF WATER RIGHTS
MAP NO. 2

APPLICATION NO. 25002

PERMIT NO. 17287

LICENSE NO. 13916

DATE:	DRAWN:	CHECKED:
2-8-2018	SMc	MAM

Note: This map does not constitute a public land survey as defined by California Business & Professions Code section 8726. It has been prepared for descriptive purposes only.

Docusign Envelope ID: CD1B5FD8-CD5C-8D03-8169-6EA25443FA19

APPENDIX H – SAN LUIS OBISPO COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

Refer to the County of San Luis Obispo online documentation:

https://www.slocounty.ca.gov/departments/administrative-office/office-of-emergency-services/forms-documents/2025-draft-multi-jurisdictional-hazard-mitigation-plan

Docusign Envelope ID: CD1B5FD8-CD5C-8D03-8169-6EA25443FA19

APPENDIX I – ADOPTION RESOLUTION

Documentation pending. It will be included in the Final 2025 UWMP.

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APPENDIX J –2025 UWMP SUBMITTAL DOCUMENTATION

Documentation pending. It will be included in the Final 2025 UWMP.

Docusign Envelope ID: CD1B5FD8-CD5C-8D03-8169-6EA25443FA19

APPENDIX K – CCSD COASTAL DEVELOPMENT PERMIT 428-10

STATE OF CALIFORNIA — EDMUND G. BROWN JR., Governor

California Coastal Commission
SOUTH CENTRAL COAST REGIONAL COMMISSION
735 STATE STREET, (805) 963-6871
BALBOA BUILDING, SUITE 612
SANTA BARBARA, CA 93101

RECEIVED JUN 2 9 1981

COASTAL DEVELOPMENT PERMIT 2 absent

On May 29, 1981, by a vote of 10 to 0, the California Coastal Commission granted to CAMBRIA COMMUNITY SERVICES DISTRICT Permit # 428-10, subject to the conditions set forth below, for development consisting of amendment to condition of Coastal Development Permit No. 132-18 and 132-20 (131.20) (Condition Nos. 2 and 4 respectively) to modify the annual hook-ups permissable to allow 125 residential hook-ups.

more specifically described in the application file in the Commission offices.

The development is within the coastal zone in San Luis Obispo County at Community of Cambria.

After public hearing held on May 29, 1981, the Commission found that, as conditioned, the proposed development is in conformity with the provisions of Chapter 3 of the California Coastal Act of 1976; will not prejudice the ability of the local government having jurisdiction over the area to prepare a local coastal program that is in conformity with the provisions of Chapter 3 of the California Coastal Act of 1976; if between the sea and the public road nearest the sea, is in conformity with the public access and public recreation policies of Chapter 3 of the California Coastal Act of 1976; and either (1) will not have any significant adverse impact on the environment, or (2) there are no feasible alternatives or feasible mitigation measures available that would substantially lessen any significant adverse impact that the development as approved may have on the environment.

Issued on behalf of the South Central Coast Regional Coastal Commission on May 29, 1981.

Carl C. Hetrick
Executive Director

The undersigned permittee acknowledges receipt of the California Coastal Commission Permit # 428-10, and fully understands its contents, including all conditions imposed. (Please return one signed copy to the South Central Coastal Commission as soon as possible; upon receipt of same, the permit card will be mailed to you to post on project property.

June 30, 1981 — Edward V. Main

PERMITTEE

Docusign Envelope ID: CD1B5FD8-CD5C-8D03-8169-6EA25443FA19

Permit # 428-10, is subject to the following conditions:

I. STANDARD CONDITIONS

1. Assignment of Permit This permit may not be assigned to another person except as provided in Cal. Admin. Code, Title 14, Section 13170.

2. Notice of Receipt and Acknowledgement Construction authorized by this permit shall not commence until a copy of this permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of its contents, is returned to the Commission.

3. Expiration If construction has not commenced, this permit will expire two (2) years from the date on which the Commission voted on the application. Application for extension of this permit must be made prior to the expiration date.

4. Construction All construction must occur in accord with the proposal as set forth in the application for permit, subject to any special conditions set forth below. Any deviations from the approved plans must be reviewed by the Commission pursuant to Cal. Admin. Code, Title 14, Sections 13164 - 13168.

II. SPECIAL CONDITIONS

1. Approve the Amendment to Coastal Development Permit Nos. 132-18 and Conditions 2 and 4 respectively to state as follows:

Unless and until a Local Coastal Program is certified specifically approving an increase in water supply beyond that provided by this permit:

a. No more than a total of 5,250 dwelling units shall be permitted to receive water connections (including existing and new units). For the purposes of this condition a "dwelling unit" is defined as a single apartment or condominium unit or a single family residence.

b. The total number of annual hookups shall be limited to 125 dwelling units. The total number of service connections allowed shall be cumulative (i.e., if all 125 dwelling unit hook-ups are not utilized in one year, the remainder can be added to the next year's total).

The additional allocation from that allowed in Permit Nos. 132-18 and 131-20 is based on the reduction in per capita water use experienced in 1979 and 1980, and assumes that the reduction is indicative of a long term reduction in water usage. As the majority of the reduction is due to the implementation of the increasing block rate structure, the Commission finds that this amendment shall be void if the District changes the rate structure to a flat rate or a decreasing block rate structure.

2. All other conditions of Coastal Development Permit Nos. 132-18(as partially amended by Permit No. 161-07) and 131-20 shall remain effective.

Carl C. Hetrick

CARL C. HETRICK
Executive Director

Docusign Envelope ID: CD1B5FD8-CD5C-8D03-8169-6EA25443FA19

CALIFORNIA COASTAL COMMISSION
SOUTH CENTRAL COAST REGION

HEARING ITEM NO. 7
(11-7)

MEETING AT DISCOVERY MOTOR INN
1800 Monterey Street, San Luis Obispo, CA

HEARING AGENDA - FRIDAY, May 29, 1981 - 1:15 p.m.

APPLICATION NO. 428-10

APPLICANT: Cambria Community Services District
P.O. BOX 65
Cambria, CA 93428

LOCATION: Community of Cambria
Co. of San Luis Obispo

PROJECT: Amendment to condition of Coastal Development Permit No. 132-18 and 132-20 (Condition Nos. 2 and 4 respectively) to modify the annual hook-ups permissable to allow 125 residential hook-ups.

STAFF RECOMMENDATION:
The Staff recommends that the Commission adopt the following resolution:

I. APPROVAL WITH CONDITIONS

The Commission hereby approves a permit for the proposed amendment subject to the conditions below, on the grounds that, as conditioned, the proposed development is in conformity with the provisions of Chapter 3 of the Coastal Act of 1976, with the public access and public recreation policies of Chapter 3 of the Coastal Act, will not prejudice the ability of the local government having jurisdiction over the area to prepare a local coastal program that is in conformity with the provisions of Chapter 3 of the Coastal Act, and there are no possible alternatives, or mitigation measures, as provided in the California Environmental Quality Act, available which would substantially lessen any significant adverse impact that the development as finally proposed may have on the environment.

1. Approve the Amendment to Coastal Development Permit Nos. 132-18 and Conditions 2 and 4 respectively to state as follows:

Unless and until a Local Coastal Program is certified specifically approving an increase in water supply beyond that provided by this permit:

a. No more than a total of 5,250 dwelling units shall be permitted to receive water connections (including existing and new units). For the purposes of this condition a "dwelling unit" is defined as a single apartment or condominium unit or a single family residence.

b. The total number of annual hookups shall be limited to 125 dwelling units. The total number of service connections allowed shall be cumulative (i.e., if all 125 dwelling unit hook-ups are not utilized in one year, the remainder can be added to the next year's total).

The additional allocation from that allowed in Permit Nos. 132-18 and 131-20 is based on the reduction in per capita water use experienced in 1979 and 1980, and assumes that the reduction is indicative of a long term reduction in water usage. As the majority of the reduction is due to the implementation of the increasing block rate structure, the Commission finds that this amendment shall be void if the District changes the rate structure to a flat rate or a decreasing block rate structure.

2. All other conditions of Coastal Development Permit Nos. 132-18(as partially amended by Permit No. 161-07) and 131-20 shall remain effective.

III. FINDINGS AND DECLARATIONS
The Commission finds and declares as follows:

1. Project Description

The Cambria Community Services District (CCSD) has applied for an amendment to Coastal Development Permit No. 132-18, Condition No. 2 and Coastal Development Permit No. 131-20, Condition No. 4. The original permits were for the expansion and upgrade of the community water and sewer systems and are summarized in following:

(a) 132-18. The rehabilitation of the existing Cambria water distribution system and the development of a new source of water for the District users by the drilling of wells in the San Simeon Groundwater Basin. The State Water Resources Control Board, Division of Water Rights, had appropriated 1,230 acre/feet of water from this basin to the District with a determination that safe yield of the groundwater basin is 1,460 acre feet.

(b) 131-20. The expansions of the existing secondary treatment plant to a 1 mgd packaged treatment plant, construction of 12 foot land outfall 15,000 square feet in length and disposal fields and a reservoir in the San Simeon Creek area.

The condition(s) requested for modification limited the number and yearly allocation of new (the full conditons are for these permits are included as Appendix 1) residential water and sewer hook-ups in Cambria. The condition is a follows:

"Unless and until a Local Coastal Program is certified specifically approving an increase in water supply beyond that provided by this permit:"

a. "No more than a total of 3,800 dwelling units shall be permitted to receive water connections (including existing and new units). For the purposes of this condition a "dwelling unit" is defined a single apartment or condominium unit or a single family residence."

b. "The total number of annual hookups shall be limited to the schedule of service connections in the Feasibility Report, attached hereto and incorporated herein by reference as Exhibit 4. The effective date of this schedule shall coincide with the implementation of this project. The total number of service connections allowed shall be equal to the cumulative total to that date."

"In addition to the 3,800 connections allowed under this permit, the Commission may allow additional connections consistent with the other conditions of the permit if the Commission determines after public hearing that water conservation measures have achieved a reduction in water usage consistent with the requirements of Public Resources Code Section 30231; the number of connections allowed in this manner shall be determined by the long term reduction in water usage."

The schedule referred to under "b" and presented as Table 1 extends for a 30 year period and allows 84 hookups in the first year, decreasing over time to 56. The schedule was derived from the original estimates which the CCSD based their financial analysis upon.

Specifically, the District requests that "Exhibit A" as referenced in (b) above and presented as Exhibit 1 herein be changed and in its place the annual number of water and sewer hookups be set at 125. The District has not explicitly requested that the total number of dwelling units referenced in "a" above, 3,800, be modified, however based on the discussion which follows it is reasonable that if the Commission grants the rate change that it should also modify the total number of hookups permissable.

The yearly allocation begins on March 21st of each year. The yearly allocation for FY1981 was exhausted in less than one month

2. Commission Regulations with Respect to Permit Amendments

The Administrative Regulations set forth the circumstances whereby an amendment to a permit may be filed. Section 13166(a) requires:

"13166. Amendments to Permits Other than Administrative Permits. (a) Applications for amendments to previously approved developments shall be filed with the commission or regional commission which issued the permit."

"(1) An application for an amendment shall be rejected if, in the opinion of the executive director, the proposed amendment would lessen or avoid the intended effect of a partially approved or conditioned permit unless the applicant presents newly discovered material information, which he could not, with reasonable diligence, have discovered and produced before the permit was granted."

In the case of this permit the Executive Director has determined that there is materially new information indicating a decrease in per capita water demand. Accordingly, the application has been filed.

3. Basis of the Original Permit Condition

Citing PRC Sections 30250(a) and 30254, the Commission found that there could be adverse impacts on coastal resources as a result of the development accommodated by the water project equal to an increase of 2.9 times the existing population. Accordingly, the Commission established that the project should be limited to serve 3,800 households, limit the area to be served to existing developed areas, and mitigate the rate of development to extend over a 30 year period required to meet the repayment plan of the Farmers Home Administration Project Funding.

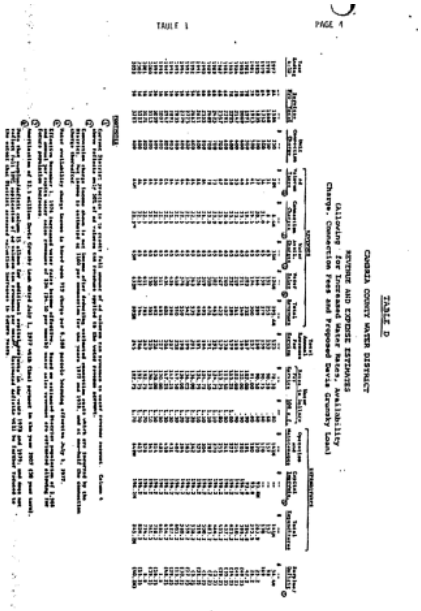

TABLE D
CAMBRIA COUNTY WATER DISTRICT
REVENUE AND EXPENSE ESTIMATES
Distribution of Increased Water Rates, Availability Charge, Connection Fees and Proposed Bond Quantity Level

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Public Resources Code Section 30250.

(a) New residential, commercial, or industrial development, except as otherwise provided in this division, shall be located within, contiguous with, or in close proximity to, existing developed areas able to accommodate it or, where such areas are not able to accommodate, in order areas with adequate public services and where it will not have significant adverse effects, either individually or cumulatively, on coastal resources. In addition, land divisions, other than leases for agricultural uses, outside existing developed areas shall be permitted only where 50 percent of the usable parcels in the area have been developed and the created parcels would be no smaller than the average size of surrounding parcels.

(b) Where feasible, new hazardous industrial development shall be located away from existing developed areas.

(c) Visitor-serving facilities that cannot feasibly be located in existing developed areas shall be located in existing isolated developments or at selected points of attraction for visitors.

Public Resources Code Section 30254.

New or expanded public works facilities shall be designed and limited to accommodate needs generated by development or uses permitted consistent with the provisions of this division; provided, however, that it is the intent of the Legislature that State Highway Route 1 in rural areas of the coastal zone remain a scenic two-lane road. Special districts shall not be formed or expanded except where assessment for, and provision of, the service would not induce new development inconsistent with this division.

Where existing or planned public works facilities can accommodate only a limited amount of new development, services to coastal dependent land use, essential public services and basic industries vital to the economic health of the region, state, or nation, public recreation, commercial recreation, and visitor-serving land uses shall be be precluded by other development.

In determining the amount of development which could be accommodated by the withdrawal of 1,230 acre feet the following factors were utilized. One, water demand was estimated to be 140 gallons per day per person, or .163 acre/foot per person per year. Two, average persons per household for the future was estimated to be 2.0. Based on these assumptions, approximately 7,600 persons or 3,800 households could be accommodated by the water available from the appropriation from San Simeon Groundwater Basin.

It had been estimated that there were a total of 6,300 building sites within the District as defined by County ordinance (this is not total development potential, as it assumes one unit per legal building site). Of the 6,300 sites, approximately 1,500 parcels had been improved leaving 4,800 undeveloped sites. Accordingly, the project could serve 2,300 new parcels (3,800-1,500) or 48 of the 4,800 remaining vacant parcels (one lot, one unit).

6. Basis for Request for Amendment

The CCSD request is based on (1) a documented decrease in per capita water consumption; (2) identification of additional water resources (Santa Rosa Creek, Steiner Creek and Perry Creek). With respect to the second factor, the staff does not believe that sufficient information has been provided to date to indicate that additional water resources are available and can be developed consistent with Coastal Act policies.

With respect to the first matter, decrease in per capita water consumption, the CCSD has provided information that actual per capita water consumption in 1979 and 1980 was substantially less than originally projected. In 1979, per capita water consumption was 92 gpcd; in 1980 105 gpcd (1979 population 2,932 (estimated); 1980 population 3,030 from U.S. Census Bureau).

This represents a substantial reduction in assumed per capita water consumption of 140 gpcd or 34% in 1979 and 25% in 1980 below assumed water consumption. In reviewing the disaggregated data on residential and commercial data, it is clear that the reduction is primarily the result of conservation efforts in the residential sector. Table 2 is a presentation of Water Produced and Metered Consumption, Cambria for 1966 through 1980.

Several factors have resulted in the substantial actual water reduction from the original projections, the major ones are consumer education and a change in water rate structure. The District has engaged in an aggressive water conservation education program which has included the provision of free flow reducing devices for plumbing fixtures. The District's water rate structure for residential customers was modified in April 1978, in response to a requirement of the Regional Commission (Permit No. 161-07). The reduction in the bimonthly minimum charge and the implementation of an increasing block rate structure has provided customers with a considerable financial incentive to conserve water.

According to the District manager, the greater decrease in per capita water consumption in 1979, as compared to 1980, may be reflective of the immediate reaction to the change in water rates in mid-1978. The District manager also advises the staff that he anticipates further reduction in per capita water use in the future due to impact to major increases in power costs which will be a result in higher costs to the consumers; and the increase in proportion of the housing stock comprised of energy efficient residences as required by recent changes to County Code.

The staff believes that it is reasonable to assume that the per capita water demand reduction of 25% from the 140 gpcd is reflective of general long-term water demand assuming that the increasing block rate structure is maintained. While per capita demand may decrease even more over time, it can not be predicted with any certainty at this time. In the original permit condition the Commission recognized that should long term water usage decrease, the total number of connections permitted could be evaluated.

WATER PRODUCED AND METERED CONSUMPTION
CAMBRIA, (1966-1980)[1]

YEAR	POPULATION[2]	WATER PRODUCED	METERED CONSUMPTION
1966		299.4	215.9
1967		327.4	225.2
1968		358.0	229.2
1969		369.5	243.6
1970	1,716	357.0	261.8
1971		415.8	296.3
1972		416.1	309.7
1973		396.6	3
1974		3	
1975		483	3
1976	2,667	518	3
1977(DROUGHT)		330	3
1978		447	3
1979		456	302
1980	3,030	473	355

1 Data for 1966 - 1973 from Cambria County Water District, Feasibility Report, Proposed Water Improvements (October, 1976); Data for 1975 - 1980 from District Manager.

2 Population for census years only from U.S. Bureau of The Census (1970 and 1980) State Department of Finance (1975).

3 Information not available.

For comparison purposes in following is a presentation of the number of existing lots which can be served by the appropriate water from San Simeon Groundwater Basin, based on the original analysis contained in Permit No. 132-18 of per-capita water demand and the number of existing lots which can be served based on the 25% water reduction evidenced in 1980.

Original Analysis (Permit No. 132-18)

- 7,600 persons equivalent to 3,800 households can be served by 1,230 acre/feet (.163 acre/feet per person per year).

  3,800 households served by the project
  -1,500 existing developed parcels, (1977)
  2,300 potential new development

  2,300 ÷ 48% of the 4,800 remaining vacant lots

Analysis Based on New Information

- 10,500 persons equivalent to 5,250 households can be served by 1,230 acre/feet (.117 acre/feet per person per year).

  5,250 households served by the project
  -1,800 existing developed parcels, (1981, estimate)
  3,450 potential new development

  3,450 ÷ 77% of the 4,500 remaining vacant lots

It should be underscored that this analysis assumes one unit per legal lot and does not assume any divisions of land at all. The County's LUP hearing draft plan by land use designation shows development twice what the existing water system could accommodate or 21,525 people.

The District's request to modify the rate of growth of the system to allow 125 residential housing units annually would allow for the phasing of growth over a 30 year period, consistent with the original permit. For the first new full year, 1982, the 125 permits would last 27 years plus the four years between 1978-1981 (In 1978 only 42 permits were allowed to be issued). For this year (1981) the District would be entitled to 41 additional residential permits over the number the District has already issued.

The growth rate of the Community, commensurate with services available would theoretically remain in balance with the original permit for the District. One of the major concerns of the Commission is that the community have adequate time to develop additional water resources in an environmentally sensitive manner and to allow the community sufficient time to implement a resource based land use plan.

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In regard to the capability of the wastewater treatment facilities the following applies. According to District estimates, the existing treatment facility of 1.0 million gallons per day (mgd) has sufficient capacity for 13.4 years; assuming an annual growth rate of 125 residential units. The plant has been designed to accept the addition of two more packaged treatment plants (future) for a total capacity of 2.0 mgd. Revenue reserves are being set aside at this time for that possibility. Upon reaching 75% design capacity of the total 1.0 mgd plant the District plans to proceed with detailed design for a third module which will provide another 0.5 mgd.

The growth management system in the original permit was based on the need to mitigate the impacts of growth accommodated by the water system over a sufficient period, based on assumptions of known water supplies available to the Community. The limitation on sewer capacity does not pose major problems with regard to the impact on environmental resources as does a possible additional water project. For instance, with a water project evaluation of the impact on the groundwater resources must be carefully evaluated.

5. Environmentally Sensitive Resources and Location of New Development

The relevant Coastal Act policies are PRC Sections 30231, 30240, 30250 and 30254.

Public Resources Code Section 30231.

> The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entainment, controlling runnoff, preventing depletion of groundwater supplies and substantial interference with surface water flow, encouraging waste water recamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

Public Resources Code Section 30240.

> (a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on such resources shall be allowed within such areas.
>
> (b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade such areas, and shall be compatible with the continuance of such habitat areas.

Public Resources Code Section 30250.

> (a) New residential, commercial, or industrial development, except as otherwise provided in this division, shall be located within, contiguous with, or in close proximity to, existing developed areas able to accommodate it or, where such areas are not able to accommodate, in order areas with adequate public services and where it will not have significant adverse effects, either individually or cumulatively, on coastal resources. In addition, land divisions, other than leases for agricultural uses, outside existing developed areas shall be permitted only where 50 percent of the usable parcels in the area have been developed and the created parcels would be no smaller than the average size of surrounding parcels.
>
> (b) Where feasible, new hazardous industrial development shall be located away from existing developed areas.
>
> (c) Visitor-serving facilities that cannot feasibly be located in existing developed areas shall be located in existing isolated developments or at selected points of attraction for visitors.

Public Resources Code Section 30254.

> New or expanded public works facilities shall be designed and limited to accommodate needs generated by development or uses permitted consistent with the provisions of this division; provided, however, that it is the intent of the Legislature that State Highway Route 1 in rural areas of the coastal zone remain a scenic two-lane road. Special districts shall not be formed or expanded except where assessment for, and provision of, the service would not induce new development inconsistent with this division.
>
> Where existing or planned public works facilities can accommodate only a limited amount of new development, services to coastal dependent land use, essential public services and basic industries vital to the economic health of the region, state, or nation, public recreation, commercial recreation, and visitor-serving land uses shall be be precluded by other development.

The amendment allows for an increase in development accommodated by the water distribution system. There will be no increase in water supply, rather more people can be served by the original system due to community conservation.

The remaining conditions of the original Permit 132-18, except as amended by 161-07 shall not be changed; nor shall any of the other existing conditions of Permit No. 131-20. The development to be accommodated by the project prior to certification of the LCP is thereby limited to the existing service district and users with existing water service agreements; priority uses are established for 20% of the system capacity is designated for public commercial and recreational uses; and mitigation measures to assure maintenance of the resources of San Simeon and Santa Rosa Creek groundwater resources is included.

The project modifications as requested by the District will accommodate development over a 30 year period which is equivalent to the development period under the original permit and will permit the impacts associated with the substantial development accommodated by the project to be adequately mitigated.

6. Prejudice to the Local Coastal Program

Public Resources Code Section 30604(a) states:

> (a) Prior to certification of the local coastal program, a coastal development permit shall be issued if the issuing agency, or the commission on appeal, finds that the proposed development is in conformity with the provisions of Chapter 3 (commencing with Section 30200) of this division and that the permitted development will not prejudice the ability of the local government to prepare a local coastal program that is in conformity with the provisions of Chapter 3 (commencing with Section 30200). A denial of a coastal development permit on grounds it would prejudice the ability of the local government to prepare a local coastal program that is in conformity with the provisions of Chapter 3 (commencing with Section 30200) shall be accompanied by a specific finding which sets forth the basis for such conclusion.

In the County LUP hearing draft, the staff propose that the yearly growth rate of Cambria be increased to allow 125 residential permits annually, consistent with this permit application.

There are a number of issues which the Commission staff have identified with regard to the existing plan. There were presented in the joint Regional-State Commission staff review of April 3, 1981. They relate to ultimate buildout and site standards. The issue of community restoration is still of very high priority and must be resolved in the LUP. There are land use planning solutions to the overcommitment to development in the Community which must be seriously considered and evaluated prior to allowing additional subdivisions in the Community.

The change requested by the District based on an increase in development accommodated by the original permit will not prejudice the County's ability to prepare an LCP consistent with the requirements of PRC Section 30604(a).

APPENDIX

CONDITIONS OF APPROVAL OF COASTAL DEVELOPMENT
PERMITS 132-18, 131-20 and 161-07

Conditions as Adopted for Appl. No. 132-18, Cambria Community Services District

Condition No. 1 - Service Area

Prior to the certification of the appropriate Local Coastal Program, the district shall neither guarantee nor promise to deliver any amount of the 1,230 acre feet of water to be derived from the wells located in the area known as the Bonomi Ranch in the San Simeon Creek groundwater basin to any individual or entity whose property is located outside of its Assessment District Nos. 1 and 2 and Subdivided Tracts Nos. 358, 384 and 420. Privided however, that should the Commission prior to the certifaction of the appropriate Local Coastal Program grant a development permit for the subdivision of any land within the District which is outside of Assessment Districts Nos. 1 & 2 and Subdivision Tracts Nos. 358, 384 and 420, then the District may provide water service from this 1,230 acre feet to such land and provided further, that the applicant may utilized portions of this 1,230 acre feet of water to service the following individuals and entities whose property is located outside of the District's present boundaries, but with which the District has existing water service agreements:

a) Air Force Radar Station
b) Sibley Ranch - agricultural uses
c) YMCA Camp
d) Cambria Cemetery
e) San Simeon State Park

Since the intent of this condition is to avoid the premature comitment of any lands within the district to other than presently existing uses before adequate Coastal Planning has been done at the local level, the District shall not:

a. Cause to be assessed for benefit received from this project,

b. Levy any stand by fees or,

c. Accept any future payment in exchange for the promise to serve or to issue water permits for or to annex,

Any property which is not located in the District's Assessment District No. 1 & 2 and Subdivision Tracts 358, 384, and 420 or which have not been subdivided pursuant to a Coastal Development Permit granted by the Commission subsequent to the effective date of this permit and prior to the certification of the appropriate Local Coastal Program.

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Condition No. 2 - Service Connections

Unless and until a Local Coastal Program is certified specifically approving an increase in water supply beyond that provided by this permit:

a. No more than a total of 3800 dwelling units shall be permitted to receive water connections (including existing and new units). For the purposes of this condition a "dwelling unit" is defined as a single apartment or condominium unit or a single family residence.

b. The total number of annual hookups shall be limited to the schedule of service connections in the Feasibility Report, attached hereto and incorporated herein by reference as Exhibit 4. The effective date of this schedule shall coincide with the implementation of this project. The total number of service connections allowed shall be equal to the cumulative total to that date.

In addition to the 3800 connections allowed under this permit, the Commission may allow additional connections consistent with the other conditions of the permit if the Commission determines after public hearing that water conservation measures have achieved a reduction in water usage consistent with the requirements of Public Resources Code 30231; the number of connections allowed in this manner shall be determined by the long term reduction in water usage.

Condition No. 3. - San Simeon Creek Groundwater Quality

The District shall prepare an operation and maintenance manual for a basin management program which meets the requirements of the State Water Resources Control Board's Water Right's Determination; to the extent that the State Water Resources Control Board's Water Right's Determination takes into account the existing fishery resources, the water supply appropriate for domestic purposes and a water supply appropriate for agricultural purposes.

This operations and maintenance manual shall be submitted to the State Water Resources Control Board staff. An annual report on the opertation of the basin shall be prepared by a qualified hydrologist and submitted to the Regional Water Quality Control Board and State Health Department to demonstrate that the District has complied with the requirements of this condition.

Condition No. 4. - Santa Rosa Creek

Use of all District wells on Santa Rosa Creek shall be discontinued when water production from San Simeon Creek has been established. Any continued permitted use of the Santa Rosa Creek wells shall be limited to the supplementing of San Simeon Creek well production in years when the 1230 acre feet cannot be safely removed. Except in the emergency situations defined below, the withdrawal of water from Santa Rosa Creek shall not exceed 260 acre feet during the dry season which normally extends from July 1 through November 20 and shall not exceed 147 acre feet per month at any other time. At no time shall the combined withdrawal from San Simeon Creek and Santa Rosa Creek exceed the 1230 acre feet annually. In addition, the following emergency situations shall be permitted: fire or any emergency use authorized by the State Water Resources Control Board or the State Health Department. Until the San Simeon Creek wells are functioning, no new water permits shall be permitted in the District (Requirement underlined amended by Permit No. 161-07).

Condition No. 5 - Erosion Control

The areas which are disturbed by the construction work shall be restored to their approximate original condition prior to construction, this shall include but is not limited to the replanting of any vegetation removed during the course of construction.

Condition No. 6 - Water Conservation

Prior to utilization of facilities, the applicant shall demonstrate the existence of a water conservation program. An acceptable water conservation program shall include, at a minimum: elimination of the decreasing block rate structure which currently exists; modification of the plumbing portions of the building code to require installation of low-flow toilets and pressure reducing devices on all taps; establishment of a retrofit program providing free water dams and pressure reducing washers; and evidence of a public information program informing the public of the need to save water, the availability of flow reduction devices, and the need to use drought-resistant plants in landscaping.

Condition No. 7 - Reservation of Capacity for Public Commercial and Recreation Uses

At all times at least 20% of the permitted water production capacity shall be reserved for public commercial or recreation uses; a public commercial or recreation use shall be a use designated as such in a permit action by the Regional or State Coastal Commission or a designated recreational use set forth in an approved Local Coastal Program for the Cambria area.

Condition No. 8 - Archaeology

Prior to construction the applicant shall have an archaeological survey made of all areas potentially affected by construction which have not been previously surveyed. All feasible recommendations made by the applicant's archaeological consultant shall become conditions of this permit. The choice of archaeological consultant, and final determinatio of the feasibility of the consultant's recommendations shall be subject to approval by the State Historic Preservation Officer.

Conditions to Application No. 161-07, Amendment to No. 132-18 Condition No. 4, to permit District to issue seven (7) water permits per month after commencement of drilling wells in the San Simeon basin:

1. The Cambria Community Services District (CCSD) shall be permitted to issue no more than seven (7) water permits monthly for a period not to exceed six months, or until such time as an overdraft situation is indicated by the District's water use monitoring program.

2. Should the San Simeon wells become operational while this amendment is in effect this amendment shall expire.

3. On a monthly basis the District shall submit to the Executive Director of the Regional Commission logs for wells #1, 3 and the Taylor Ranch well. At such time as the Executive Director of the Regional Commission determines that an impending overdraft situation exists he may immediately void this permit amendment. Such action shall remain binding unless changed by the Regional Commission, which will retain final authority to resolve any disputes in this matter.

4. Prior to issuance of permit, applicant shall submit to the Executive Director for his review and opinion evidence to the effect that a rate structure which encourage water conservation has been implemented (i.e., a rate structure that provides for elimination of the decreasing block rate structure and of the minimum monthly charge).

Conditions for Application 131-20, Sewer Treatment Plant of Cambria Community Services District.

Condition No. 1 - Service Area.

Prior to certification of the Local Coastal Program the District can neither guarantee nor provide sewer service to any area outside of its Assessment Districts No. 1 and 2 and Subdivision Tracts Nos. 350, 384 and 420. Provided however, that should the Commission prior to the certification of the appropriate Local Coastal Program grant a Development Permit for the subdivision of any land within the District which is outside of Assessment Districts No.1 and 2 and Subdivision Tracts 350, 384 and 420 then the District may provide sewer service to such land.

Further, since the intent of this condition is to avoid the premature commitment of any lands within the District to other than presently existing uses before adequate coastal-planning has been done at the local level, the District shall not:

a. Cause to be assessed for benefit received for this project,

b. Levy any standby fees or,

c. Accept any future payment in exchange for any promise to serve, to issue sewer connection permits for, or to annex,

any property which is not located in the District's Assessment District Nos. 1 & 2 and Subdivision Tracts 350, 384 and 420.

Condition No. 2 - Treatment Plant Capacity.

The treatment plant capacity allowed under this permit shall not be greater than a 1.0 million gallon daily flow.

Condition No. 3 - San Simeon Creek Groundwater Quality.

The District shall prepare an operation and maintenance manual for a basin management program which meets the requirements of the State Water Resources Control Board's Water Right's Determination, to the extent that the State Water Resources Control Board's Water Rights Determination takes into account the existing fishery resources, the water supply appropriate for domestic purposes and a water supply appropriate for agricultural purposes.

This operation and maintenance manual shall be submitted to the State Water Resources Control Board staff. An annual report on the operation of the basin shall be prepared by a qualified hydrologist and submitted to the Regional Water Quality Contol Board and State Health Department to demonstrate that the District has complied with the requirements of this condition.

Condition No. 4 - Sewerage Connections.

Unless and until a Local Coastal Program is certified specifically approving an increase

n water supply beyond that provided by Permit 132-18:

a. No more than a total of 3800 dwelling units shall be permitted to receive sewer connections (including existing and new units). For the purposes of this condition a "dwelling unit" is defined as a single apartment or condominium unit or a single family residence. In order to assure priority for existing residences the District shall submit evidence to the Regional Commission that connections have been reserved for the total of residences existing as of the day of this permit. Additional connections for up to a total of 3800 dwelling units, shall be allowed for that portion of the 3800 dwelling units which remains after capacity has been reserved for existing residences.

b. The total number of annual hookups shall be limited to the schedule of service connections attached hereto and incorporated herein by reference as Exhibit 4. The total cumulative number of connections shall be the same as those connections allowed under Application 132-18.

In addition to the 3800 connections allowed under this permit the Commission may allow additional connections consistent with the other conditions of this permit if the Commission determines after public hearing that water conservation measures have achieved a reduction in water usage consistent with the requirements of Public Resources Code 30231; the number of connections allowed in this manner shall be determined by the long-term reduction of water usage.

Condition No. 5 - Reservation of Capacity for Public Commercial and Recreation Uses.

At all times at least 20% of the permitted capacity shall be reserved for public commercial or recreational uses; the public commercial or recreation use shall be a use designated as such in a permit action by the Regional or State Coastal Commissions or a designated recreational use set forth in an approved Local Coastal Program for the Cambria area.

Condition No. 6 - Arcaeological Sites.

Prior to construction the District shall have an archaeological survey made of all areas potentially affected by construction which have not been previously surveyed. All feasible recommendations made by the applicant's archaeological consultant shall become conditions of this permit. The choice of archaeological consultant and final determination of the feasibility of the consultant's recommendation shall be subject to approval by the State Historic Preservation Officer.

Condition No. 7 - Erosion Control.

The areas which are disturbed by the construction work shall be restored to their approximate original condition prior to the construction, this shall include but is not limited to the replanting of any vegetation removed during the course of construction.

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APPENDIX L – 2025 WATER SHORTAGE CONTINGENCY PLAN

The 2025 Water Shortage Contingency Plan (WSCP) was adopted as a standalone plan and is included in this UWMP as an appendix.

The 2025 WSCP is available on the CCSD's website at:
https://www.cambriacsd.org/urban-water-management-plan

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A

APPENDIX A
UWMP CHECKLIST

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APPENDIX A – UWMP CHECKLIST

2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2025 UWMP Location
Chapter 1	10615	A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities.	Introduction and overview	Section 1.6
Chapter 1	10630.5	Each plan shall include a simple description of the Supplier's plan including water availability, future requirements, a strategy for meeting needs, and other pertinent information. Additionally, a Supplier may also choose to include a simple description at the beginning of each chapter.	Plan preparation	Start of Each Chapter
Section 2.1	10620(b)	Every person that becomes a Supplier shall adopt UWMP within one year after it has become a Supplier.	Plan preparation	Chapter 1 and Section 2.2
Section 2.5	10644	Supplier shall report the Public Water Systems number, volume of delivered water, and number of connections that are included in this UWMP.	Plan preparation	Section 2.2
Section 2.5	10644	Supplier shall report if this UWMP is an individual UWMP and whether the Supplier belongs to a regional UWMP or regional alliance.	Plan preparation	Section 2.4
Section 2.5	10644	Supplier shall report whether the data is in fiscal or calendar years and the units of measure used for reporting water volumes.	Plan preparation	Section 2.5
Section 2.4	10642	Provide supporting documentation that the Supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan	Plan preparation	Section 2.6

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2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2025 UWMP Location
		and contingency plan.		
Section 2.4.2	10620(d)(3)	Coordinate the preparation of its plan with other appropriate agencies in the area, including other Suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	Plan preparation	Section 2.6
Section 2.4.1	10631(h)	Retail Suppliers will include documentation that they have provided their Wholesale Supplier(s)—if any—with water use projections from that source.	Plan preparation	2-4 R
Chapter 3.0	10631(a)	Describe the Supplier service area.	System description	Section 3.1
Section 3.3	10631(a)	Describe the climate of the Supplier's service area.	System description	Section 3.3
Section 3.4.1	10631(a)	Provide the current and projected service area populations for 2030, 2035, 2040, 2045, and optionally 2050.	System description	3-1
Section 3.4.2	10631(a)	Describe other social, economic, and demographic factors affecting the Supplier's water management planning.	System description	Section 3.4
Section 3.5	10631(a)	Describe the land uses within the service area… include the current and projected land uses within the existing or anticipated service area affecting the Supplier's water management planning. Describe the land uses within the service area.	System description and baselines	Section 3.5

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2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2025 UWMP Location
Sections 4.2.3 and 4.2.4	10631(d)(1)	Quantify past, current, and projected water use, identifying the uses among water use sectors.	System water use	4-1 and 4-2
Section 4.3.1	10631(d)(3)(A)	Report the distribution system water loss for each of the five years preceding the plan update.	System water use	4-5
Section 4.3.2	10631(d)(3)(C)	Retail Suppliers shall provide data to show the distribution loss standards were met.	System water use	4-6
Section 4.2.5.4	10631.1(a)	Include projected water use needed for lower income housing projected in the service area of the Supplier.	System water use	4-3 and 4-3b
Section 4.2.5.3	10631(d)(4)(A)	In projected water use, include estimates of water savings from adopted codes, plans, and other policies or laws.	System water use	Section 4.2
Section 4.2.5.3	10631(d)(4)(B)	Provide citations of codes, standards, ordinances, or plans used to make water use projections.	System water use	4-3
Section 4.2.5.3	10631(d)(4)(B)(ii)	To the extent that a Supplier reports the information described in subparagraph (A), an urban water Supplier shall… Indicate the extent that the water use projections consider savings from codes, standards, ordinances, or transportation and land use plans. Water use projections that do not account for these water savings shall be noted of that fact.	System water use	4-3
Section 4.2.5.6	10635(b)	Demands under climate change considerations must be included as part of the drought risk assessment.	System water use	Section 4.4

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2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2025 UWMP Location
Section 5.2	10608.4	Retail Suppliers shall report on their compliance in meeting their water use targets. Reporting requirements will vary depending on whether the Supplier: - Was considered an urban retail water supplier in 2020, - Met its 2020 target in 2020, or - Was part of a merger or consolidation since 2020. Chapter 5 Subsections 5.2.1, 5.2.2, and 5.2.3 address each of these situations.	Baselines and targets	5-1
Section 6.1	10631(b)(2)	When multiple sources of water supply are identified, describe the management of each supply in relationship to other identified supplies.	System supplies	Section 6.2
Sections 6.1 and 6.2	10631(b)(1)	Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought, including changes in supply due to climate change.	System supplies	Sections 7.2 and 7.3
Section 6.2.2	10631(b)(4)(C)	Indicate whether groundwater is an existing or planned source of water available to the Supplier. If groundwater is identified as an existing or planned source of water… (include) a detailed description and analysis of the location, amount and sufficiency of groundwater pumped by the Supplier for the past five years.	Water supplies and recycled water	6-1
Section 6.2 .2	10631(b)(4)(A)	Indicate whether a groundwater sustainability plan or groundwater management plan has been adopted by the Supplier or if there is any other specific authorization for groundwater management. Include a copy of	System supplies	6.2, Appendix G

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2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2025 UWMP Location
		the plan or authorization.		
Section 6.2.2	10631(b)(4)(B)	Describe the groundwater basin.	System supplies	Section 6.2
Section 6.2.2	10631(b)(4)(B)	Indicate if the basin has been adjudicated and include a copy of the court order or decree and a description of the amount of water the Supplier has the legal right to pump.	System supplies	Section 6.2
Section 6.2.2	10631(b)(4)(B)	For unadjudicated basins… (include) information as to whether DWR has identified the basin as a high- or medium-priority basin in the most current official departmental bulletin…	Water supplies and recycled water	Section 6.2
Section 6.2.2	10631(b)(4)(B)	For unadjudicated basins… describe efforts by the Supplier to coordinate with sustainability or groundwater agencies to achieve sustainable groundwater conditions.	Water supplies and recycled water	Section 6.2
Section 6.2.2.	10631(b)(4)(C)	If groundwater is identified as an existing or planned source of water… (include) a detailed description and analysis of the location, amount and sufficiency of groundwater pumped by the Supplier for the past five years.	System supplies	Section 6.2
Section 6.2.2	10631(b)(4)(D)	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	System supplies	Section 6.2, 6-1
Section 6.1	10631(b)	Identify and quantify the existing and planned sources of water available for 2025, 2030, 2035,	System supplies	6-8 and 6-9

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2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2025 UWMP Location
		2040, 2045 and optionally 2050.		
Section 6.2.7	10631(c)	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	System supplies	Section 6.2
Section 6.2.5	10633(a)	Describe the wastewater collection and treatment systems in the Supplier's service area with quantified amount of collection and treatment and the disposal methods.	System supplies (recycled water)	6-2, Section 6.2
Section 6.2.5	10633(b)	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	System supplies (recycled water)	Section 6.2
Section 6.2.5	10633(c)	Describe the recycled water currently being used in the Supplier's service area.	System supplies (recycled water)	6-4
Section 6.2.5	10633(d)	Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses.	System supplies (recycled water)	Section 6.2
Section 6.2.5	10633(e)	Describe the projected use of recycled water within the Supplier's service area at the end of 5, 10, 15, and 20 years, and describe the actual use of recycled water in comparison to uses previously projected.	System supplies (recycled water)	6-9
Section 6.2.5	10633(f)	Describe the actions that may be taken to encourage the use of recycled water and the projected results of these actions in terms of acre-feet of recycled water used per year.	System supplies (recycled water)	Section 6.2

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2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2025 UWMP Location
Section 6.2.5	10633(g)	Provide a plan for optimizing the use of recycled water in the Supplier's service area.	System supplies (recycled water)	Section 6.2
Section 6.2.6	10631(g)	Describe desalinated water project opportunities for long-term supply.	System supplies	Section 6.2
Section 6.2.10	10631(f)	Describe the expected future water supply projects and programs that may be undertaken by the water Supplier to address water supply reliability in average, single-dry, and for a period of drought lasting five consecutive water years.	System supplies	Section 6.2
Section 6.3 and Appendix O	10631.2(a)	The UWMP must include energy information, as stated in the code, that a Supplier can readily obtain.	System suppliers, energy intensity	Section 6.3
Section 7.1	10634	Provide information on the quality of existing sources of water available to the Supplier and the manner in which water quality affects water management strategies and supply reliability.	Water supply reliability assessment	Section 7.4
Section 7.2	10635(a)	Service Reliability Assessment: Assess the water supply reliability during normal, dry, and a drought lasting five consecutive water years by comparing the total water supply sources available to the Supplier with the total projected water use over the next 20 years.	Water supply reliability assessment	7-2, 7-3, and 7-4
Section 7.2.3	10620(f)	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	Water supply reliability assessment	Section 7.4
Section 7.3	10635(b)	Provide a drought risk assessment as part of information considered in developing the demand management measures and water	Water supply reliability assessment	Section 7.3

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2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2025 UWMP Location
		supply projects.		
Section 7.3	10635(b)(1)	Include a description of the data, methodology, and basis for one or more supply shortage conditions that are necessary to conduct a drought risk assessment for a drought period that lasts five consecutive years.	Water supply reliability assessment	Section 7.3
Section 7.3	10635(b)(2)	Include a determination of the reliability of each source of supply under a variety of water shortage conditions.	Water supply reliability assessment	Section 7.3
Section 7.3	10635(b)(3)	Include a comparison of the total water supply sources available to the Supplier with the total projected water use for the drought period.	Water supply reliability assessment	7-5
Section 7.3	10635(b)(4)	Include considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.	Water supply reliability assessment	Section 7.2
Chapter 8	10632(a)	Provide a water shortage contingency plan (WSCP) with specified elements below.	Water shortage contingency planning	Chapter 8, WSCP
Chapter 8	10632(a)(1)	Provide an analysis of water supply reliability (from Guidebook Chapter 7) in the WSCP.	Water shortage contingency planning	WSCP Section 3.1
Section 8.2	10632(a)(2)(A)	Provide the written decision-making process and other methods that the Supplier will use each year to determine its water reliability.	Water shortage contingency planning	WSCP Section 3.2

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2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2025 UWMP Location
Section 8.2	10632(a)(2)(B)	Provide data and methodology to evaluate the Supplier's water reliability for the current year and one dry year pursuant to factors in the code.	Water shortage contingency planning	WSCP Section 3.2
Section 8.3	10632(a)(3)(A)	Define six standard water shortage levels of 10%, 20%, 30%, 40%, 50% shortage, and greater than 50% shortage. These levels shall be based on supply conditions, including percent reductions in supply, changes in groundwater levels, changes in surface elevation, or other conditions. The shortage levels shall also apply to a catastrophic interruption of supply.	Water shortage contingency planning	WSCP Section 3.3
Section 8.3	10632(a)(3)(B)	Suppliers with an existing WSCP that uses different water shortage levels must cross reference their categories with the six standard categories.	Water shortage contingency planning	8-1
Section 8.4	10632(a)(4)(A)	Suppliers with WSCPs that align with the defined shortage levels must specify locally appropriate supply augmentation actions.	Water shortage contingency planning	8-2
Section 8.4	10632(a)(4)(B)	Specify locally appropriate demand reduction actions to adequately respond to shortages.	Water shortage contingency planning	8-3
Section 8.4	10632(a)(4)(C)	Specify locally appropriate operational changes.	Water shortage contingency planning	8-2
Section 8.4	10632(a)(4)(D)	Specify additional mandatory prohibitions against specific water use practices that are in addition to State-mandated prohibitions are appropriate to local conditions.	Water shortage contingency planning	WSCP Section 3.4

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2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2025 UWMP Location
Section 8.4	10632(a)(4)(E)	Estimate the extent to which the gap between supplies and demand will be reduced by implementation of the action.	Water shortage contingency planning	8-2 and 8-3
Section 8.4.6	10632.5	The UWMP shall include a seismic risk assessment and mitigation plan.	Water shortage contingency plan	WSCP Section 3.13
Section 8.5	10632(a)(5)(A)	Suppliers must describe that they will inform customers, the public and others regarding any current or predicted water shortages.	Water shortage contingency planning	WSCP Section 3.5, Appendix C
Section 8.5	10632(a)(5)(B), 10632(a)(5)(C)	Suppliers must describe that they will inform customers, the public and others regarding any shortage response actions triggered or anticipated to be triggered and other relevant communications.	Water shortage contingency planning	WSCP Section 3.5, Appendix C
Section 8.6	10632(a)(6)	Retail Supplier must describe how it will ensure compliance with and enforce provisions of the WSCP.	Water shortage contingency planning	WSCP Section 3.6
Section 8.7	10632(a)(7)(A)	Describe the legal authority that empowers the Supplier to enforce shortage response actions.	Water shortage contingency planning	WSCP Section 3.7
Section 8.7	10632(a)(7)(B)	Provide a statement that the Supplier will declare a water shortage emergency per Water Code Chapter 3. *Water Shortage Emergencies*.	Water shortage contingency planning	WSCP Section 3.4
Section 8.7	10632(a)(7)(C)	Provide a statement that the Supplier will coordinate with any city or county within which it provides water for the possible proclamation of a local emergency.	Water shortage contingency planning	WSCP Section 3.4

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2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2025 UWMP Location
Section 8.8	10632(a)(8)(A)	Describe the potential revenue reductions and expense increases associated with activated shortage response actions.	Water shortage contingency planning	WSCP Section 3.8
Section 8.8	10632(a)(8)(B)	Provide a description of mitigation actions needed to address revenue reductions and expense increases associated with activated shortage response actions.	Water shortage contingency planning	WSCP Section 3.4
Section 8.8	10632(a)(8)(C)	Retail Suppliers must describe the cost of compliance with Water Code Chapter 3.3, *Excessive Residential Water Use During Drought*.	Water shortage contingency planning	WSCP Section 3.6
Section 8.9	10632(a)(9)	Retail Suppliers must describe the monitoring and reporting requirements and procedures that ensure appropriate data are collected, tracked, and analyzed for purposes of monitoring customer compliance.	Water shortage contingency planning	WSCP Section 3.9
Section 8.10	10632(a)(10)	Describe reevaluation and improvement procedures for monitoring and evaluation the WSCP to ensure risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented.	Water shortage contingency planning	WSCP Section 3.10
Section 8.11	10632(b)	Analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas.	Water shortage contingency planning	WSCP Section 3.11
Section 8.12	10632(c)	Make available the WSCP to customers and any city or county where it provides water within 30 days after adoption of the plan.	Water shortage contingency planning	WSCP Section 3.12

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2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2025 UWMP Location
Sections 9.1	10631(e)(1)	Retail Suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in code.	Demand management measures	Section 9.1
Chapter 10	10608.26(a)	Retail Suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets (recommended to discuss compliance).	Plan adoption, submittal, and implementation	Section 10.3
Section 10.2.1	10621(b)	Notify, at least 60 days prior to the public hearing, any city or county within which the Supplier provides water that the Supplier will be reviewing the UWMP and considering amendments or changes to the plan.	Plan adoption, submittal, and implementation	Section 10.2, 10-1
Section 10.4	10621(f)	Each urban water Supplier shall update and submit its 2025 plan to DWR by July 1, 202 6.	Plan adoption, submittal, and implementation	Section 10.4
Sections 10.2.2, 10.3, and 10.5	10642	Provide supporting documentation that the Supplier made the UWMP and WSCP available for public inspection, published notice of the public hearing, and held a public hearing about the UWMP and WSCP.	Plan adoption, submittal, and implementation	Section 10.4
Section 10.2.2	10642	The Supplier is to provide the time and place of the hearing to any city or county within which the Supplier provides water.	Plan adoption, submittal, and implementation	10-1
Section 10.3.2	10642	Provide supporting documentation that the UWMP and WSCP have been adopted as prepared or modified.	Plan adoption, submittal, and implementation	Section 10.8

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2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2025 UWMP Location
Section 10.4	10644(a)	Provide supporting documentation that the Supplier has submitted their UWMP to the California State Library.	Plan adoption, submittal, and implementation	Section 10.4
Section 10.4	10644(a)(1)	Provide supporting documentation that the Supplier has submitted their UWMP to any city or county within which the Supplier provides water no later than 30 days after adoption.	Plan adoption, submittal, and implementation	Section 10.4
Sections 10.4.1 and 10.4.2	10644(a)(2)	The UWMP, or amendments to the UWMP, submitted to DWR shall be submitted electronically.	Plan adoption, submittal, and implementation	Section 10.8
Section 10.7.2	10644(b)	If revised, submit a copy of the WSCP to DWR within 30 days of adoption.	Plan adoption, submittal, and implementation	Section 10.8
Section 10.5	10645(a)	Provide supporting documentation that, not later than 30 days after filing a copy of its UWMP with DWR, the Supplier has or will make the plan available for public review during normal business hours.	Plan adoption, submittal, and implementation	Section 10.5
Section 10.5	10645(b)	Provide supporting documentation that, not later than 30 days after filing a copy of its WSCP with DWR, the Supplier has or will make the plan available for public review during normal business hours.	Plan adoption, submittal, and implementation	Section 10.5
Section 10.6	10621(c)	If Supplier is regulated by the Public Utilities Commission, include its plan and contingency plan as part of its general rate case filings.	Plan adoption, submittal, and implementation	Section 10.6

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B

APPENDIX B
NOTICE OF INTENT TO UPDATE UWMP

Docusign Envelope ID: CD1B5FD8-CD5C-8D03-8169-6EA25443FA19

CAMBRIA COMMUNITY SERVICES DISTRICT

DIRECTORS:
HARRY FARMER, President
KAREN DEAN, Vice President
TOM GRAY, Director
DEBRA SCOTT, Director
MICHAEL THOMAS, Director

OFFICERS:
MATTHEW MCELHENIE, General Manager
TIMOTHY J. CARMEL, District Counsel

2150 Main Street #1A • P.O. Box 65 • Cambria, CA 93428
Telephone (805) 927-6223 • Facsimile (805) 927-5584

Delivered via E-mail to:
John Diodati
1050 Monterey St., Room 206 San Luis Obispo, CA 93408
jdiodati@co.slo.ca.us

Cambria Community Services District 2025 Urban Water Management Plan 60-Day Public Hearing Notice

Cambria Community Services District (CCSD) is in the process of preparing and updating its 2025 Urban Water Management Plan (UWMP) in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. An update of the CCSD's UWMP is required every five (5) years.

The 2025 UWMP Update will reflect new information since the adoption of the 2020 UWMP, forecasted demands within the CCSD's service area, the CCSD's plan to reliably meet the water needs within its service area, and compliance with the SB X7-7 and the Urban Water Use Objective. As part of the new requirements, the CCSD is also adopting a Water Shortage Contingency Plan (WSCP), which must be included as part of the 2025 UWMP. This document will describe how the CCSD will respond to foreseeable and unforeseeable water shortages.

Water Code section 10621(b) requires an urban water supplier updating its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing. This letter serves as the CCSD's official notice of preparation and intent to adopt the UWMP and WSCP before the July 1, 2026, deadline.

A copy of the CCSD's draft 2025 UWMP and WSCP will be available for review on the CCSD's website (https://www.cambriacsd.org/) in April of 2026, and the CCSD will subsequently hold a noticed public hearing on the 2025 UWMP and WSCP in advance of its proposed adoption. The CCSD invites you to submit comments and consult with the CCSD regarding these plans.

The CCSD's website will have updates on the 2025 UWMP and WSCP, including notice of the date, time, and place of the public hearing when adoption will be considered by the CCSD Board of Directors. If you have any questions, comments, or input, please contact James Green, Utilities Department Manager, via email at JGreen@cambriacsd.org or by phone at (805) 927-6119.

Sincerely,

James R. Green
Utilities Department Manager
Cambria Community Services District

Docusign Envelope ID: CD1B5FD8-CD5C-8D03-8169-6EA25443FA19

CAMBRIA COMMUNITY SERVICES DISTRICT

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2150 Main Street #1A • P.O. Box 65 • Cambria, CA 93428
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Delivered via E-mail to:
Trevor Keith
Director of Planning and Building
976 Osos Street, Room 200
San Luis Obispo, CA 93408
tkeith@co.slo.ca.us

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Sincerely,

James R. Green
Utilities Department Manager
Cambria Community Services District

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CAMBRIA COMMUNITY SERVICES DISTRICT

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Delivered via E-mail to:
San Simeon Community Services District
111 Pico Avenue
San Simeon, CA 93452

Cambria Community Services District 2025 Urban Water Management Plan 60-Day Public Hearing Notice

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Sincerely,

James R. Green
Utilities Department Manager
Cambria Community Services District

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C

APPENDIX C
NOTICE OF PUBLIC HEARING

Docusign Envelope ID: CD1B5FD8-CD5C-8D03-8169-6EA25443FA19

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Package:	SLO - Legal Ads
Order Cost:	$220.00

Account Details

CAMBRIA COMMUNITY SERVICE DISTRICT IP
PO BOX 65

CAMBRIA, CA 93428

805-927-6223

CAMBRIA COMMUNITY SERVICE DISTRICT

Schedule for ad number IPL03303680

Wed Apr 29, 2026

The Tribune (San Luis Obispo) Print Publication *All Zones*

Wed May 6, 2026

The Tribune (San Luis Obispo) Print Publication *All Zones*

Notice of Public Hearing

The Cambria Community Services District (Docusign Envelope ID: CD
ban Water Management Plan (UWMP) and Water Shortage Contingency Plan and will hold a Public Hearing to receive public feedback and suggestions. Updates to the UWMP are required every five (5) years in accordance with the California Water Code. This effort helps ensure the CCSD can provide Cambria with a safe and reliable supply of high-quality water to meet current and future demands.

The Public Hearing will be held to take public comment at the CCSD's Regular Board Meeting on May 14, 2026. The meeting begins at 10:00 AM and is held at 1000 Main Street, Cambria, CA 93428. At the conclusion of the Public Hearing, the CCSD Board will consider adopting the proposed UWMP.

The proposed UWMP will be available for review on the CCSD's website (https://www.cambriacsd.org/urban-water-management-plan). Hard copies will be available for review at the CCSD District Office, 2150 Main Street #1-A, Cambria, CA 93428, during business hours. Public comments may be submitted to boardcomment@cambriacsd.org or via the online public comment submission portal at: https://www.cambriacsd.org/written-public-comments

IPL0330368

Apr 29,May 6 2026

Docusign Envelope ID: CD1B5FD8-CD5C-8D03-8169-6EA25443FA19

D

APPENDIX D
CALIFORNIA DEPARTMENT OF WATER RESOURCES BULLETIN NO. 118

Docusign Envelope ID: CD1B5FD8-CD5C-8D03-8169-6EA25443FA19

San Simeon Valley Groundwater Basin

- Groundwater Basin Number: 3-35
- County: San Luis Obispo
- Surface Area: 620 acres (1.0 square miles)

Basin Boundaries and Hydrology

The San Simeon Valley Groundwater Basin underlies San Simeon Valley and is bounded by the Pacific Ocean on the west, the Santa Lucia Range on the east, and elsewhere by impermeable Franciscan Group rocks. The valley is drained by San Simeon Creek. Precipitation varies across the watershed from 20 inches at the coast to about 26 inches at the eastern end of the valley floor to more than 40 inches at the headwaters of San Simeon Creek (Yates and Van Konyenburg 1998).

Hydrogeologic Information

Water Bearing Formations

Groundwater is found in Holocene age alluvial deposits, which have an estimated specific yield of 18 percent (DWR 1958).

Holocene Deposits. Unconsolidated alluvial deposits underlie San Simeon Creek and consist of unconsolidated gravel, sand, clay, and silt. The alluvium has a maximum thickness of about 100 feet beneath the center of the valley and more than 120 feet at the coast (Yates and Van Konyenburg 1998).

Recharge Areas

Groundwater is unconfined and flows generally westward.
Recharge to the basin is largely by percolation of stream flow and, to a lesser extent, from deep infiltration of precipitation and excess irrigation flow (DWR 1958).

Groundwater Level Trends

In 1988, the rate of water-level decline slowed or even reversed slightly at most wells during November and early December following declines of 1 to 7 feet/month from February through August (Yates and Van Konyenburg 1998). This variation likely indicates seasonal fluctuation in groundwater level.

Groundwater Storage

Groundwater Storage Capacity. The groundwater storage capacity is estimated at 4,000 af (DWR 1975).

Groundwater in Storage. Unknown.

Groundwater Budget (Type A)

A groundwater budget for the San Simeon Groundwater Basin was simulated using a groundwater flow model for April 1988 through March 1989 (Yates and Van Konyenburg 1998). Recharge to the basin from rainfall totaled 50 af/yr. Recharge of creek flow was estimated at 540 af/yr. Subsurface inflow was 150 af/yr and subsurface outflow to the ocean was 320 af/yr. Recharge

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to the basin from irrigation-return flow was 170 af/yr. Agricultural pumpage was estimated at 450 af/yr. Municipal pumpage was estimated at 550 af/yr. Rural domestic pumpage was estimated at less than 10 af/yr. Phreatophyte transpiration was estimated at 30 af/yr. About 440 af/yr of wastewater is also recharged (Yates and Van Konyenburg 1998).

Groundwater Quality

Characterization. Groundwater analyses from 31 wells in this basin taken from 1955 through 1994 show TDS content ranging from 46 to 2,210 mg/L. Analyses of data from 3 public supply wells show an average TDS content of 413 mg/L in the basin and range from 400 to 420 mg/L.

Impairments. There is no evidence of seawater intrusion (DWR 1975). Manganese concentrations increased downstream in the San Simeon Groundwater Basin, exceeding the MCL, ranging from 0.002 to 1.60 mg/L, with a median of 0.190 mg/L (Yates and Van Konyenburg 1998).

Water Quality in Public Supply Wells

Constituent Group[1]	Number of wells sampled[2]	Number of wells with a concentration above an MCL[3]
Inorganics – Primary	3	0
Radiological	3	0
Nitrates	3	0
Pesticides	3	0
VOCs and SOCs	3	0
Inorganics – Secondary	3	0

[1] A description of each member in the constituent groups and a generalized discussion of the relevance of these groups are included in *California's Groundwater – Bulletin 118* by DWR (2003).
[2] Represents distinct number of wells sampled as required under DHS Title 22 program from 1994 through 2000.
[3] Each well reported with a concentration above an MCL was confirmed with a second detection above an MCL. This information is intended as an indicator of the types of activities that cause contamination in a given basin. It represents the water quality at the sample location. It does not indicate the water quality delivered to the consumer. More detailed drinking water quality information can be obtained from the local water purveyor and its annual Consumer Confidence Report.

Well Production characteristics

	Well yields (gal/min)	
Municipal/Irrigation	Range: to 170	Average: 100 (DWR 1958)
	Total depths (ft)	
Domestic		
Municipal/Irrigation	Range: to 80 ft	Average: 50 (DWR 1958)

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Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
	Groundwater levels	NKD
	Miscellaneous water quality	NKD
Department of Health Services and cooperators	Title 22 water quality	4

NKD: No Known Data

Basin Management

Groundwater management:

Water agencies

Public	Cambria CSD, San Luis Obispo County Department of Public Works
Private	

References Cited

California Department of Water Resources (DWR). 1958. *San Luis Obispo County Investigation*. Bulletin 18. 288 p.

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Yates, E. B., and K. M. Van Konyenburg. 1998. *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.* U.S. Geological Survey Water-Resources Investigations Report 98-4061.

Errata

Changes made to the basin description will be noted here.

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Santa Rosa Valley Groundwater Basin

- Groundwater Basin Number: 3-36
- County: San Luis Obispo
- Surface Area: 4,480 acres (7.0 square miles)

Basin Boundaries and Hydrology

The Santa Rosa Valley Groundwater Basin underlies Santa Rosa Valley and is bounded on the west by the Pacific Ocean and on all other sides by impermeable rocks of the Jurassic to Cretaceous age Franciscan Group. The valley is drained by Green Valley, Perry, and Santa Rosa Creeks. Average annual rainfall increases from about 20 inches at the coast to about 26 inches at the eastern end of the valley floor to more than 40 inches at the creek headwaters (Yates and Van Konyenburg 1998).

Hydrogeologic Information

Water Bearing Formations

Groundwater is found in alluvial deposits with an average specific yield of 17 percent (DWR 1975). Groundwater is unconfined and generally flows westward.

Holocene Deposits. Alluvial deposits consist of unconsolidated sand, clay, silt, and gravel of primarily fluvial origin. Commonly, the deposits are about 100 feet thick beneath the center of the valley and more than 120 feet thick at the coast (Yates and Van Konyenburg 1998).

Recharge Areas

Recharge to the basin is largely by percolation of stream flow and, to a lesser extent, from infiltration of precipitation and excess irrigation flow (DWR 1958).

Groundwater Level Trends

In 1988, the rate of water-level decline slowed or even reversed slightly at most wells during November and early December following declines of 1 to 7 feet/month from February through August (Yates and Van Konyenburg 1998). This variation likely indicates seasonal fluctuation in groundwater level.

Groundwater Storage

Groundwater Storage Capacity. The total groundwater storage capacity has been estimated at 24,700 af (DWR 1975) and 170,000 af (Camrosa Water District 2001).

Groundwater in Storage. Unknown.

Groundwater Budget (Type A)

A groundwater budget for the Santa Rosa Groundwater Basin was simulated using a groundwater flow model for April 1988 through March 1989 (Yates and Van Konyenburg 1998). Recharge to the basin from rainfall totaled 140 af/yr. Recharge from creek flow was estimated at 470 af/yr. Subsurface inflow was 370 af/yr and subsurface outflow to the ocean was 60 af/yr.

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Recharge to the basin from irrigation-return flow was 330 af/yr. Agricultural pumpage was estimated at 890 af/yr. Municipal and rural pumpage totaled 260 af/yr. Phreatophyte transpiration was estimated at 160 af/yr. Groundwater pumping during 1998 to 1999 totaled 5,900 af (Cambria Water District 2001).

Groundwater Quality

Characterization. Analysis of water from 1 public supply well has a TDS content of 680 mg/L.

Impairments. There is evidence that points to the possibility of seawater intrusion (DWR 1975). Chloride content increased more than ten times, from 80 mg/L in 1955 to 933 mg/L in 1975 (DWR 1975). Background chloride concentrations typically ranged from 30 to 270 mg/L (Yates and Van Konyenburg 1998). One well had a chloride concentration of 1,925 mg/L in November 1961 (Yates and Van Konyenburg 1998).

Water Quality in Public Supply Wells

Constituent Group[1]	Number of wells sampled[2]	Number of wells with a concentration above an MCL[3]
Inorganics – Primary	1	0
Radiological	1	0
Nitrates	1	0
Pesticides	1	0
VOCs and SOCs	1	0
Inorganics – Secondary	1	1

[1] A description of each member in the constituent groups and a generalized discussion of the relevance of these groups are included in *California's Groundwater – Bulletin 118* by DWR (2003).
[2] Represents distinct number of wells sampled as required under DHS Title 22 program from 1994 through 2000.
[3] Each well reported with a concentration above an MCL was confirmed with a second detection above an MCL. This information is intended as an indicator of the types of activities that cause contamination in a given basin. It represents the water quality at the sample location. It does not indicate the water quality delivered to the consumer. More detailed drinking water quality information can be obtained from the local water purveyor and its annual Consumer Confidence Report.

Well Production characteristics

	Well yields (gal/min)	
Municipal/Irrigation	Range: to 708	Average: 400 (DWR 1958)
	Total depths (ft)	
Domestic		
Municipal/Irrigation	Range: to 130	Average: 80 ft (DWR 1958)

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Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
	Groundwater levels	NKD
	Miscellaneous water quality	NKD
Department of Health Services and cooperators	Title 22 water quality	2

NKD: No Known Data

Basin Management

Groundwater management:

Water agencies

Public	Cambria CSD, Camrosa WD
Private	Santa Rosa MWC

References Cited

California Department of Water Resources (DWR). 1958. *San Luis Obispo County Investigation*. Bulletin 18. 288 p.

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Camrosa Water District. 2000. *Draft: 2000 Urban Water Management Plan.* http://www.camrosa.com/Public%20Information/UWMP2000Draft.pdf (October 2001).

Yates, E. B., and K. M. Van Konyenburg. 1998. *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.* U.S. Geological Survey Water-Resources Investigations Report 98-4061.

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U.S. Bureau of Reclamation. 1990. *Long-Term Wastewater System Draft Environmental Impact Report, Statement : Santa Rosa Subregional Water Reclamation System.*

_____. 1992. *Santa Rosa Subregional Water Reclamation System: Long-Term Wastewater System Final Environmental Impact Statement.*

Errata

Changes made to the basin description will be noted here.

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E

APPENDIX E

CCSD ADOPTED GROUNDWATER MANAGEMENT PLAN, NOVEMBER 19, 2015

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Cambria Community Services District
Groundwater Management Plan

November 19, 2015

Jerome D. Gruber, M.P.A.
General Manager

Robert C. Gresens, P.E.
District Engineer

BOARD OF DIRECTORS

Gail Robinette, President
Michael Thompson, Vice President
James Bahringer
Amanda Rice
Greg Sanders

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THIS GROUNDWATER MANAGEMENT PLAN
HAS BEEN REVIEWED AND APPROVED BY:

Jerome D. Gruber, M.P.A., General Manager
Cambria Community Services District

ADOPTED BY CCSD BOARD, ORDINANCE 01-2015

ON November 19, 2015

PREPARED BY:
ROBERT C. GRESENS, P.E.
CCSD District Engineer

REGISTERED PROFESSIONAL ENGINEER
ROBERT CHARLES GRESENS
C 34018
Exp. 6-30-2017
CIVIL
STATE OF CALIFORNIA

Docusign Envelope ID: CD1B5FD8-CD5C-8D03-8169-6EA25443FA19

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Section 1 - Purpose and Background

This section describes the overall purpose of the groundwater management plan and provides related background information on the Cambria Community Services District's (CCSD's) water and wastewater facilities. Summaries are also provided on CCSD well operations, CCSD operating permits, past CCSD planning efforts that may directly or indirectly relate to groundwater management, a significant groundwater rights settlement agreement, and regional, countywide water planning coordination.

1.1 Purpose

The CCSD Groundwater Management Plan describes groundwater planning for the area's San Simeon Creek groundwater basin and Santa Rosa Creek groundwater basin. Each of these basins are within the north coast area of San Luis Obispo County. Figure 1-1 shows these two basins, which is from an earlier US Geological Survey report (98-4061). The reader is referred to USGS Report 98-4061 for a more detailed discussion on the hydrogeology, water quality, and water budgets of these two basins.

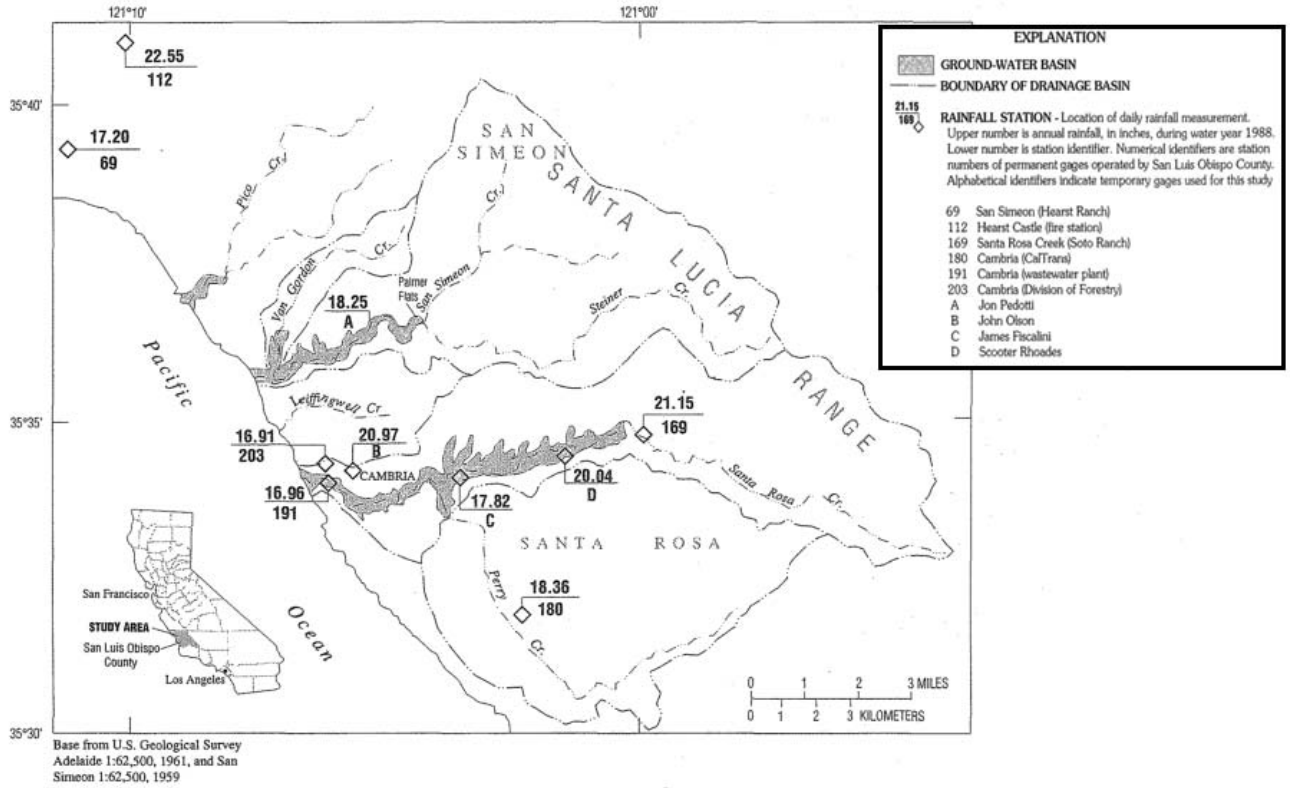

Figure 1. Locations of creeks, drainage-area boundaries, ground-water basins, and rainfall stations in the Cambria area, San Luis Obispo County, California—Continued.

From USGS Report 98-4061, "Hydrogeology, Water Quality, Water Budgets, and Simulated Responses to Hydrologic Changes in Santa Rosa and San Simeon Creek Ground-Water Basin, Yates & Van Konyenberg

Figure 1-1 – San Simeon Creek and Santa Rosa Creek Groundwater Basins

This planning effort is intended to bring the CCSD up to date and in compliance with the planning requirements described within California Water Code Sections 10753 through 10753.11. Plans complying with these water code sections are commonly referred to as AB 3030 plans, which are not to be confused with plans that will follow the state's more recent 2014 Sustainable Groundwater Management Act legislation.

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The overall purpose of a Groundwater Management Plan is to work with basin stakeholders in maintaining a sustainable, reliable, and high-quality groundwater supply. Stakeholders include CCSD customers, the agricultural community, the environmental community, business groups and associations, as well as regulatory and resource agencies. The CCSD completed a San Simeon Creek Water Basin Management Program and Operations Manual in 1980, which was a precursor to the state's 1992 passage of Assembly Bill AB 3030, which resulted in updates to the California Water Code on Groundwater Management Plans. The CCSD's earlier water management program was in response to State Water Resources Control Board and California Coastal Commission permit conditions. Although driven by regulatory mandate, the earlier groundwater management program included several of the basic components of a groundwater management plan. To ensure compliance with the subsequent legislation and associated Water Code Sections, this current Groundwater Management Plan compiles information from that earlier program document, rearranges the information into a format that more clearly identifies the required components of a groundwater management plan, provides updates to incorporate subsequent changes to CCSD facilities, and includes mapping that shows areas of recharge within both the San Simeon Creek and Santa Rosa Creek watersheds.

1.2 Background

The CCSD obtains its water from groundwater wells within the lower reaches of the San Simeon Creek and Santa Rosa Creek Groundwater Basins (State Groundwater Basin ID Numbers 3-35 and 3-36, respectively). The San Simeon Creek aquifer wells have been the CCSD's primary water supply since they were installed in 1979. The San Simeon aquifer groundwater is also of better quality than the Santa Rosa aquifer primarily due the San Simeon aquifer having lower hardness and lower iron and manganese concentrations. The Santa Rosa Creek aquifer was the community's sole water source prior to installation of the San Simeon creek aquifer wells, and prior to the CCSD becoming the community's local water purveyor. During the mid-1970s and prior to the operation of the CCSD's San Simeon well field, localized areas along the lower Santa Rosa Creek channel experienced some land subsidence as well as seawater intrusion. The establishment of the San Simeon wells as the primary water source has lessened the municipal demand on the Santa Rosa Creek aquifer, which has stopped seawater intrusion and subsidence from recurring.

The CCSD also provides wastewater collection and treatment, with treated secondary wastewater effluent being pumped approximately 2.5 miles north of town to the CCSD's property located down gradient from its San Simeon Creek aquifer potable wells. During the late 1970s to 1994, treated secondary wastewater effluent was surface applied with sprayers onto the ground surface. This past practice was changed to using four percolation basins, which were completed during 1994. The percolated wastewater effluent in this area forms a groundwater mound, which helps slow freshwater flow towards the ocean while also preventing seawater from intruding inland. The percolation ponds are still used today for wastewater effluent discharge, with only one of the four ponds typically needing to be operated at any given time.

The CCSD originally operated its three *S*anta Rosa wells (aka, Wells SR-1, SR-2, and SR-3) along the lower portion of the Santa Rosa creek aquifer. Flood damage during 1995 resulted in the loss of Well SR-2, leaving the CCSD with Santa Rosa Wells SR-1 and SR-3. During 2000, the CCSD shut down its lower Santa Rosa wells in response to the discovery of an MTBE contamination plume from a nearby gas station. In response, the CCSD completed a new well (Well SR-4) and wellhead treatment facility behind the Coast Union High School athletic fields, which are farther up-gradient from the MTBE plume.

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In response to exceptional drought conditions and an emergency water shortage in 2014, the CCSD restored operation of Santa Rosa Well SR-3, converted well SR-1 to a non-potable irrigation supply well, and completed an emergency water supply project on the CCSD's lower San Simeon Creek property. The restoration of Well SR-3 allowed the CCSD to access deeper aquifer water, which Well SR-4 could not pump. The Well SR-3 efforts included installing a new submersible well pump and rebuilding an iron and manganese removal filter plant, which had been inoperable since 2000. Well SR-1 was separated from the CCSD potable water distribution system and provided with a new submersible pump that discharges into non-potable water storage tanks, which are connected to filling stations located off of Rodeo Grounds Road in Cambria. The Well SR-1 water is used by local residents and landscapers to haul for irrigation.

The emergency water supply project on the CCSD's lower San Simeon Creek property extracts water from an existing well (State Well Number 27S/8E-9P7, aka Well 9P7) at the CCSD's treated wastewater effluent percolation ponds, treats the extracted water using a new advanced water treatment plant, and re-injects the treated water at the CCSD's San Simeon Creek aquifer's potable well field. The emergency water supply project was designed to meet the State's requirements for indirect potable reuse of recycled water. Its source water will vary depending upon the amount and timing of seasonal rainfall, and time of year. Typically, it will be a combination of percolated treated wastewater effluent, fresh groundwater, and dilute saltwater, with the latter coming from a deeper saltwater wedge of seawater. Figure 1-2 provides an overview of the emergency water supply project that was completed on the CCSD's lower San Simeon Creek Road property.

Figure 1-1: Project Overview

From Cambria Emergency Water Supply Project, Title 27 Report of Waste Discharge, Final, by CDM Smith, October 20, 2014.

Figure 1-2 – Overview of CCSD's San Simeon Creek Emergency Water Supply Project

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1.3 Overview of CCSD Water Well Field Operations

The local groundwater aquifers are narrow and thin with relatively small storage, which results in late dry season drawdown and relatively rapid recharge after adequate seasonal rainfall occurs. During the beginning of the dry season, well levels drop gradually. Towards the later summer months and early fall months, the amount of storage per foot of drawdown decreases, which accelerates the rate of groundwater decline.

Besides the physical characteristics of the aquifers, there are key permitting conditions that effect how the CCSD may operate its well fields. A primary concern on the San Simeon Creek aquifer is the hydraulic gradient between the percolated mound of treated wastewater at its percolation ponds and the up-gradient potable wells. During the late dry season, and to avoid a negative gradient, which could allow percolated secondary wastewater effluent to flow towards the potable wells, the CCSD would need to use a gradient control well. The gradient control well would pump mounded groundwater from below the percolation ponds into the Van Gordon Creek, which would lower the groundwater table. Although effective at controlling the hydraulic gradient, this practice would essentially waste water as it is pumped into the creek and lost to the ocean. It would also lower the groundwater elevation at the San Simeon Creek production wells, which reduced remaining storage during the late dry season. The 2014-constructed emergency water supply project addresses these inefficiencies by capturing and restoring the water extracted from the percolation pond area to reuse it while maximizing groundwater elevation and storage at the up-gradient potable well field. To ensure protection of riparian habitat during its operation, the emergency water supply project includes a discharge of approximately 100 gallons per minute to the head of the San Simeon Creek lagoon to maintain surface water levels. This protective feature is further backed up by an adaptive management plan, with biological monitoring to ensure favorable conditions are being maintained.

Environmental protection is also a key operating concern associated with the Santa Rosa Creek aquifer wells. To address this concern, a key permit condition requires maintaining a minimum groundwater elevation of 3 feet above mean sea level at a monitoring well located southwest from the intersection of Santa Rosa Creek and the Windsor Boulevard Bridge (Monitoring Well WBE). During dry years, this monitoring well may approach the 3-foot minimum elevation during August to September. It was also found that operation of the nearby Shamel Park irrigation well, and tides, can further impact this monitoring well. When the 3-foot elevation condition occurs, the CCSD stops use of its Santa Rosa Creek aquifer wells (Wells SR-1, SR-3, and SR-4), and shifts all of its production to its San Simeon Creek wells.

The CCSD is also subject to meeting the state's surface water treatment rule (SWTR) due to its groundwater sources being under the influence of surface water. To meet these requirements, the CCSD does not operate its San Simeon Well SS-1 whenever surface flow within the San Simeon Creek occurs within 150 feet of the well. San Simeon Wells SS-2 and SS-3 are outside the SWTR's 150-foot boundary and can continue to operate when there is flow in the creek. The Santa Rosa wells SR-3 and SR-4 have well head treatment facilities, which allow them to operate while within the SWTR's 150-foot limit.

1.4 CCSD Water and Wastewater Operating Permits

Operation of the CCSD's water and wastewater facilities is regulated by a combination of permits. The State Water Resources Control Board (SWRCB, aka the California Water Board) has issued diversion permits to the CCSD, which condition how much water may be extracted from each aquifer. The California Department of Public Health (which became the Division of Drinking Water under the SWRCB following a July 1, 2014 reorganization), has issued operating permits to the CCSD that focus on protecting public health and meeting potable water quality requirements. The area's Regional Water Quality Control Board (RWQCB) has issued permits (Waste Discharge

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Orders) that govern operation of the wastewater treatment plant and percolation ponds, as well as other related permits associated with the protection of surface water. Additionally, the California Coastal Commission has issued Coastal Development Permits on the CCSD's wastewater treatment plant and San Simeon Creek well field projects, which further condition and overlap those found in the diversion permits issued by the SWRCB.

The following table summarizes the primary permits regulating the CCSD water and wastewater operations.

Table 1-1 – Primary CCSD Water and Wastewater Operating Permits

Permit	Issuing Agency	Summary Description
Santa Rosa Creek Diversion Permit No. 20387	SWRCB	Originally issued to the CCSD on November 7, 1989. Diversions not to exceed 518 acre-feet/year (AFY), and 260 acre-feet (AF) from May 1 to October 31. Conditions include Endangered Species Act compliance and maintaining groundwater elevation at or above 3 feet near the lagoon area (Well WBE).[1]
San Simeon Creek Diversion Permit No. 17287	SWRCB	Filed on February 23, 1976. Diversions not to exceed 1,230 AFY. Subsequently amended to allow up to 370 AF during dry period, with dry period being between the time surface flow ceases at Palmer Flats gaging station and October 31. Conditions include maintaining water levels in the lower basin to maintain stream flow to the lagoon, and to maintain fish and riparian habitat[2].
Coastal Development Permit 428-10, which amended earlier permits 132-18 and 131-20.	California Coastal Commission	Issued on May 29, 1981. Limits the total combined extraction from the San Simeon Creek and Santa Rosa Creek aquifers to no more than 1,230 AFY. Conditions included requirement to development an operations and maintenance manual for a basin management program.
Drinking Water Permit No. 03-06-01P-001	Division of Drinking Water	Conditions included an emphasis on meeting the state's Surface Water Treatment Rule (SWTR) requirements. Permit update included Well SR-4 and its new wellhead treatment facility.
Wastewater Treatment Plant Operations Waste Discharge Order 01-100	RWQCB	Updated and adopted by RWQCB on December 7, 2001. Conditions operations of wastewater treatment plant and effluent percolation basins. Includes monitoring and reporting program requirements for wastewater treatment plant and percolation basins. Percolation basin monitoring requirements include local groundwater well monitoring.

The 2014 Completion of the Emergency Water Supply Project along the CCSD's lower San Simeon Creek property has also resulted in additional permits that further regulate its operation. Table 1-2 summarizes the Emergency Water Supply Project permits. In addition to these existing permits, the CCSD is in the process of obtaining a regular Coastal Development Permit (CDP) from the County on its emergency water supply project. The regular CDP is being completed in accordance with provisions of the San Luis Obispo County Coastal Zone Land Use Ordinance (Section 23.03.045), which allow for such subsequent regular CDP processing. To date, the CCSD has submitted a regular

[1] Application to extend permit 20387 was filed during October 2014. Continuation of the existing permit and conditions is subject to the SWRCB's review and approval process.

[2] Application to extend permit 17287 was filed during October 2014. Continuation of the existing permit and conditions is subject to the SWRCB's review and approval process.

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CDP application to the County and is completing an Environmental Impact Report to ensure that the County's application completeness requirements are fully addressed.

Table 1-2 – Emergency Water Supply Project Permits

Permit	Issuing Agency	Summary Description
Emergency Coastal Development Permit (CDP) ZON2013-00589	San Luis Obispo County	Permit was effective May 15, 2014. Authorized construction and operation of emergency water supply project. Permit is valid until Stage 3 water shortage emergency has ended, or a regular CDP has been approved. (The CCSD is currently completing efforts to obtain a regular CDP).
Waste Discharge Requirements and Water Recycling Requirements. RWQCB Order No. R3-2014-0050	RWQCB	Permit was effective on November 14, 2014. Also referred to as a Title 22 permit. Permit includes concentration limits on water being re-injected into the San Simeon Creek aquifer. An accompanying Monitoring and Reporting Program No. R3-2014-0050 includes groundwater monitoring requirements.
Waste Discharge Requirements for RO Concentrate Evaporation Pond RWQCB Order No. R3-2014-0047	RWQCB	Permit was effective on November 14, 2014. Also referred to as a Title 27 permit. Describes protective requirements of evaporation pond and related monitoring to prevent ground-water or surface water contamination. An accompanying Monitoring and Reporting Program No. R3-2014-0047 includes groundwater monitoring requirements.
Low Threat Discharge of Water to Lagoon Monitoring and Reporting Program No. R3-2011-0223.	RWQCB	Modified on December 8, 2014. Covers monitoring and reporting of discharge of water to the San Simeon Creek lagoon, which is used to maintain surface water levels. Incorporates by reference a December 9, 2011 Draft Waste Discharge Requirements Order No. R3-2011-0223 (NPDES Permit CAG993001) for Discharges with Low Threat to Water Quality.

1.5 Geological Study and Modeling of the Santa Rosa Creek and San Simeon Creek Ground-Water Basins

The U.S. Geological Survey (USGS) completed study and modeling of the Santa Rosa and San Simeon Creek groundwater basins, which is reported in USGS Report 98-4061, entitled "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 study found that the lower reaches of both creeks usually dry up in the summer, with base flow being more persistent in the Santa Rosa Creek. The modeling also found that a significant amount of dry season water level decline was not the result of pumping, but of natural drainage processes.

An annual water budget from the earlier USGS report was updated and incorporated into the CCSD's 2005 and 2010 Urban Water Management Plan Updates. The original USGS budget was based on the period of April 1988 through March 1989. This was adjusted slightly within the CCSD's 2005 and 2010 Urban Water Management Plan Updates to account for the CCSD's 1994 conversion of its wastewater effluent spray field operation to percolation ponds (with less evaporation). For convenient reference, the updated budget table is included here as Table 1-3.

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Table 1-3 – Annual Water Budget Summary for the Santa Rosa and San Simeon Creek 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 and 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			-240			-50
Percolation Ponds	0	0		500	0	
Septic Tanks	10	0		<10	0	
Irrigation-Return Flow	10	0		0	0	
Phreatophyte Transpiration	0	160	-160	0	30	-30
Total Net Flow			-50			+60

Notes:

a. All values rounded to the nearest 10 AFY. Positive net flow indicates flow into basin; negative net flow indicates flow out of basin.

b. From 1998 USGS report 98-4061, p.46, modified to show subsequent change from wastewater effluent spray field operation to percolation ponds.

As noted by its original USGS report authors, the water budget accuracy is not greater than two significant digits. Because of the time that has passed since the original USGS report was developed, as well as possible changes within the basins, an update to the annual water budget should be considered in future groundwater management plan updates. The long-term benefits of continued water conservation efforts and technological advancements should also be part of such future efforts. Therefore, the findings and recommendations of the CCSD's pending 2015 Urban Water Management Plan Update, which may include future water conservation measures and conservation program updates, should be assessed with relevant updates being incorporated into future groundwater management plan updates.

The modeling within the earlier USGS report had further analyzed several water resources management alternatives, including one that pumped approximately 270 acre-feet of water from the percolation pond area into recharge basins being proposed above the San Simeon Creek aquifer well field. This alternative was similar in nature to the 2014 constructed emergency water supply project. However, the 2014 project was smaller in scope and limited injecting water within the CCSD-owned property limits. Operating experience and related data from the CCSD's recently completed Emergency Water Supply Project could be used in assessing whether the earlier water budget modeling could be further adjusted (e.g., would creek seepage outflow decrease?, and if so, by how much?).

To abide by Title 22 requirements for indirect potable reuse of recycled water, the 2014-constructed Emergency Water Supply project included detailed geo-hydrological modeling. This modeling effort was primarily focused on determining the location of the project's injection well and related underground travel time achieved before the re-injected water would be pumped by the CCSD's existing potable well field pumps. Results of the modeling are summarized in a May 2014 CDM Smith report entitled "Cambria Emergency Water Supply Project, San Simeon Creek

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Basin Groundwater Modeling Report." This report, in combination with subsequent tracer study efforts, found that a maximum extraction rate of 400 gallons per minute could be achieved from production wells SS-1 or SS-2 while meeting a minimum Title 22 requirement for a 60 day travel time. Water demands exceeding 400 gpm while the emergency water supply project is in operation, must be met from storage within the distribution system, or in combination with the operation of Santa Rosa Wells SR-4 or SR-3.

1.6 CCSD Baseline Water Supply Analysis Report

A December 9, 2000 Baseline Water Supply Analysis was an historically significant report that the CCSD commissioned to study groundwater supply and demand. This report used a regression analysis technique to develop a supply and demand model, which included estimating the duration of the upcoming dry season and remaining storage within the aquifers. The results of this model would then be used to support what level of conservation would be needed from CCSD customers. This report further documented updates to CCSD ordinances to permanently prohibit the waste of water within the CCSD water service area (Ordinance 4-2000) and the establishment of an emergency water conservation program with three stages. These ordinances were subsequently incorporated into the CCSD Municipal Code.

1.7 CCSD Long-Term Water Supply Planning

The CCSD has spent decades studying various long-term water supply alternatives including seasonal storage reservoirs, cross country transmission mains, and seawater desalination. The unincorporated CCSD service area is environmentally sensitive, within the Coastal Zone, and has much of the offshore area being within the Monterey Bay National Marine Sanctuary, as well as the more recently formed Cambria State Marine Park. Earlier attempts to expand the water supply stalled out due to a combination of factors, including the area's relatively remote location, environmental concerns, associated growth inducement concerns, and costs. The most current summary of long-term water supply planning can be found in a November 27, 2013 report by CDM Smith, which was administered by the U.S. Army Corps of Engineers, and entitled, "Cambria Water Supply Alternatives Engineering Technical Memorandum." This effort included a series of facilitated public workshops, which resulted in technical screening of numerous supply alternatives. Based on this work, a brackish water supply alternative along the lower San Simeon Creek aquifer was found to be the most technically feasible alternative.

Unlike the 2014-emergency water supply project, the longer term brackish alternative (aka Alternative 5 of the 2013 report) included injection wells farther up-gradient from the CCSD's property, which would allow highly treated and injected water to flow past neighboring agricultural wells. Because of concerns over potential risk due to the State's mandated 60-day travel time requirement, a separation has been preferred by the CCSD's agricultural neighbor, which would preclude such an approach. Therefore, the Army Corps was requested to revisit long-term supply Alternative 5 to determine whether it could be further modified to address the CCSD neighbor's concerns. Modifications to be investigated included adding a subterranean cutoff wall (aka a secant-style augured cutoff wall) on CCSD property down-gradient from the emergency supply project's injection well and near the location of an existing stream gauging station (San Luis Obispo County Sensor 718), which would be in combination with a future extraction well that would be placed to avoid having re-injected water pass the neighboring wells. Figure 1-3 illustrates this concept.

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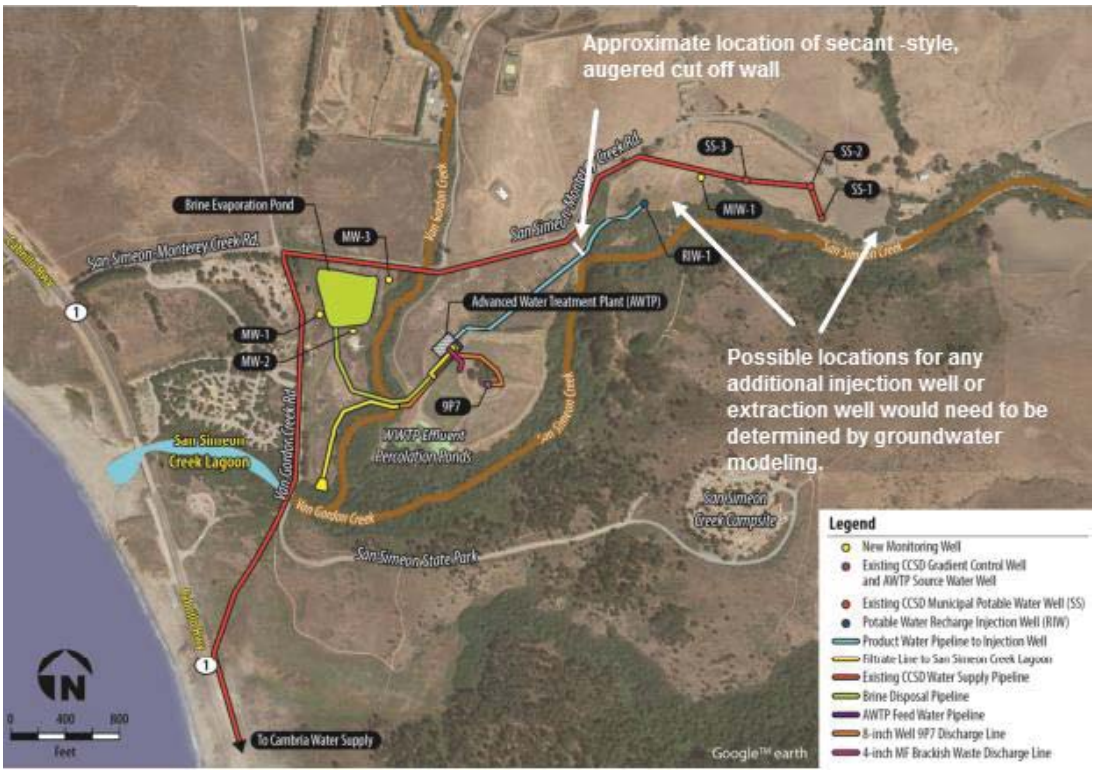

Figure 1-3 – Concept Associated with Pending Long-Term Water Supply Analyses

Besides the additional geo-hydrologic analyses that are needed to evaluate possible modifications to the earlier brackish water alternative (Alternative 5), additional analyses are needed to investigate alternative means to dispose of reverse osmosis reject water. The technical work on this subsequent analysis is currently on hold due to lack of federal funding. Once the technical support work is completed, and subject to these modifications being determined to be feasible, an updated long-term Alternative 5, along with the remaining screened alternatives, are to be analyzed as part of an ongoing environmental impact statement (EIS) analysis, which is currently under commission by the U.S. Army Corps of Engineers.

In addition to long-term potable water planning efforts, the CCSD is in the early process of improving its wastewater treatment plant. With the completion of its 2014 Emergency Water Supply project, the wastewater treatment plant has essentially become a water restoration plant as opposed to a treated wastewater disposal operation. As a result, more emphasis is being placed on the need for the existing plant to de-nitrify (to remove nitrates) from its effluent. This is because the CCSD's Emergency Water Supply project has a very low nitrate requirement (2.3 mg/l Nitrate expressed as N, or NO_3-N) based on the state's non-degradation policy (Porter-Cologne Act), which is well below the state's drinking water limit of 10 mg/l NO_3-N). Nitrate can also be a limiting nutrient in certain aquatic environments, which means its presence can promote the growth of aquatic plants and algae, which may not otherwise occur to the same extent. Such growth can create problems, particularly at night, by lowering the dissolved oxygen needed to support fish life. Associated with this concern, the RWQCB released a draft report during early 2015 entitled "Draft TMDL Project Report for Nitrate, Dissolved Oxygen, Sodium, and Chloride in San Simeon Watershed." This report includes draft target concentration limits for the San Simeon Creek lagoon water, which is located down gradient from the CCSD's treated effluent percolation basins. For nitrate, the report's draft target is 1.3 mg/l NO_3-N. For phosphorous, another limiting nutrient, the report's draft target limit is 0.05 mg/l – P. Future upgrades to the CCSD wastewater treatment plant

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will need to consider the RWQCB's final report recommendations as well as those of the emergency water supply project.

1.8 Water Rights Agreements

The CCSD has a water rights settlement agreement in place with its agricultural neighbor to the north of its San Simeon Creek well field and percolation pond property. This 2006 agreement allows for providing non-potable agricultural water to this ranch property from CCSD Well 9P2, which is located north of the CCSD's emergency water supply project's extraction well (9P7), and in the same general proximity as the treated wastewater effluent percolation ponds. The amount of non-potable water provided is subject to meeting specific terms of the agreement, and can be up to 183.5 acre-feet per year. This agreement also allows for providing up to 21.5 acre-feet per year of potable water to an existing residence and commercial establishment on this same ranch property, as well as a buffer area where non-potable is not allowed to be used.

Meeting the future agricultural demand called for in this agreement will be challenging in view of the environmental conditions and dry season diversion limits in the CCSD's permits. Future planning should therefore consider how the terms of this agreement could be met in view of these regulatory limitations. Such planning scenarios could include the establishment of agricultural storage ponds in combination with limiting CCSD supply deliveries during more ideal wet season periods and conditions.

1.9 Water Conservation

Water conservation has been a way of life in Cambria for many decades. The CCSD's conservation program includes mandated, as well as voluntary conservation measures. Mandated measures include the requirement to retrofit homes on resale, and businesses on changes of use or resale. Voluntary measures include rebates to customers for installing water conservation measures such as low flow toilets, low flow showerheads, hot water circulating pumps, and water efficient clothes washers.

During the early 1980s, the CCSD developed a demand offset program based on water conservation, which required the demand of any new water connection to be offset by conservation. This program is administered by maintaining a conservation points bank, which tracks completed conservation measures against the points needed for a new connections. The CCSD's most recent update to this program was completed by Maddaus Water Management, which is summarized within a February 28, 2013 Water Use Efficiency Plan report. This report included study of water use by various size residences, which resulted in modifying the number of conservation points needed to obtain a demand offset. Other specific updates since the 2013 report included lowering the maximum allowable flow for showerheads down to 1.5 gallons per minute maximum, and requiring that urinals not exceed 1/8 gallon per flush. The CCSD's water conservation measures are typically revisited as new water conservation measures evolve in the market place, and as part of the CCSD's Urban Water Management Plan updating process. Future updates may include review of newer point of use recycled (POUR) water systems (e.g., Nexus "eWater"), and dual plumbing of residences to separate gray and black water to further facilitate the implementation of POUR systems.

In response to the CCSD's current Stage 3 Water Shortage Emergency Declaration, Cambrians continued to excel at water conservation by having reduced their water use by over 35%.

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1.10 Non-Potable Recycled Water Planning

The CCSD's lower San Simeon Creek emergency water project provides indirect potable reuse of recycled water. In addition, the CCSD has a plan that was completed in 2004 to guide the future use of recycled water for irrigation on landscaping. Approximately 65 acre-feet of future irrigation with recycled water has been estimated as part of the effort in developing the 2013 Technical Memorandum on Water Supply Alternatives. The non-potable irrigation water is planned for larger irrigators, including a future community park, the Cambria middle school, and Cambria elementary school. Future upgrades to the CCSD's wastewater treatment plant will consider these needs, as well as recycled water's potential use to recharge the lower Santa Rosa Creek aquifer during critical summer months.

1.11 Integrated Regional Water Management Planning and County Land Use Coordination

The CCSD is a signatory agency to the memorandum of understanding with the San Luis Obispo County Flood Control and Water Conservation District (County), which leads efforts to coordinate development and updating of a county-wide Integrated Regional Water Management (IRWM) plan. Cambria is located within the County's North Coast Regional Water Planning Area 2 of the IRWM. Key features and activities covered by the countywide IRWM planning process include:

- Describes the Region and its water management strategies
- Reviews the Region's water issues (e.g., supply, quality, storage, conveyance)
- Puts forward strategies to address solutions for those issues
- Suggests actions, programs, and capital projects to carry out those strategies
- Prioritizes and integrates those actions, programs, and capital projects
- Establishes metrics to measure and manage collected data to show the potential improvements, benefits, and impacts of the plan
- Provides a methodology to carry out those actions, programs and capital projects
- Monitors the plan's progress and makes adjustments when needed

Besides participation in the IRWM planning efforts, the CCSD actively attends the county's regular Water Resources Advisory Committee (WRAC) meetings, which reports to the County Board of Supervisors on water related concerns within the County. The county also follows a Resource Management System (RMS) reporting and evaluation process every two years as part of its Growth Management Ordinance. The RMS reporting includes collaboration with the CCSD and WRAC on the status and availability of water and wastewater services, which is considered by the County Board of Supervisors in setting allowable growth rates within the County.

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Section 2 - Basin Management Objectives

The CCSD's 1980 Basin Management Program incorporated an historic, November 16, 1976 Resolution (Resolution 13-11-76), which was passed by the Cambria County Water District, the community's water purveyor prior to CCSD. This resolution entitled "Resolution Establishing Policy for San Simeon Basin Management Plan" included the following:

> WHEREAS: The Board recognizes that a basin management plan for the San Simeon Creek basin is necessary to prevent sea water intrusion, and mitigate environmental impacts on the fishery resources, supply facilities in the basin for up to 1230 acre-feet per year in accordance with water rights application No. 25002.
>
> NOW, THEREFORE, IT IS HEREBY RESOLVED, FOUND, AND DETERMINED AS FOLLOWS:
>
> The District will operate its water supply and waste water disposal facilities to serve the following functions:
>
> A. Maintain water levels in the lower basin in order to (1) sustain stream flow to the lagoon at the mouth of San Simeon Creek, and (2) prevent sea water intrusion. The objectives will be accomplished by return of waste water to the basin in accordance with Discharge Requirements of the Regional Water Quality Control Board.
>
> B. Maintain riparian vegetative growth along San Simeon Creek in the lower basin area in the event lowered ground water levels should cause damage to riparian vegetation. The District will provide irrigation facilities, within the Bonomi Ranch area owned by the District, where said damage occurs from depletion of soil moisture due to basin dewatering by District water wells."

In following the intent of the aforementioned resolution, while providing updating based on current facilities and permits, the following Basin Management Objectives are recommended.

2.1 Basin Management Objective 1

Monitor and Manage Water and Wastewater Facilities to Ensure Protection of the Area's Fishery and Riparian Habitat

Existing permit conditions require the CCSD to operate its well fields to maintain at least 3 feet of elevation at its Santa Rosa Creek monitoring well (WBE) and to maintain flow into the mouth of the San Simeon Creek lagoon. Each of these conditions have their own unique challenges, particularly during extended drought periods. To abide by these conditions, the CCSD will need to plan, budget, and develop a revenue stream to support the resources necessary to ensure compliance. Existing groundwater management efforts should be bolstered by the addition of remote sensing, as well as continued biological monitoring.

Currently, the CCSD has an adaptive management plan and associated biological monitoring in place to coincide with operation of its emergency water supply (EWS) project. A copy of this Adaptive Management Plan is being provided as Appendix E. The monitoring will be further augmented by the pending installation of remote measuring equipment, which is proposed for installation at the lower San Simeon State Campground pedestrian bridge, which spans the upper portion of the San Simeon Creek lagoon. The EWS project further includes a design feature that discharges 100 gallons per minute of flow into the mouth of the San Simeon Creek whenever the new system operates during periods of no creek flow. Biological monitoring will be budgeted and

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planned for as part of any future rate analysis to ensure this expense continues to be funded. This may also need to be expanded to include the lower Santa Rosa Creek reaches and lagoon area.

In addition to coordinating monitoring expenses into its operating budget, future capital projects should also consider this need. For example, the pending wastewater treatment plant improvements should address the RWQCB's 2015 draft TMDL report recommendations to further reduce nitrates and phosphorus in the CCSD plant effluent. Other possibilities may include recharging the lower Santa Rosa aquifer during the summer with highly treated wastewater effluent, as well as converting the Shamel Park irrigation system to Title 22 non-potable water from the CCSD wastewater treatment plant.

2.2 Basin Management Objective 2

Operate, Plan, and Provide CCSD Water and Wastewater Facilities in a Manner to Prevent Sea Water Intrusion and to Avoid Inelastic Ground Subsidence

Localized subsidence was last experienced along the lower Santa Rosa Creek aquifer during the 1970s and prior to the construction and operation of the CCSD's San Simeon Creek well field. This is documented within the February, 1980 California Geology article by George B. Cleveland entitled "Drought and Ground Deformation, Cambria, San Luis Obispo County, California." Causes cited within this article included: flooding that had destabilized the creek banks; the loss of soil moisture after the area was served by sewers (and local septic tanks and leach fields were abandoned); and, the 1975-1976 drought. Subsequent elevation surveys followed this period and were eventually stopped after no further ground elevation changes were found to be occurring. Since this earlier time, the CCSD also began operating its San Simeon well field, which started during 1979 and has allowed for less strenuous demand on pumping from the Santa Rosa Creek aquifer. Future operations of the CCSD's Santa Rosa Creek and San Simeon Creek aquifer well will avoid lowering groundwater elevations to a point where subsidence could possibly start to occur. Additionally, the CCSD's 2014-constructed emergency water supply project will provide further protection to the San Simeon well field area by increasing groundwater elevations during its operation. The CCSD also uses its water conservation demand offset program to ensure any future water connections are offset by water conservation measures. If static groundwater elevations go near or below 5 feet above mean sea level near the lower San Rosa Well SR-1, ground level surveys may be reinitiated along with adjustments to pump operations to avoid the potential for subsidence.

2.3 Basin Management Objective 3

Work Cooperatively with District Customers, the Agricultural Community, and Regulatory and Resource Agencies to Protect and Maintain Groundwater and Surface Water Quality

The CCSD actively participates in the County-wide Water Resources Advisory Committee (WRAC), which is widely represented and makes recommendations to the County Board of Supervisors on water related matters. It is also a signatory agency to the County-wide Integrated Regional Water Management Plan (IRWMP) memorandum of Understanding. Continuing participation in the WRAC and IRWMP by the CCSD will help foster a collaborative working relationship with the local agencies and agricultural community.

In addition to the WRAC and IRWMP, land use jurisdiction within the unincorporated CCSD service area and groundwater basins is governed by San Luis Obispo County. Because the area is within the Coastal Zone, proposed development is subject to conditions within the Local Coastal Plan, with land use development permitting by the County being appealable to the State Coastal Commission. A local North Coast Advisory Committee further reviews proposed new development and makes recommendation to County Planning and the area's local County Board Supervisor. Besides these

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reviews, the CCSD implements a demand offset program that requires the demand from any new water connections to be offset by water conservation measures implemented within the CCSD's water services boundary. This overall process ensures that any new development is closely reviewed for possible impacts to groundwater.

The County is also lead on administering a Hazardous Materials Management Plan (HMMP) program, which serves to further protect the local groundwater and surface water quality by documenting where and how hazardous materials are stored, as well as guiding emergency responders on how to safely and expeditiously respond to fires and accidents to minimize the potential for accidental releases.

The community has also benefitted from the past efforts of local ranchers and agricultural interests. Most recently, a local rancher allowed residents to haul irrigation water from one of his wells that had an appropriation permit. During the early 1975-1976 drought, ranchers along the Santa Rosa Creek provided temporary relief to the CCSD by piping irrigation wells into Santa Rosa Well SR-2 to locally recharge the aquifer near the CCSD wells. Others have reduced or voluntarily suspended irrigation practices during extreme drought periods. Further collaborative opportunities exist with the agricultural community, including work with the CCSD's well field neighbors.

2.4 Basin Management Objective 4

Continue to Monitor and Collect Baseline Groundwater Elevation and Quality Data for Use by Resource and Regulatory Agencies, In Assessing Progress, Developing Action Plans, and in Developing Future Groundwater Management Planning Updates

The CCSD regularly collects bi-monthly groundwater elevation data from wells installed along the lower reaches of the San Simeon Creek and Santa Rosa Creek aquifers. Elevation and water quality data is also collected to meet requirements set by the RWQCB and Division of Drinking Water as part of monitoring and reporting programs supporting operation of the Emergency Water Supply project and the CCSD's potable wells. Groundwater monitoring has previously supported geo-hydrological modeling of both the San Simeon Creek and Santa Rosa Creek aquifers by the US Geological Survey. More recently, geo-hydrological modeling of the lower San Simeon Creek aquifer was developed during 2014 to support design of the Emergency Water Supply project.

A future recommendation is for the CCSD to regularly enter elevation data from the CCSD-owned wells into the California Statewide Groundwater Elevation Monitoring (CASGEM) web site portal. This would further augment the confidential well data that has been entered for the San Simeon Basin Valley Groundwater Basin (Number 3-35) and the Santa Rosa Valley Groundwater Basin (Number 3-36). Data on the CCSD-owned wells is currently maintained by the CCSD's Water Department. Entering this data in to the CASGEM system would facilitate future study of the groundwater basins by making it more readily accessible.

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Section 3 - Inter-Agency Coordination and Collaboration Plan

The CCSD has completed this Groundwater Management Plan following completion of an intense emergency response effort to the area's epic drought, which was coupled with a significant loss of revenue due to exceptional conservation efforts. To address its cash flow difficulties, while ensuring it was meeting all of the Proposition 84 grant funding requirements, the CCSD has completed this current Groundwater Management Plan using in-house staff, and has chosen to update the earlier groundwater management program by following the procedural requirements outlined in Water Code Sections 10753.4 and 10753.5.

Because of the time urgency associated with its revenues needs, the CCSD is completing a two-step adoption process that includes seeking comments from public agencies and interested parties, similar to how environmental documents are reviewed. A more elaborate agency collaboration plan is also described within this section for consideration on future Groundwater Management Plan Updates. The use of the steering committee is recommended for future groundwater management plan updates, which would more ideally occur when there is less time urgency.

3.1 Inter-Agency Coordination

The inter-agency coordination followed in adopting this current Groundwater Management Plan has included sending notices on the CCSD's intent to complete its update to regulatory and resource agencies, as well as interested private parties. Following publication of its notice per *California Government Code* §6066, the CCSD Board held an initial hearing on its intention to complete this current Groundwater Management Plan on October 15, 2015. Following deliberations during this hearing, the CCSD Board adopted Resolution 34-2015, indicating its intention to complete this Groundwater Management Plan. Appendix A includes CCSD Resolution 34-2015, a certified copy of the newspaper notification, the list of agencies and interested parties notified by mail, and the notice that was mailed.

Following a second public noticing per *California Government Code* §6066, on November 12, 2015, the CCSD held a second public hearing to consider whether a majority property owner protest existed over the adoption of the Groundwater Management Plan. Following the receipt of three written comment letters, as well as public testimony received during this hearing, the CCSD Board deliberated on District Ordinance 01-2015, and moved forward with adopting the Groundwater Management Plan. District Ordinance 01-2015, the CCSD Staff Report on this item, and written comment letters are provided in Appendix B.

3.2 Inter-Agency Collaboration Plan

It is recommended that as follow-up to adopting this current Groundwater Management Plan, the following steps be implemented to ensure continuing and future inter-agency input and collaboration. These steps should logically follow the CCSD's updating of its Urban Water Management Plan and Watershed Sanitary Surveys, which are required every five years. This would then allow pulling information from those five-year planning and updating efforts into any subsequent Groundwater Management Plan updates. This process would also include the formation of a steering committee to further guide the development of future plan updates.

Step 1 – Develop a Plan to Finance Future Groundwater Management Plan Updating

The CCSD should include as part of its planning and budgeting processes, a means to finance the regular completion of Groundwater Management Plan updates. The CCSD may want to involve the services of a consultant to assist in such efforts due to the workload such

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periodic efforts may require, and the specialized nature of the work. A scope of work and request for proposals would then follow for selection of a consultant to assist the CCSD.

Step 2 – Formation of a Multi-Agency Steering Committee

As lead agency, the CCSD should include contacting the following agencies and organizations to solicit representatives that would be available to attend monthly steering committee meetings and/or conference calls:

- San Luis Obispo County
- California Coastal Commission
- California Department of Fish and Wildlife
- California Department of Parks and Recreation
- Upper Salina-Las Tablas Resource Conservation District
- Natural Resources Conservation Service
- San Luis Obispo County Farm Bureau
- California Cattlemen's Association
- The Santa Rosa Creek Valley Groundwater Monitoring Cooperative
- The CCSD's agricultural neighbors
- Greenspace, The Cambria Land Conservancy
- North Coast Advisory Council
- Cambria Chamber of Commerce
- Cambrians for Water (C4 H2O)
- Regional Water Quality Control Board
- Department of Water Resources

This list may be adjusted as needed to ensure that a broad spectrum of stakeholders are available and included. The initial committee meetings would set up a mission statement, goals, rules for participation, meeting schedules, and distribute key documents for review.

Step 3 – Review and Identify Regulatory Updates and Any Recent Trends That May Require Related Groundwater Management Plan Updating

Data collected from ongoing monitoring programs would be reviewed along with progress that has been made towards meeting key regulatory and voluntary criteria. For example, future updating may include review of the RWQCB's target goals that were recently described in the draft 2015 "Total Maximum Daily Loads for Nitrate, Dissolved Oxygen, Sodium, and Chloride in San Simeon Watershed in San Luis Obispo County, California," as well as any related progress to the CCSD's wastewater treatment plant, which may contribute towards meeting such goals.

Step 4 – Develop an Action Plan to Complete Groundwater Management Plan Updates

Key points to include in a detailed action plan would include a public outreach effort, progress reporting to the CCSD Board and any Board ad-hoc committees, as well as a production schedule on a Groundwater Management Plan update. This outreach effort should plan on making special presentations to the area's North Coast Advisory Committee, County Planning Commission, County Board of Supervisors, California Coastal Commission, conservation and environmental organizations, neighboring property owners, service clubs and organizations, as well as business groups.

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Step 5 – Execute the Updating Process

The completion of subsequent Groundwater Management Plan updates should regularly involve the public to make sure the key concerns are understood along with any potential alternatives towards addressing certain issues. This would include the pros and cons of various approaches being considered before the final report is finalized. The report would then be completed through a series of at least two public hearings with the CCSD Board. The first hearing would describe the CCSD's intent to complete this updated Groundwater Management Plan. The second CCSD hearing would focus on adoption of the Groundwater Management Plan. Intermediate discussions would also be made through reports by the CCSD ad-hoc committee during regular CCSD Board meetings, Board agenda discussion items, or a combination of both.

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Section 4 - Groundwater Recharge and Mapping Update

Groundwater recharge to the Santa Rosa and San Simeon Creek Basins occurs through permeable alluvial materials that underlie the creek beds. Detailed mapping of the area by Hall (1974) and the USGS (1998) provided much of the detailed geology information for the area, including alluvial deposit locations. This information was used in the completion of Figure 4-1, which provides an updated map of the recharge areas within the San Simeon Creek and Santa Rosa Creek groundwater basins. Within each basin, recharge predominantly occurs through these alluvial deposits during the annual rainy season while the creeks are flowing. Certain upper reaches of each creek may also run perennially with springs contributing to surface water in the upper elevations of the watersheds during the dry summer months. During multiple-year droughts, such springs may stop flowing late in the year. Surface flow along the lower reaches of each creek typically stop during the latter dry season, with the Santa Rosa Creek having more of a propensity to flow for a longer period into the dry season period than the lower San Simeon Creek. During winter time flows, recharge will result from rainfall events and can extend through entire reach of each creek, depending upon the pattern and intensity of seasonal rains.

In addition to Figure 4-1 of this report, the CCSD has provided digital, ESRI-based mapping files to the Department of Water Resources, San Luis Obispo County, and the San Luis Obispo County Local Agency Formation Commission (LAFCO).

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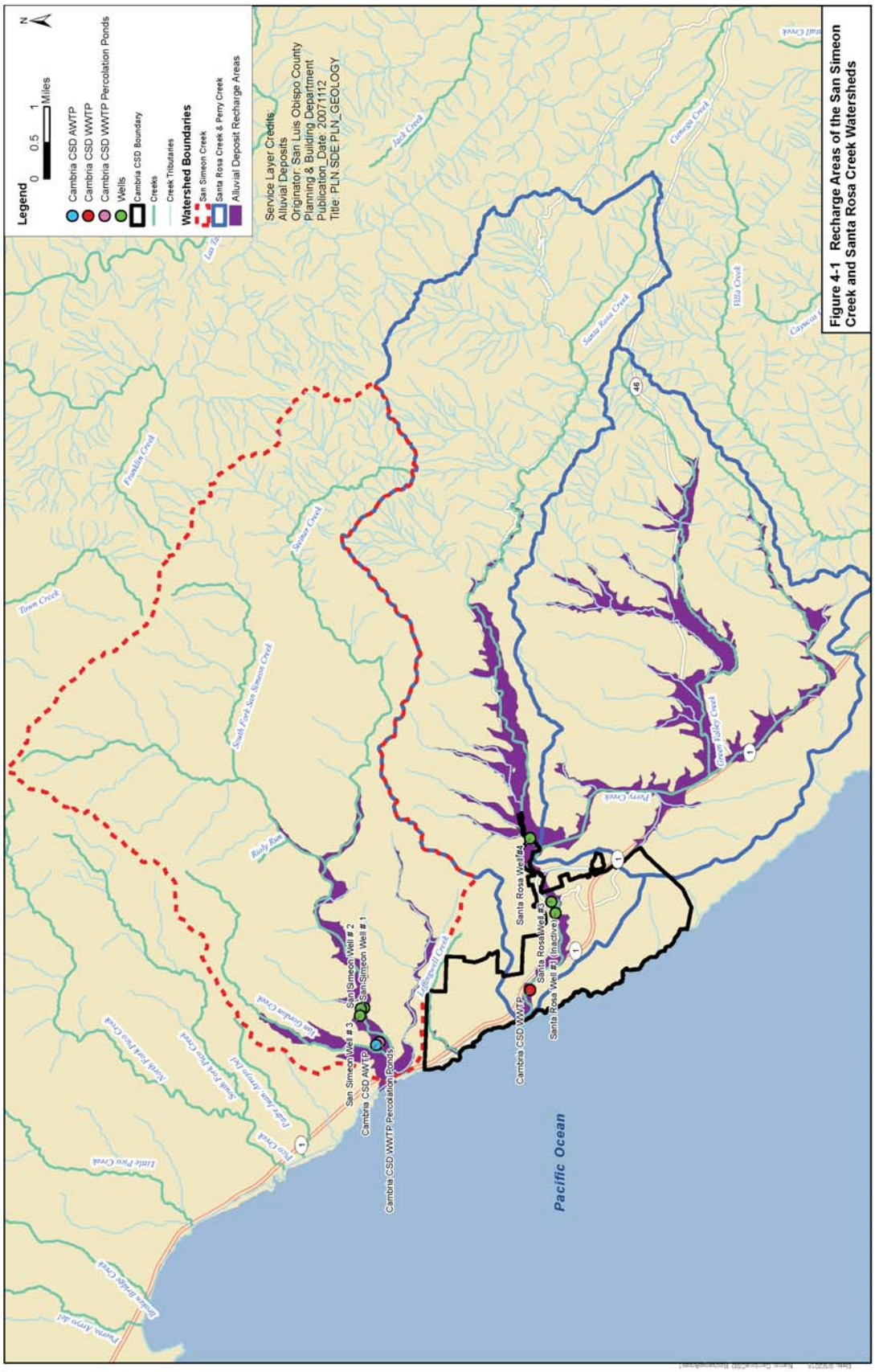

Figure 4-1 – San Simeon Creek and Santa Rosa Creek Watershed Recharge Areas

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Section 5 - Groundwater and Surface Water Monitoring

The CCSD has collected groundwater elevation and quality data since it began water operations during the 1970s. Additionally, the US Geological Survey, San Luis Obispo County Flood Control and Water Conservation District, and RWQCB, have collected data on surface water flow and quality. In more recent times, Senate Bill 6 (SBx7-6) was enacted on November 6, 2009, which revised CWC §10920, et seq. and established a new groundwater monitoring program (CASGEM) to more regularly and systematically monitor groundwater in all or parts of groundwater basins throughout the state. The CCSD is currently the sole public entity registered with the state's CASGEM portal for groundwater monitoring within the San Simeon Creek and Santa Rosa Creek ground water basins. Data is currently being provided to the CASGEM system on CCSD-owned wells.

This section describes the following elements of the groundwater and surface water monitoring program:

- Groundwater Elevation Monitoring
- Groundwater Quality Monitoring
- Land Subsidence Monitoring
- Groundwater-Surface Water Interaction Monitoring

The monitoring program is used to adjust CCSD operations, promote collaborative efforts with other water users to protect the groundwater basins, support meeting the Basin Management Objectives outlined within this update, and in supporting future groundwater management plan updates.

5.1 Groundwater Elevation Monitoring

Groundwater elevations will continue to be monitored by the CCSD on a bi-monthly basis at the lower groundwater aquifer wells identified on Table 1-1 and shown on Figure 5-1. The data from these wells is also being reported in the statewide CSGEM web site portal by the CCSD.

Historic data plots from these wells are further shown in Appendix C. In addition to the historically plotted well field data, the CCSD also measures elevation and water quality data on its Emergency Water System project per the Monitoring and Reporting Program requirements issued by the RWQCB. The Emergency Water Supply Project monitoring is further described within its state-approved Operation Maintenance and Monitoring Program (OMMP) report. OMMP Section 18, which describes the project's Monitoring and Reporting Program, is included as Appendix D.

5.2 Groundwater Quality Monitoring

Groundwater quality monitoring is essential in assessing the overall condition of the groundwater basin, the need to take corrective measures, monitoring the progress of corrective measures, and in meeting statewide policy and local CCSD permit conditions. Statewide policy includes the SWRCB's 2009 adoption of a recycled water policy (RWP) to develop a salt and nutrient management plan within all of the state's groundwater basins. This was to occur by 2014, but subsequent progress has not met this earlier goal. The current RWP emphasis is focused on higher priority groundwater basins within the state. For the CCSD, its existing RWQCB-issued waste discharge requirements order (Order 01-100) includes a condition to maintain a salt management program, which serves to reduce salt loading into the groundwater basin.

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Table 5-1 – CCSD Monthly Monitoring Wells

CCSD Water Department Well ID Code	State Well Identifier	Coordinates Latitude	Coordinates Longitude	Reference Elevation Point Feet Above Mean Sea Level	Notes	Estimated Survey Date
SANTA ROSA CREEK WELLS						
23R	27S 8E 23R2	N35° 34' 4.75"	W121° 04' 14.17"	83.42	Lat & long not surveyed - values from Google Earth estimate	
SR4	27S 8E 23R3	N35° 34' 5.34"	W121° 04' 15.69"	82.00	Lat & long not surveyed - values from Google Earth estimate	
SR3	27S 8E 26C5	N35° 33' 51.49"	W121° 04' 49.00"	54.30	Lat & long not surveyed - values from Google Earth estimate	
SR1	27S 8E 26D1	N35° 33' 45.12"	W121° 05' 05.02"	46.40	Lat & long not surveyed - values from Google Earth estimate	
RP#1	27S 8E 27H1	N35° 33' 40.05"	W121° 05' 13.96"	46.25	Lat & long not surveyed - values from Google Earth estimate	
RP#2	27S 8E 27G1	N35° 33' 38.62"	W121° 05' 40.43"	33.11	Lat & long not surveyed - values from Google Earth estimate	
21R3	27S 8E 21R3	Shamel Park Irrigation Well		12.88	County-owned well	
WBE	27S 8E 21R4(?)	N35° 34' 04.64"	W121° 06' 14.44"	16.87	Lat & long not surveyed - values from Google Earth estimate	
WBW	27S 8E 21R5(?)			17.02	(?) State ID number needs to be confirmed.	
SAN SIMEON CREEK WELLS						
11B1	Privately owned well - confidential			105.43		
11C1	Privately owned well - confidential			98.20		
PFNW	Privately owned well - confidential			93.22		
10A1	Privately owned well - confidential			78.18		
10G2	Privately owned well - confidential			62.95		
10G1	Privately owned well - confidential			59.55		
10F2	Privately owned well - confidential			66.92		
10M2	Privately owned well - confidential			55.21		
9J3	Privately owned well - confidential			43.45		
SS1	27S 8E 9J4	N35° 36' 01.63"	W121 ° 06' 32.19"	32.37	Elevation at painted X next to well	2/12/2015 NCE
SS2	27S 8E 9J5	N35° 36' 04.12"	W121° 06' 33.17"	33.16	Elevation at painted X next to well	2/12/2015 NCE
SS3	27S 8E 9K3	N35° 36' 04.28"	W121° 06' 38.95"	33.73	Elevation at painted X next to well	2/12/2015 NCE
SS4	27S 8E 9P5	N35° 35' 53.51"	W121° 06' 51.10"	25.92	Lat & long not surveyed - values from Google Earth estimate	
MIW		N35° 36' 04.44"	W121° 06' 41.51"	29.89	Elevation at Top of casing	2/12/2015 NCE
RIW		N35° 36' 02.69"	W121° 06' 47.74"	25.41	Elevation on concrete next to well	2/12/2015 NCE
9L1	27S 8E 9L1			27.33		
9P7	27S 8E 9P7	N35° 35' 49.47"	W121° 07' 01.26"	20.69	Elevation at Top of casing	2/12/2015 NCE
9P2	27S 8E 9P2			19.11		
9M1	Privately owned well - confidential			65.63		
MW3		N35° 35' 57.47"	W121 ° 07' 10.20"	49.56	Elevation at Top of casing	2/12/2015 NCE
MW2		N35° 35' 53.38"	W121° 07' 14.03"	38.10	Elevation at Top of casing	2/12/2015 NCE
MW1		N35° 36' 04.44"	W121° 06' 41.51"	42.11	Elevation at Top of casing	2/12/2015 NCE
MW4		N35° 35' 41.90"	W121° 07' 15.33"	15.95	Elevation at Top of casing	2/12/2015 NCE
16D1	27S 8E 16D1	N35° 35' 41.84"	W121° 07' 17.47"	11.36	Elevation at Top of casing	2/12/2015 NCE

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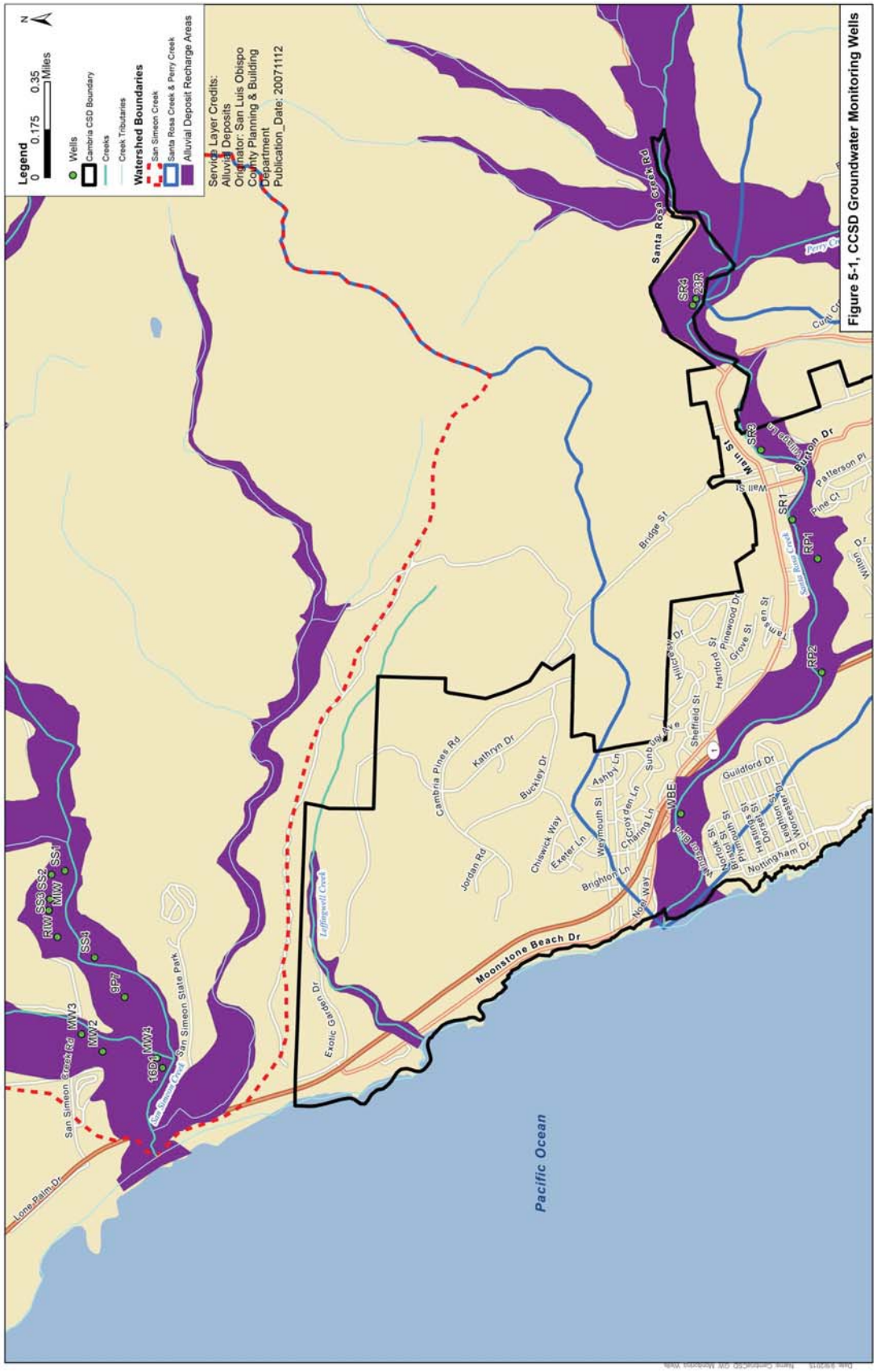

Figure 5-1 – Map of CCSD Monitoring Wells

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Besides salt loadings, nutrients are a key regulatory concern due primarily to their potential impact on aquatic habitat. Of these, nitrate is the most significant contaminant of concern with regard to the CCSD's operations and long term planning. This stems from three general areas: 1) groundwater from monitoring wells downstream from the CCSD's treated wastewater effluent percolation ponds are required to have nitrate concentrations below the statewide maximum contaminant level limit for drinking water, which is 10 milligrams per liter (mg/l) when reported as nitrate expressed as nitrogen (NO_3-N); 2) operation of the emergency water supply project requires the maximum NO_3-N concentration of its final re-injected water be no greater than 2.3 mg/l; and, 3) the RWQCB's draft 2015 Total Maximum Daily Loads report for the San Simeon Creek Watershed includes a recommended numeric target of 1.3 mg/l for NO_3-N within the San Simeon Creek and lower lagoon.

Because the CCSD's existing wastewater treatment plant was designed to convert ammonia (which can be toxic to fish) into nitrate, future plant upgrades are needed to reliably remove nitrate, which can otherwise serve as a nutrient to promote excessive algae and plant life within the creek and lagoon (which can reduce dissolved oxygen concentrations at night).

Other concerns exist with regard to salt loading from the CCSD's wastewater plant, which has a total dissolved solids (TDS) effluent concentration limit of 1,000 mg/l for a 30-day mean, and 1,500 mg/l for an instantaneous measurement. Ongoing and future trends in water conservation also create a conundrum for the CCSD due to such efforts increasing TDS concentrations. This is because the same amount of waste product generally occurs even as the water volume decreases. These factors could lead to further assessment of the CCSD's salt management program efforts in reducing plant TDS concentrations.

Of benefit towards addressing the nutrient and salt management concerns, the CCSD's 2014-constructed emergency water supply project serves to further reduce salt loading and nitrates by its operation. This is due to its treatment process including reverse osmosis, which reduces the concentration of nitrates and total dissolved solids from the extracted water before it is re-injected. The CCSD wastewater operators have also made interim operational adjustment to further reduce nitrates in the plant's effluent. Groundwater monitoring and its data collection efforts will allow continuing assessment of progress made in reducing salts and nutrients.

5.3 Leaking Underground Fuel Storage Tanks

Cambria has been previously impacted by leaking underground fuel storage tanks (LUSTs), and had shut down its lower Santa Rosa Creek wells since the fuel oxygenate, methyl tert-butyl ether (MTBE) was discovered in a groundwater contamination plume during late 1999 to early 2000. This led to remedial actions, including the construction of CCSD Well SR-4 and its associated iron and manganese removal filter farther upstream from this plume. In addition, the gas station site where MTBE was detected installed groundwater treatment, including a pump and treat system that hauled away contaminated groundwater. Of the CCSD's existing production wells, Well SR-1 was the closest to the MTBE plume, while Well SR-3 was somewhat better situated than SR-1 to avoid the MTBE plume. Additionally, there have been other LUST locations, such as the one at the old Hampton Inn site (a site that has since been ruled closed by the RWQCB). Figure 5-2 shows the old LUST sites in relation to the CCSD's Santa Rosa wells.

Because of concerns over whether MTBE may be pervasive, as well as form an intermediate degradation product, tert-butyl alcohol (TBA), the CCSD conducted testing on both of these compounds during the testing and startup of converted Well SR-1 and upgraded Well SR-3 during 2014. Additionally, the CCSD converted Well SR-1 to a non-potable irrigation well that had a relatively low pumping rate due to the SR-1 water being hauled by end users. The analytical tests conducted on Wells SR-1 and SR-3 resulted in non-detection of MTBE and TBA. The CCSD will continue testing for these compounds as part of its regular operation of these lower Santa Rosa wells. If either compound is detected at reportable limits, the CCSD may suspend or otherwise modify its existing operation of these two wells.

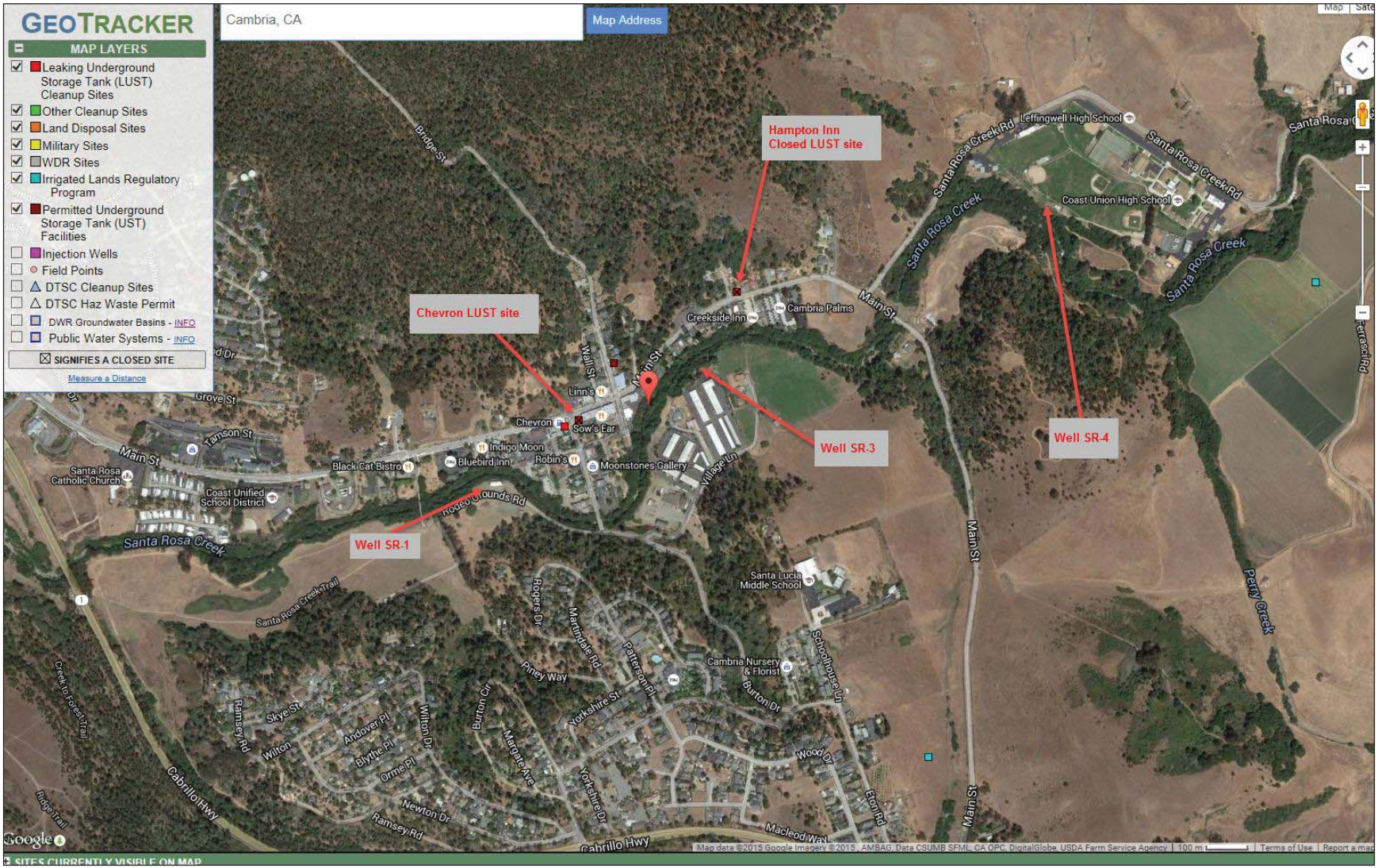

Figure 5-2 – Map of Leaking Underground Fuel Storage Sites and CCSD Santa Rosa Wells

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5.4 Surface Water Quality Monitoring

Surface water quality monitoring of the San Simeon and Santa Rosa Creeks is accomplished through a combination of efforts including the CCSD's sampling in response to operating permit criteria, as well as through efforts of the Central Coast Ambient Monitoring Program (CCAMP), which is the Central Coast Regional Water Quality Control Board's regionally scaled water quality monitoring and Evaluation program. In addition to CCAMP, the Central Coast RWQCB issued Irrigated Agricultural Order R3-2012-011, which includes various water quality monitoring requirements for the area's irrigated agriculture. Water quality requirements and goals are generally driven by the beneficial uses identified within the Central Coast RWQCB's Basin Plan.

For the San Simeon Creek, CCAMP sites 310-SSC and 310-SSU have been historical sampled with historic water quality data being managed by the RWQCB. For Santa Rosa Creek, CCAMP sites 310-SRO and 310-SRU have served in a similar capacity.

The primary surface water quality focus of concern has been the listing of the San Simeon Creek watershed as having been included on the Clean Water Act (CWA) Section 303(d) list as being impaired for nitrate (NO_3), dissolved oxygen (DO), sodium (Na), and Chloride (Cl). The RWQCB's early 2015 draft Total Maximum Daily Loads report for the San Simeon Creek watershed suggested numeric limits for receiving water, and will be a key area of study as part of ongoing groundwater and surface water monitoring. This draft report will likely influence future permit requirements as well as the design of the CCSD's wastewater treatment plant improvements.

5.5 Land Subsidence Monitoring

Localized land subsidence was discovered within the lower Santa Rosa Creek aquifer during the 1970s, which was during a period that preceded completion and operation of the CCSD's San Simeon Creek aquifer wells. This earlier subsidence is further documented within the February 1980 California Geology paper by geologist George B. Cleveland of the California Division of Mines and Geology. Land subsidence surveys followed this early discovery, but were eventually stopped after subsequent years of survey found that subsidence was no longer occurring. Additionally, the CCSD also commissioned Cleath–Harris Geologists to review the proposed Well SR-3 operation during earlier 2014, which resulted in a recommendation to keep the minimum static groundwater elevation near lower Santa Rosa Well SR-1 no less than 5 feet above mean sea level in order to avoid the potential for subsidence. In addition to the San Simeon well field going on line since this earlier Santa Rosa Creek experience, the recently completed Emergency Water Supply project serves to recharge the CCSD's San Simeon Well field area to further avoid the potential for subsidence within the San Simeon Creek aquifer. Subsidence has not been observed in the lower San Simeon Creek aquifer. From review of historic CCSD well levels plots from 1988 to 2015, the lowest average groundwater elevation at the CCSD's San Simeon well field has been 0.8 feet above mean sea level. Therefore, to avoid possible subsidence in this area, the CCSD's goal will be to maintain an average San Simeon well elevation at or above the historic minimum of 1 foot above mean sea level.

5.6 Groundwater-Surface Water Interaction Monitoring

Although the CCSD does not have a direct surface water intake as part of its water supply, several permit conditions apply to CCSD's operation with regard to how groundwater pumping may interact with surface water flows. For example, the CCSD is required to stop operating its Santa Rosa Wells when the down-gradient monitoring well (Well WBE) is equal to or less than 3 feet above mean seal level. During 2014 the CCSD added the well WBE to its remote monitoring capabilities to allow for its instantaneous information and alarms. The CCSD is also required to

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abide by the endangered species act by avoiding the incidental taking of listed species unless it completes a consultation process with the appropriate resource agencies and develops acceptable offsetting mitigations.

To address related concerns along the lower San Simeon Creek, the CCSD included a design feature within its Emergency Water Supply Project, which provides 100 gallons per minute (gpm) of freshwater flow into the upper reach of the San Simeon Creek lagoon whenever the new facility is in operation. The 100 gpm rate was developed by a geo-hydrologist following modeling of the area and review of flow and elevation data. This flow measure also backed up by an Adaptive Management Plan (AMP), with biological monitoring to ensure favorable conditions are being maintained. As part of ongoing efforts to improve the AMP monitoring, the CCSD is also in the process of obtaining permissions to install remote creek monitoring equipment under the State campground's pedestrian bridge, which spans the upper San Simeon Creek lagoon area.

The CCSD plans to continue with its AMP monitoring and to make necessary adjustments to its operations based on input from its biologists. It will also install remote monitoring equipment after permissions are granted by State Parks and other agencies on its installation. Future planning and design of pending wastewater treatment plan improvements will also consider whether highly treated wastewater could be used to recharge or otherwise minimize the lowering of the lower Santa Rosa Creek aquifer during the dry summer months.

Periodic review of the protective measures and elevations will be used to guide CCSD operations and future groundwater management plan updates.

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Section 6 - Wellhead Protection, Well Abandonment, and Well Construction Policies

The San Luis Obispo County Department of Environmental Health administers programs within the San Simeon Creek and Santa Rosa Creek watersheds that further protect groundwater and drinking water quality. These programs include the permitting of wells and associated enforcement of the California Department of Water Resources Bulletins 74-81 and 74-90 combined standards. The efforts by County Environmental Health in this area are essential in protecting the area's groundwater quality, as improperly constructed, maintained, or destroyed wells can impact water quality by allowing:

- Pollutants, contaminants, and water to enter a well bore or casing;
- Poor quality surface and subsurface water, pollutants, and contaminants to move between the well casing and borehole wall;
- Poor quality groundwater, pollutants, and contaminants to move from one stratum or aquifer to another; and,
- The well bore to be used for illegal waste disposal

Besides wells, the County's Department of Environmental Health also administers the cross connection control program for the area, which serves to prevent the accidental introduction of contaminants into potable water systems by ensuring proper backflow prevention devices are installed and maintained.

Because its water supply wells are under the influence of surface water and subject to the state's Surface Water Treatment Regulations, the CCSD is also required to complete an updated Watershed Sanitary Survey every five years. This survey includes identifying existing and potential sources of contamination within the watersheds, providing a water quality and watershed condition assessment, and providing recommendations for watershed management practices to protect surface water quality within the watershed. The CCSD's 2015 survey update included mapping of water protection zones at each of the CCSD's potable production wells, which is shown in Figure 6-1. The identified protection zones A, B5, and B10 coincide with the relative risk that a contaminant has in reaching a well without being detected or mitigated beforehand. Zone A, the closest zone to each well, is generally based on most microbiological contaminants becoming ineffective after being submerged in groundwater for more than two years. Besides microbiological concerns, chemical contamination can travel and last for many years. Zones B5 and B10 are shown in relation to the longer time that a chemical contaminant can travel, with Zone B5 being based on an intermediate travel time of 5 years, while Zone B10 is based on a long-term 10-year travel time.

Recommendations within the CCSD 2015 Water shed Sanitary Survey include additional watershed monitoring, educational efforts on best management practices to promote watershed protection, as well as containment and pollution prevention.

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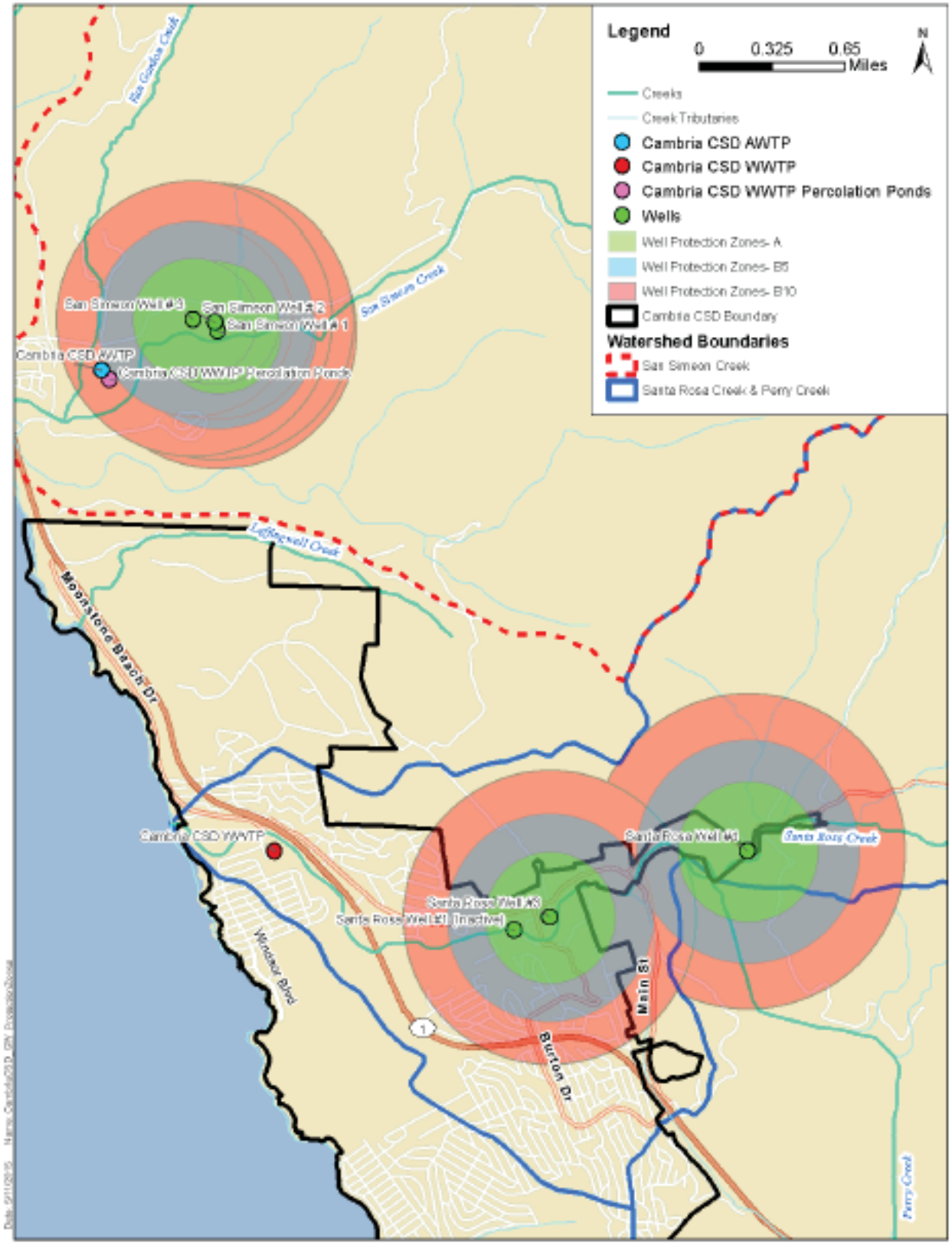

From draft May 29, 2015 CCSD Watershed Sanitary Survey Update
Water Systems Consulting, Inc.

Figure 6-1 – Groundwater Protection Zones

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Section 7 - Recommendations

The CCSD should regularly review and assess the condition of the Santa Rosa Creek and San Simeon Creek groundwater basins, to gauge progress on whether the Best Management Objectives (see Section 2) are being met. Future updates to the Groundwater Management Plan should be considered as conditions evolve and adjustments or additional measures are deemed necessary. A logical timing to consider such updating would follow the 5-year cycle of updating the CCSD's Urban Water Management Plan and its Watershed Sanitary Survey. If future pumpage or other conditions (e.g., climate change) result in a deficit to the groundwater basin water balance (see Table 1-3 on page 7 and its earlier discussion), the CCSD could consider weighing the need to implement measures outlined in the 2014 Sustainable Groundwater Management Act (SGMA) legislation. Because the San Simeon Creek aquifer and the Santa Rosa Creek aquifer are not classified by the state as being either a high or medium priority groundwater basin, SGMA compliance is not mandatory. However, if desired or otherwise warranted by changing conditions, future SGMA measures could include determining and developing a lead Groundwater Management Planning Agency, as well as a Sustainable Groundwater Management Plan. At this time, more near-term recommendations are outlined below.

1. The CCSD should complete its regular Coastal Development Permitting process with San Luis Obispo County on its Emergency Water Supply Project to further improve the reliability of its existing supplies. This effort is to include completion of a supporting Environmental Impact Report, which would support operating the new facilities whenever they are needed to avoid the potential waste of water; a reverse hydraulic gradient condition between its treated wastewater hydraulic mound and upstream San Simeon well field; or the onset of any future water shortage emergency.
2. The CCSD should continue to coordinate with the Army Corps of Engineers on its long-term water supply project and associated Environmental Impact Statement (EIS) process. This includes providing supporting data and information to complete the technical analyses that are needed to support the EIS consultant. The acquisition of continuing federal funding to support the Corps and its consultants would be part of this coordination.
3. The CCSD's financial planning and budgeting should include anticipating requirements associated with meeting the Basin Management Objectives. Example cost items would include:
    a. Continued funding to support the emergency water supply project's EIR and regular Coastal Development Permit.
    b. Funding to support remaining technical analyses of the Army Corps'-administered long-term water supply project's Environmental Impact Statement (EIS).
    c. Funding to support completion of a long-term water supply alternative (i.e., the preferred alternative to be identified within the Army Corps EIS).
    d. Improvements to the CCSD wastewater treatment plant.
    e. Regular biological monitoring of the riparian habitat
    f. Data collection and laboratory water quality analyses.
    g. Additional remote sensing of the creeks and monitoring wells.
    h. 5-year updating to the Groundwater Management Plan.
    i. Additional monitoring wells that may be identified as a future monitoring need.

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j. Continuance of the CCSD water conservation program and related conservation demand offset program efforts.

k. Continuation of efforts to extend SWRCB diversion permits 20387 and 17287 (See Table 1-1.).

4. Future Groundwater Management Plan updates should allow for the time and resources to form a steering committee as part of its outreach efforts.

5. Future Groundwater Management Plan updates should allow for the time, and provide the necessary resources, to update the water budget for both basins (See Table 1-3.) using current water use information and an associated or similar modelling effort that was used in the original USGS Report (98-4061).

6. The CCSD should continue to routinely monitor and report data on its groundwater monitoring wells. This reporting would include participation in the statewide CASGEM system.

7. Review the water rights settlement agreement with the CCSD's ranch neighbor to the north of its lower San Simeon Creek property and develop means to modify or meet the future commitments outlined in this agreement.

8. Continue to assess evolving water conservation innovations and incorporate cost-effective measures into the CCSD's demand offset program. This may include point of use recycled water systems, such as the "Civis eWater" system, as well as other innovations.

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Section 8 - References

The following references were used during the completion of this Groundwater Management Plan:

California Department of Water Resources, Groundwater Information Center web site

Cambria Community Services District, San Simeon Creek Water Basin Management Program and Operations Manual, August 14, 1980

Cambria Community Services District, 2010 Urban Water Management Plan

US Geological Survey 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, CA, 1998

San Luis Obispo County Flood Control and Water Conservation District, Integrated Regional Water Management Plan; July, 2014

San Luis Obispo County Environmental Health Services web site, including links to California Department of Health Well Standards, Bulletins 74-81 and 74-90

Cambria Community Services District, Watershed Sanitary Survey Update, draft report by Water Systems Consulting, Inc. dated 5/29/2015

Personal communications between R. Gresens of the CCSD and Joshua Reynolds of Water Systems Consulting Inc. regarding production of Figure 4-1 and 5-1

Personal communications between R. Gresens of the CCSD and Tim Cleath of Cleath-Harris Geologists regarding recharge areas shown on Figure 4-1 and subsidence reference

Geologic Map of the Cambria Region, San Luis Obispo County, Clarence A. Hall, 1974, US Geological Survey, US Government Printing Office 1975-0-689-908/51

"Drought and Ground Deformation, Cambria, San Luis Obispo County, California, California," California Geology paper by George B. Cleveland, February, 1980

San Luis Obispo County Coastal Zone Land Use Ordinance

Warren – CCSD Settlement Agreement, November 20, 2006

Cambria Community Services District Water Use Efficiency Plan, Maddaus Water Management, February 28, 2013

Cambria Community Services District, "Final Report, Task 3: Recycled Water Distribution System Master Plan," by Kennedy/Jenks Consultants, July 2004

"Delineating Groundwater Sources and Protection Zones," University of California Agricultural Extension Service and California Department of Health Services, April 2002

Cambria Community Services District, "Final Report: Baseline Water Supply Analysis," by Kennedy/Jenks Consultants, December 8, 2000

"Operations, Maintenance, and Monitoring Plan for the Cambria Emergency Water Supply Project, Revised Final" by CDM Smith, January 6, 2015

Personal communications between R. Gresens of the CCSD and Mladen Bandov of San Luis Obispo County Public Works regarding plan references and requirements

Permits listed on Table 1-1 (page 5) and Table 1-2 (page 6)

Review of CCSD record drawings on wastewater and water facilities

Presentation by Bob Hitchner of Nexus eWater during the Home Builders Association's Central Coast Water Forum, Mountainbrook Church, San Luis Obispo, CA, August 5, 2015

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Appendix A

Cambria CSD Resolution 34-2015

Staff Reports

Public Notices

List of Contacted Parties

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RESOLUTION NO. 34-2015
October 15, 2015

A RESOLUTION OF THE BOARD OF DIRECTORS
OF THE CAMBRIA COMMUNITY SERVICES DISTRICT OF ITS
INTENTION TO DRAFT A GROUNDWATER MANAGEMENT PLAN
(WATER CODE SECTION 10753.2)

WHEREAS, Water Code Section 10753 et seq. provides the Cambria Community Services District with the authority to adopt a Groundwater Management Plan within its jurisdiction; and

WHEREAS, after holding a noticed public hearing in accordance with Water Code Section 10753.2(a), the Board of Directors has determined that it should initiate the process of drafting a Groundwater Management Plan.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Cambria Community Services District as follows:

1. To immediately proceed with the drafting of a Groundwater Management Plan in accordance with the provisions Water Code Sections 10753 et seq.

2. The attached Exhibit A, which is incorporated herein by reference, shall constitute the written statement required by Water Code Section 10753.4(b) describing the manner in which interested parties may participate in developing the Groundwater Management Plan.

3. In accordance with Water Code Section 10753.2(c) and (d), a copy of this Resolution shall be provided to the Department of Water Resources for posting on their website, and informed that the contact person at the CCSD for the Groundwater Management Plan is District Engineer Robert Gresens, PO Box 65, Cambria, CA 93428, (805) 927-6223.

4. The District Clerk is directed to publish this Resolution in accordance with the requirements of Water Code Section 10753.3(a), as well as to provide interested persons copies in accordance with of Water Code Section 10753.3(b).

PASSED AND ADOPTED THIS 15th day of October, 2015.

Gail Robinette, President
Board of Directors

ATTEST:

Monique Madrid, District Clerk

APROVED AS TO FORM:

Timothy J. Carmel, District Counsel

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CAMBRIA COMMUNITY SERVICES DISTRICT

I, Gail Robinette, President of the Cambria Community Services District Board of Directors, hereby call a Special Meeting of the Board of Directors pursuant to California Government Code Section 54956. The Special Meeting will be held:**Thursday, October 15, 2015, 4:00 PM**, **1000 Main Street Cambria, CA.** The purpose of the special meeting is to discuss or transact the following business:

AGENDA
SPECIAL MEETING OF THE CAMBRIA COMMUNITY SERVICES DISTRICT BOARD OF DIRECTORS
Thursday, October 15, 2015, 4:00 PM
1000 Main Street
Cambria, CA

1. OPENING

A. Call to Order

B. Pledge of Allegiance

C. Establishment of Quorum

2. PUBLIC COMMENT ON AGENDA ITEMS

Members of the public wishing to address the Board on any item described in this Notice may do so when recognized by the Board President prior to Board consideration of each agenda item. Public Comment on this agenda will be limited to three (3) minutes per person.

3. CONSENT AGENDA (Estimated time: 15 Minutes)

All matters on the consent calendar are to be approved by one motion. If Directors wish to discuss a consent item other than simple clarifying questions, a request for removal may be made. Such items are pulled for separate discussion and action after the consent calendar as a whole is acted upon.

A. Consider Adoption of Resolution 33-2015 to Revise Reporting the Payment of Member Contributions to the California Public Employee's Retirement System for IAFF Local 4635 Members

4. HEARINGS AND APPEALS (Estimated time: 15 Minutes per item)

A. Public Hearing Regarding Adoption of Resolution 34-2015, A Resolution of Intention to Draft a Groundwater Management Plan

5. REGULAR BUSINESS (Estimated time: 15 Minutes per item)

A. Discussion and Consideration of Procedure to Fill the Vacancy on the CCSD Board of Directors Created by the Resignation of Muril Clift

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6. ADJOURN

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CAMBRIA COMMUNITY SERVICES DISTRICT

TO: Board of Directors AGENDA NO. **4. A.**

FROM: Jerry Gruber, General Manager

Meeting Date:	October 15, 2015	Subject:	PUBLIC HEARING REGARDING ADOPTION OF RESOLUTION 34-2015, A RESOLUTION OF INTENTION TO DRAFT A GROUNDWATER MANAGEMENT PLAN

RECOMMENDATIONS:
Staff recommends that the Board of Directors hold a public hearing in accordance with the requirements of Water Code Section 10753.2 regarding adoption of a Resolution of Intention to Draft a Groundwater Management Plan.

Staff recommends that the Board of Directors:

1. Open the Public Hearing;
2. Receive public testimony;
3. Close the Public Hearing;
4. Consider Resolution 34-2015, a Resolution of Intention to Draft a Groundwater Management Plan

FISCAL IMPACT:
There will be costs related to staff time needed to draft the Groundwater Management Plan. Once in place, it will satisfy a requirement of the Proposition 84 Integrated Regional Water Management (IRWM) Grant, so that funding can be processed to the District.

DISCUSSION:
At its meeting on September 24, 2015, the Board of Directors considered the issue of initiating the process for preparation and adoption of a Groundwater Management Plan ("GMP"). The CCSD has been awarded a Proposition 84 IRWM Grant ("Grant") for the Emergency Water Supply Project and one of the Grant conditions is the adoption of a GMP that complies with the requirements of Water Code Section 10753.7.

Adoption of the GMP must comply with the statutory procedures and requirements of Water Code Sections 10753 through 10753.10. The first step is to hold a noticed public hearing in accordance with Water Code Section 10753.2(a), after which the Board can consider adopting a Resolution of Intention to Draft a Groundwater Management Plan (the "Resolution"). The item before the Board is the public hearing to consider adoption of Resolution 34-2015, a Resolution of Intention to Draft a Groundwater Management Plan. Water Code Section 10753.4(b) also requires that the District prepare a written statement

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describing the manner in which interested parties may participate in developing the Groundwater Management Plan, which has been included as an exhibit to the Resolution and sets forth the process described below.

After adoption of the Resolution, a copy will be published and provided to the Department of Water Resources ("DWR") in accordance with Water Code Section 10753.2(c), which will then post it on its website, pursuant to Water Code Section 10753.2(d). The District is also required to prepare a written statement describing the manner in which interested parties may participate in developing the GMP available to the public and DWR. A draft statement is attached.

As noted in the September 24, 2015 staff report, staff believes that a balance must be struck between swiftly preparing and adopting a GMP and facilitating the community's involvement in same, so that the Grant conditions can be satisfied as quickly as possible while maximizing public participation in the process. Accordingly, public review and comment will be facilitated through a process similar to how environmental documents are reviewed. An initial workshop during which the public will be introduced to a draft GMP will be held on October 21, 2015 at 2:00 p.m. A public review and comment period will follow, where written comments can be provided to the District. A second workshop on the GMP will be held on October 29, 2015 at 2:00 p.m. to receive additional verbal comments and to discuss any written comments received. Board attendance at these workshops, which will be led by District Engineer Bob Gresens, will be limited to the Water Permitting Ad Hoc Committee. In addition, during this process, the draft GMP, as well as any subsequent revisions to the draft, will be posted on the CCSD website. Public input will be accepted and considered throughout the process. A Special Meeting is scheduled on November 12, at 12:30 p.m. in anticipation of the Board's consideration to introduce an Ordinance to Adopt the Groundwater Management Plan.

As previously noted, the GMP will be adopted under Water Code Sections 10753 et seq., which since January 1, 2015 is only available for low or very low priority groundwater basins. Both the San Simeon and Santa Rosa basins are classified as very low priority basins. This is not a Groundwater Sustainability Plan, which is a process under a different statutory scheme (reference Water Code Sections 10720 et seq.) for high or medium priority groundwater basins.

Attachments: Resolution 34-2015
Exhibit A to Resolution 34-2015

BOARD ACTION: Date _____ Approved: _____ Denied: _____

UNANIMOUS: ___ ROBINETTE ___THOMPSON ____ BAHRINGER ___ RICE

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Supervisors may fill the vacancy within ninety (90) days of the vacancy or the Board of Supervisors may order the District to call an election to fill the vacancy.

After consulting with President Robinette, who expressed a desire to facilitate the appointment process as much as possible, staff took the liberty of identifying dates that the Board of Directors could hold a Special Meeting to consider appointment. Staff also posted a Notice of Vacancy on October 2, 2015 in order to satisfy the statutory requirement. It has been determined that a quorum of Board Members is available to meet on October 19, 2015, at 12:30 p.m. to consider making an appointment to fill the vacancy. Pursuant to her authority under the Brown Act, President Robinette has indicated that she will call a Special Meeting on that date. Also, the Notice of Vacancy provided that applications were available for those interested in applying for the vacancy, and would be accepted until October 15, 2015 at 4:00 p.m. The application packet being used is consistent with the packets used for prior Board vacancies.

State law does not require any specific procedure when a community services district board seeks to fill a vacancy by appointment. Accordingly, it is appropriate for the Board of Directors to discuss and consider the procedure by which the vacancy created by the resignation of former Vice President Muril Clift will be filled.

BOARD ACTION: Date _____ Approved: _____ Denied: _____

UNANIMOUS: ___ ROBINETTE ___ BAHRINGER ____THOMPSON ___ RICE

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Exhibit A to Resolution 34-2015 (corrected)

HOW TO PARTICPATE IN DEVELOPING THE CAMBRIA COMMUNITY SERVICES DISTRICT'S PROPOSED GROUNDWATER MANAGEMENT PLAN

In accordance with the requirements of Water Code Section 10753.4, the following written statement describes the manner in which interested parties may participate in developing the Groundwater Management Plan.

The draft Groundwater Management Plan (GMP), as well as any subsequent revisions to the draft, will be posted on the CCSD's website (www.cambriacsd.org) and copies will be available in the office of the District Clerk.

An initial workshop will be held on October 21, 2015 at 2:00 p.m. at the Veterans Memorial Building located at 1000 Main Street, Cambria, CA, where the public will be introduced to a draft of the GMP. The public workshop will be followed by a public review and comment period, where written review comments can be provided to the District.

A second workshop on the GMP will be held on October 29, 2015 at 2:00 p.m. at the Veterans Memorial Building located at 1000 Main Street, Cambria, CA, to receive additional verbal comments and to discuss any written comments that have been submitted. Public input will be accepted and considered throughout the process.

In accordance with Water Code Section 10753.4(c), the CCSD will establish and maintain a list of persons interested in receiving notices regarding GMP preparation, meeting announcements, and availability of draft plans, maps, and other relevant documents. Any person may request, in writing, to be placed on the list of interested persons. Such written requests should be submitted to the CCSD District Clerk, PO Box 65, Cambria, CA 93428, mmadrid@cambriacsd.org.

Following the public workshops, it is anticipated that a Special Meeting will be held on November 12, 2015 at 12:30 p.m. for the Board to consider adoption of an ordinance to adopt the Groundwater Management Plan.

Questions regarding the GMP can be directed to the District Engineer, Bob Gresens, PO Box 65, Cambria, CA 93428, (805) 927-6223, bgresens@cambriacsd.org.

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CAMBRIA COMMUNITY SERVICES DISTRICT
NOTICE OF PUBLIC HEARING TO CONSIDER ADOPTING RESOLUTION OF INTENTION TO DRAFT A GROUNDWATER MANAGEMENT PLAN

NOTICE IS HEREBY GIVEN that the Cambria Community Services District (CCSD) Board of Directors will hold a Public Hearing on October 15, 2015 at approximately 4:00 p.m. in the Cambria Veteran's Hall at 1000 Main Street, Cambria, CA, for the following purpose:

To consider adoption of a Resolution of Intention to Draft a Groundwater Management Plan for the Cambria Community Services District (CCSD) service area pursuant to California Water Code Section 10753 *et seq*.

The CCSD recognizes the importance of maintaining a sustainable, reliable, high-quality groundwater supply for the long-term benefit of its customers. Adoption of a Groundwater Management Plan could further this goal. The CCSD Board of Directors will hold a Public Hearing as indicated above to provide interested members of the public with an opportunity to express their opinions and hear the Board's deliberations on whether or not to adopt a Resolution of Intention to Draft a Groundwater Management Plan. The Board will consider adopting, and may adopt, a Resolution of Intention to Draft a Groundwater Management Plan immediately following the Public Hearing. All interested persons may attend the Public Meeting and be heard.

Additional information and a copy of the proposed Resolution of Intention to Draft a Groundwater Management Plan may be obtained by contacting the CCSD Offices at (805) 927-6223, or by visiting the CCSD web site at CambriaCSD.org.

Dated: September 24, 2015

By Monique Madrid, CCSD District Clerk

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THE TRIBUNE
Newspaper of the Central Coast

3825 South Higuera • Post Office Box 112 • San Luis Obispo, California 93406-0112 • (805) 781-7800

In The Superior Court of The State of California
In and for the County of San Luis Obispo
AFFIDAVIT OF PUBLICATION

AD # 1995293
CARMEL & NACCASHA, LLP

STATE OF CALIFORNIA
ss.
County of San Luis Obispo

I am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen and not interested in the above entitled matter; I am now, and at all times embraced in the publication herein mentioned was, the principal clerk of the printers and publishers of THE TRIBUNE, a newspaper of general Circulation, printed and published daily at the City of San Luis Obispo in the above named county and state; that notice at which the annexed clippings is a true copy, was published in the above-named newspaper and not in any supplement thereof – on the following dates to wit; SEPTEMBER 30; OCTOBER 7, 2015 that said newspaper was duly and regularly ascertained and established a newspaper of general circulation by Decree entered in the Superior Court of San Luis Obispo County, State of California, on June 9, 1952, Case #19139 under the Government Code of the State of California.

I certify (or declare) under the penalty of perjury that the foregoing is true and correct.

Jane E. Durand
(Signature of Principal Clerk)
DATED: OCTOBER 7, 2015
AD COST: $280.24

CAMBRIA COMMUNITY SERVICES DISTRICT
NOTICE OF PUBLIC HEARING TO CONSIDER ADOPTING RESOLUTION OF INTENTION TO DRAFT A GROUNDWATER MANAGEMENT PLAN

NOTICE IS HEREBY GIVEN that the Cambria Community Services District (CCSD) Board of Directors will hold a Public Hearing on October 15, 2015 at approximately 4:00 p.m. in the Cambria Veteran's Hall at 1000 Main Street, Cambria, CA, for the following purpose:

To consider adoption of a Resolution of Intention to Draft a Groundwater Management Plan for the Cambria Community Services District (CCSD) service area pursuant to California Water Code Section 10753 et seq.
The CCSD recognizes the importance of maintaining a sustainable, reliable, high-quality groundwater supply for the long-term benefit of its customers. Adoption of a Groundwater Management Plan could further this goal. The CCSD Board of Directors will hold a Public Hearing as indicated above to provide interested members of the public with an opportunity to express their opinions and hear the Board's deliberations on whether or not to adopt a Resolution of Intention to Draft a Groundwater Management Plan. The Board will consider adopting, and may adopt, a Resolution of Intention to Draft a Groundwater Management Plan immediately following the Public Hearing. All interested persons may attend the Public Meeting and be heard.

Additional information and a copy of the proposed Resolution of Intention to Draft a Groundwater Management Plan may be obtained by contacting the CCSD Offices at (805) 927-6223, or by visiting the CCSD web site at CambriaCSD.org.

Dated: September 24, 2015
By Monique Madrid, CCSD District Clerk
Sept. 30; Oct. 7, 2015 1995293

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In The Superior Court of The State of California
In and for the County of San Luis Obispo
AFFIDAVIT OF PUBLICATION

AD # 2040249
CARMEL & NACCASHA LLP

STATE OF CALIFORNIA
ss.
County of San Luis Obispo

I am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen and not interested in the above entitled matter; I am now, and at all times embraced in the publication herein mentioned was, the principal clerk of the printers and publishers of THE TRIBUNE, a newspaper of general Circulation, printed and published daily at the City of San Luis Obispo in the above named county and state; that notice at which the annexed clippings is a true copy, was published in the above-named newspaper and not in any supplement thereof – on the following dates to wit; OCTOBER 21, 28, 2015 that said newspaper was duly and regularly ascertained and established a newspaper of general circulation by Decree entered in the Superior Court of San Luis Obispo County, State of California, on June 9, 1952, Case #19139 under the Government Code of the State of California.

I certify (or declare) under the penalty of perjury that the foregoing is true and correct.

Jane E. Durand
(Signature of Principal Clerk)
DATED: OCTOBER 28, 2015
AD COST: $379.68

RESOLUTION NO. XX-2015
October 15, 2015

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE CAMBRIA COMMUNITY SERVICES DISTRICT OF ITS INTENTION TO DRAFT A GROUND-WATER MANAGEMENT PLAN (WATER CODE SECTION 10753.2)

WHEREAS, Water Code Section 10753 et seq. provides the Cambria Community Services District with the authority to adopt a Groundwater Management Plan within its jurisdiction; and

WHEREAS, after holding a noticed public hearing in accordance with Water Code Section 10753.2(a), the Board of Directors has determined that it should initiate the process of drafting a Groundwater Management Plan.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Cambria Community Services District as follows:

1. To immediately proceed with the drafting of a Groundwater Management Plan in accordance with the provisions Water Code Sections 10753 et seq.

2. The attached Exhibit A, which is incorporated herein by reference, shall constitute the written statement required by Water Code Section 10753.4(b) describing the manner in which interested parties may participate in developing the Groundwater Management Plan.

3. In accordance with Water Code Section 10753.2(c) and (d), a copy of this Resolution shall be provided to the Department of Water Resources for posting on their website, and informed that the contact person at the CCSD for the Groundwater Management Plan is District Engineer Robert Gresens, PO Box 65, Cambria, CA 93428, (805) 927-6223.

4. The District Clerk is directed to publish this Resolution in accordance with the requirements of Water Code Section 10753.3(a), as well as to provide interested persons copies in accordance with of Water Code Section 10753.3(b).

PASSED AND ADOPTED THIS 15th day of October, 2015.

/s/Gail Robinette, President
Board of Directors

ATTEST:
/s/Monique Madrid, District Clerk

APROVED AS TO FORM:
/s/Timothy J. Carmel, District Counsel
October 21, 28, 2015 2040249

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In The Superior Court of The State of California
In and for the County of San Luis Obispo
AFFIDAVIT OF PUBLICATION

AD # 2059178
CARMEL & NACCASHA

STATE OF CALIFORNIA
ss.
County of San Luis Obispo

I am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen and not interested in the above entitled matter; I am now, and at all times embraced in the publication herein mentioned was, the principal clerk of the printers and publishers of THE TRIBUNE, a newspaper of general Circulation, printed and published daily at the City of San Luis Obispo in the above named county and state; that notice at which the annexed clippings is a true copy, was published in the above-named newspaper and not in any supplement thereof – on the following dates to wit; OCTOBER 29; NOVEMBER 5, 2015 that said newspaper was duly and regularly ascertained and established a newspaper of general circulation by Decree entered in the Superior Court of San Luis Obispo County, State of California, on June 9, 1952, Case #19139 under the Government Code of the State of California.

I certify (or declare) under the penalty of perjury that the foregoing is true and correct.

Jane E. Durand
(Signature of Principal Clerk)
DATED: NOVEMBER 5, 2015
AD COST: $402.28

NOTICE OF PUBLIC HEARING TO CONSIDER INTRODUCTION OF AN ORDINANCE ADOPTING THE CAMBRIA COMMUNITY SERVICES DISTRICT GROUNDWATER MANAGEMENT PLAN

NOTICE IS HEREBY GIVEN that the Cambria Community Services District ("CCSD") Board of Directors ("Board") will hold a Public Hearing on November 12, 2015 at approximately 12:30 p.m. in the Cambria Veterans Hall at 1000 Main Street, Cambria, CA, for the following purpose:

To consider introduction of an ordinance adopting the Cambria Community Services District Groundwater Management Plan, pursuant to California Water Code Sections 10753 et seq.

The draft CCSD Groundwater Management Plan summarizes Santa Rosa Basin and San Simeon Groundwater Basin conditions, identifies groundwater issues, defines basin management objectives, long term water supply planning, conservation efforts, regional planning, interagency coordination and collaboration, groundwater recharge, mapping and quality issues. The plan covers both the Santa Rosa and San Simeon Groundwater Basins.

The CCSD recognizes the importance of maintaining a sustainable, reliable, high-quality groundwater supply for the long-term benefit of its customers. Adoption of a Groundwater Management Plan will further this goal. The Board will hold the Public Hearing as indicated above to provide interested members of the public with an opportunity to express their opinions and hear the Board's deliberations on whether or not to adopt the draft Groundwater Management Plan. Landowners within the jurisdiction of the CCSD may file written protests to the adoption of the Groundwater Management Plan. Written protests must include a description of the land owned sufficient to identify the land (ex: APN or street address) and the landowner's signature. Written protests must be received by the Clerk of the Board prior to the close of the Public Hearing. The Board will consider written protests prior to the adoption of the draft Groundwater Management Plan. The Board will consider introducing an ordinance adopting the draft CCSD Groundwater Management Plan immediately following the Public Hearing. All interested persons may attend the Public Hearing and be heard.

Additional information and a copy of the proposed Groundwater Management Plan may be obtained by contacting the CCSD Offices at (805) 927-6223, or by visiting the CCSD web site at CambriaCSD.org.

Dated: October 26, 2015
By Monique Madrid, CCSD District Clerk
Oct. 29; Nov. 5, 2015 2059178

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CAMBRIA COMMUNITY SERVICES DISTRICT

Groundwater Management Plan – Workshop 1

Wednesday, October 21, 2015 – 2:00 PM

VETERANS MEMORIAL BUILDING, 1000 MAIN ST., CAMBRIA, CA

AGENDA

Please note that this workshop agenda is not for a CCSD Board meeting. The meeting will end by 4:00 p.m. due to commitments for the facility.

1. OPENING

- **A**. Introductions
- **B.** Purpose of today's workshop
- **C.** Review of today's agenda

2. INTRODUCTION TO DRAFT CAMBRIA CSD GROUNDWATER MANAGEMENT PLAN – DISTRICT ENGINEER BOB GRESENS

3. REVIEW OF SECOND PLANNED GROUNDWATER MANAGEMENT WORKSHOP AND OTHER MEETINGS

4. HOW TO PARTICIPATE IN THE CONTINUED DEVELOPMENT OF THE PROPOSED GROUNDWATER MANAGEMENT PLAN

5. PUBLIC COMMENTS AND QUESTIONS

Each speaker has up to three minutes. Speaker slips (available at the entry) should be submitted to the District Clerk.

6. ADJOURN

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CAMBRIA COMMUNITY SERVICES DISTRICT

Groundwater Management Plan – Workshop 2

Wednesday, October 29, 2015 – 2:00 PM

VETERANS MEMORIAL BUILDING, 1000 MAIN ST., CAMBRIA, CA

AGENDA

Please note that this workshop agenda is not for a CCSD Board meeting. The meeting will end by 4:00 p.m. due to commitments for the facility.

1. OPENING

A. Introductions

B. Purpose of today's workshop

C. Review of today's agenda

2. BRIEF OVERVIEW OF GROUNDWATER MANAGEMENT PLAN

3. REVIEW OF UPDATES MADE TO DRAFT CAMBRIA CSD GROUNDWATER MANAGEMENT PLAN IN RESPONSE TO PUBLIC COMMENTS MADE DURING AND FOLLOWING WORKSHOP NO. 1

4. HOW TO PARTICIPATE IN THE CONTINUED DEVELOPMENT OF THE PROPOSED GROUNDWATER MANAGEMENT PLAN

5. PUBLIC COMMENTS AND QUESTIONS

Each speaker has up to three minutes. Speaker slips (available at the entry) should be submitted to the District Clerk.

6. REMINDER ON SPECIAL CCSD BOARD MEETING OF NOVEMBER 12, 2015

7. ADJOURN

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Cambria Community Services District Contacts List

The following individuals and organizations were contacted during completion of the Groundwater Management Plan:

Zaffar Eusuff – California Department of Water Resources

Monica Reis - California Department of Water Resources

Bruce Gibson - San Luis Obispo County Supervisor, District 2

Ken Topping, - San Luis Obispo County Planning Commissioner, District 2

Matt Janssen – San Luis Obispo County Planning & Building

Wade Horton – San Luis Obispo County Public Works

Mladen Bandov – San Luis Obispo County Public Works

Airlin Singewald - San Luis Obispo County, Planning & Building

Callie Lewis – San Luis Obispo County

Ken Harris - California Water Board, Central Coast Region

Howard Kolb – California Water Board, Central Coast Region

Jeff Densmore - California Water Board, Division of Drinking Water

Dan Carl, California Coastal Commission

Daniel Robinson – California Coastal Commission

Tom Luster - California Coastal Commission

Brooke Gutierrez – California State Parks, Hearst – San Luis Obispo Coast District

Doug Barker – California State Parks, Hearst – San Luis Obispo Coast District

Jeffrey Single - California Department of Fish and Wildlife

Becky Ota – California Department of Fish and Wildlife

Dean Marston – California Department of Fish and Wildlife

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Cambria Community Services District Contacts List

Tim Duff – California State Coastal Conservancy

Devin Best - Upper Salinas - Las Tablas Resource Conservation District

James Worthley - San Luis Obispo Council of Governments

Carolyn Skinder – Monterey Bay National Marine Sanctuary

California Native American Heritage Commission

Fred Segobia - Salinan Tribe of San Luis Obispo. Monterey, and San Benito Counties

Connie Gannon– Greenspace, The Cambria Land Conservancy

Mary Webb – Greenspace, The Cambria Land Conservancy

EcoSLO – San Luis Obispo

Elizabeth Bettenhausen – Cambria Resident

Mahala Burton – Cambria Resident

Tina Dickason – Cambria Resident

Bill Allen – Cambria Resident

Clyde Warren - Cambria Area Rancher

Jon Pedotti – Cambria Area Rancher

George Kendall – Cambria Area Rancher

Mark Rochefort – Cambrians for Water (C4H2O)

Deryl Robinson - UnLoc

Cynthia Hawley - Landwatch

Bruce Fosdike – North Coast Advisory Commission

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Cambria Community Services District Contacts List

Mel McColloch – Cambria Chamber of Commerce

Dixie Walker – Cambria Lions Club

Cambria Rotary Club

Joy Fitzhugh, San Luis Obispo County Farm Bureau

Michael Bell, The Nature Conservancy

Heidi Holmes – Cambria Community Healthcare District

Marcia Betrue, Coast Union School District

Tom Gray – Public Information Consultant to the Cambria CSD

Dean Florez – Balance Public Relations, Cambria CSD Consultant

Rita Garcia – Michael J. Baker International, Cambria CSD Consultant

Mike Smith – CDM Smith, Cambria CSD Consultant

Gregg Cummings – CDM Smith, Cambria CSD Consultant

Kathe Tanner – Cambrian Newspaper

KSBY TV

KCBX Radio

New Times, San Luis Obispo

KVEC Radio

CalCoast News

Bailey Hudson, Central Coast Urban Forest Council

Caitlin Malone, Brownstein Hyatt Farber Schreck

Jena Shof, Brownstein Hyatt Farber Schreck

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Appendix B

Cambria CSD Ordinance 01-2015

November 19, 2015 Cambria CSD Staff Report

November 12, 2015 Cambria CSD Staff Report

Comment Letters

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ORDINANCE NO. 01-2015

BOARD OF DIRECTORS
CAMBRIA COMMUNITY SERVICES DISTRICT
DATED: NOVEMBER 19, 2015

AN ORDINANCE ADOPTING THE CAMBRIA COMMUNITY SERVICES DISTRICT GROUNDWATER MANAGEMENT PLAN

WHEREAS, Water Code Section 10750 et seq. provides the Cambria Community Services District with the authority to adopt a Groundwater Management Plan within its jurisdiction; and

WHEREAS, after holding a noticed public hearing in accordance with Water Code Section 10753.2(a), the Board of Directors adopted Resolution 34-2015 regarding its intention to draft a Groundwater Management Plan in accordance with the requirements of Water Code Sections 10753 through 10753.10; and

WHEREAS, subsequent to the adoption of Resolution 34-2015, workshops were held in order to provide interested parties with an opportunity to participate in the development of the Groundwater Management Plan and opportunities were provided for the submittal of written and verbal comments and public input; and

WHEREAS, as required by Water Code Section 10753.5 and Government Code Section 6066, notice of a second public hearing relating to the Groundwater Management Plan was published and a second public hearing was conducted on November 12, 2015 by the Board of Directors of the Cambria Community Services District in order to receive and consider any protests on whether or not to adopt the Groundwater Management Plan. Pursuant to Water Code Section 10753.6(c)(3), the Board of Directors has determined that a majority protest has not been filed and therefore, the Board wishes to take action to adopt the Groundwater Management Plan.

NOW THEREFORE, BE IT ORDAINED by the Board of Directors of the Cambria Community Services District (CCSD) as follows:

Section 1. The foregoing Recitals are true and correct and are incorporated herein.

Section 2. Pursuant to Water Code Sections 10753 and 10753.6, the Cambria Community Services District Groundwater Management Plan, attached hereto as Exhibit A and incorporated herein by reference, is hereby adopted.

Section 3. The adoption of the Cambria Community Services District Groundwater Management Plan is hereby determined to be both statutorily and categorically exempt from the California Environmental Quality Act (CEQA) under CEQA Guidelines Sections 15262, 15306, 15307, and 15308. The General Manager is hereby authorized and directed to file a Notice of Exemption in accordance with the provisions of CEQA.

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Section 4. If any section, subsection, subdivision, paragraph, sentence, or clause of this Ordinance or any part thereof is for any reason held to be unlawful, such decision shall not affect the validity of the remaining portion of this Ordinance or any part thereof. The Board of Directors hereby declares that it would have passed each section, subsection, subdivision, paragraph, sentence, or clause thereof, irrespective of the fact that any one or more section, subsection, subdivision, paragraph, sentence, or clause be declared unconstitutional.

Section 5. This Ordinance shall take effect thirty (30) days after its adoption.

The foregoing Ordinance was adopted at a regular meeting of the Board of Directors of the Cambria Community Services District held on the 19th day of November, 2015.

AYES: 5
NOES: 0
ABSENT: 0

Gail Robinette
President, Board of Directors

APPROVED AS TO FORM:

Monique Madrid
District Clerk

Timothy J. Carmel
District Counsel

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CAMBRIA COMMUNITY SERVICES DISTRICT

TO: Board of Directors AGENDA NO. **9.B.**

FROM: Jerry Gruber, General Manager

Meeting Date:	November 19, 2015	Subject:	CONSIDERATION OF ADOPTION OF ORDINANCE 01-2015 AN ORDINANCE ADOPTING THE CAMBRIA COMMUNITY SERVICES DISTRICT GROUNDWATER MANAGEMENT PLAN AND DIRECTING THAT A NOTICE OF EXEMPTION BE FILED

RECOMMENDATIONS:
Staff recommends that the Board of Directors move to adopt Ordinance 01-2015 An Ordinance Adopting the Cambria Community Services District Groundwater Management Plan (the "Ordinance") by title only and waive further reading. The Ordinance also directs that a Notice of Exemption be filed pursuant to CEQA.

FISCAL IMPACT:
There were costs incurred related to staff time needed to draft the Groundwater Management Plan (GMP). Once in place, the GMP will satisfy a requirement of the Proposition 84 Integrated Regional Water Management (IRWM) Grant, so that funding can be processed to the District.

DISCUSSION:

The CCSD has been awarded a Proposition 84 IRWM Grant for the Emergency Water Supply Project and one of the Grant conditions is the adoption of a GMP that complies with the requirements of Water Code Section 10753.7. At its meeting on November 12, 2015 the Board of Directors held a public hearing in accordance with Water Code Section 10753.5 to consider any protests to the adoption of the GMP and to determine whether or not to introduce it. After the public hearing, the Board determined that a majority protest did not exist and introduced Ordinance 01-2015. The Ordinance is now being presented to the Board of Directors for adoption.

The GMP is statutorily exempt from the California Environmental Quality Act (CEQA) under California Code of Regulations, Title 14 (CEQA Guidelines), Section 15262 (feasibility and planning studies), and categorically exempt under the State CEQA Guidelines Section 15306 (information collection), Section 15307(actions by regulatory agencies for protection of natural resources), and Section 15308 (actions by regulatory agencies for protection of the

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environment). The Ordinance provides for a determination relating to these CEQA exemptions and directs that a Notice of Exemption be filed pursuant to CEQA.

Attachment:
Ordinance No. 01-2015 An Ordinance Adopting the Cambria Community Services District Groundwater Management Plan

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BOARD ACTION: Date _____ Approved: _____ Denied: _____

UNANIMOUS: ___ ROBINETTE ___ THOMPSON ___ BAHRINGER ____ RICE ___ SANDERS

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CAMBRIA COMMUNITY SERVICES DISTRICT

I, Gail Robinette, President of the Cambria Community Services District Board of Directors, hereby call a Special Meeting of the Board of Directors pursuant to California Government Code Section 54956. The Special Meeting will be held:**Thursday, November 12, 2015, 12:30 PM**, **1000 Main Street Cambria, CA.** The purpose of the special meeting is to discuss or transact the following business:

AGENDA
SPECIAL MEETING OF THE CAMBRIA COMMUNITY SERVICES DISTRICT
BOARD OF DIRECTORS
Thursday, November 12, 2015, 12:30 PM
1000 Main Street
Cambria, CA

1. **OPENING**
   - **A. Call to Order**
   - **B. Pledge of Allegiance**
   - **C. Establishment of Quorum**
2. **ACKNOWLEDGEMENTS AND PRESENTATIONS**
   - **A.** Presentation of Proclamation recognizing Vice-President Clift for his years of service to the CCSD and the Cambria Community
3. **PUBLIC COMMENT ON AGENDA ITEMS**

   Members of the public wishing to address the Board on any item described in this Notice may do so when recognized by the Board President prior to Board consideration of each agenda item. Public Comment on this agenda will be limited to three (3) minutes per person.
4. **HEARINGS AND APPEALS (Estimated time: 15 Minutes per item)**
   - **A.** Public Hearing to Consider Introduction of Ordinance 01-2015 Adopting the Cambria Community Services District Groundwater Management Plan
5. **REGULAR BUSINESS (Estimated time: 15 Minutes per item)**
   - **A.** Receive and Discuss Water and Sewer Rate Study from Bartle Wells & Associates, and Consider and Approve the Notice of Proposed Increase in Water Rates
6. **ADJOURN**

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CAMBRIA COMMUNITY SERVICES DISTRICT

TO: Board of Directors AGENDA NO. **4.A.**

FROM: Jerry Gruber, General Manager

Meeting Date:	November 12, 2015	Subject:	PUBLIC HEARING TO CONSIDER INTRODUCTION OF ORDINANCE 01-2015 ADOPTING THE CAMBRIA COMMUNITY SERVICES DISTRICT GROUNDWATER MANAGEMENT PLAN

RECOMMENDATIONS:
Staff recommends that the Board of Directors hold a public hearing in accordance with the requirements of Water Code Section 10753.5 to consider protests and determine whether to introduce an Ordinance Adopting the Cambria Community Services District Groundwater Management Plan (GMP).

Staff recommends that the Board of Directors:

1. Open the Public Hearing;
2. Receive public testimony and consider protests to the adoption of the GMP;
3. Close the Public Hearing;
4. Determine whether a majority protest exists (reference Water Code Section 10753.6); and
5. If the Board of Directors finds that a majority protest has not been filed, move to introduce Ordinance 01-2015 An Ordinance Adopting the Cambria Community Services District Groundwater Management Plan by title only and waive further reading.

FISCAL IMPACT:
There have been costs related to staff time needed to draft the GMP. Once in place, the GMP will satisfy a requirement of the Proposition 84 Integrated Regional Water Management (IRWM) Grant, so that funding can be processed to the District.

DISCUSSION:
The CCSD has been awarded a Proposition 84 IRWM Grant (“Grant”) for the Emergency Water Supply Project and one of the Grant conditions is the adoption of a GMP that complies with the requirements of Water Code Section 10753.7. At its meeting on October 15, 2015, the Board of Directors held a public hearing in accordance with the requirements of Water Code Section 10753.2 and adopted a Resolution of Intention to Draft a Groundwater Management Plan.

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Subsequent to the adoption of the Resolution of Intention to Draft a Groundwater Management Plan, two public workshops on the proposed GMP were held, with public review and comment periods and instructions as to how written comments could be provided to the District. Public input has been accepted and considered throughout the process and will continue to be until such time as an Ordinance is introduced. The GMP was and will continue to be updated, as appropriate, in response to that public input. Staff will distribute the final revised draft GMP under separate cover prior to or at the November 12, 2015 special meeting. Any revision of the attached version will be clearly identified.

The Board of Directors is now being asked to hold a second public hearing in accordance with Water Code Section 10753.5 to consider any protests to the adoption of the plan and determine whether or not to adopt it. Water Code Section 10753.6 provides that written protests may be filed by landowners, and a majority protest exists if the Board of Directors finds that protests filed and not withdrawn prior to the conclusion of the second hearing represent more that 50 percent of the assessed value of the land within the District. If a majority protest exists, the GMP may not be adopted and the District cannot consider adopting a plan for a one year period. If a majority protest does not exist, the District may then proceed with the process of adopting the GMP. Since the District is authorized to act by ordinance, the GMP is to be adopted by an ordinance in accordance with Water Code Section 10753(a). Accordingly, Ordinance 01-2015 has been prepared for consideration by the Board of Directors if it is determined that a majority protest does not exist.

Attachments:

1. Ordinance 01-2015 An Ordinance Adopting the Cambria Community Services District Groundwater Management Plan
2. Draft Groundwater Management Plan (Exhibit “A” to Ordinance 01-2015)

BOARD ACTION: Date _____ Approved: _____ Denied: _____

UNANIMOUS: ___ ROBINETTE ___ THOMPSON ___ BAHRINGER ____ RICE ___ SANDERS

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ORDINANCE NO. 01-2015

BOARD OF DIRECTORS
CAMBRIA COMMUNITY SERVICES DISTRICT
DATED: , 2015

AN ORDINANCE ADOPTING THE CAMBRIA COMMUNITY SERVICES DISTRICT GROUNDWATER MANAGEMENT PLAN

WHEREAS, Water Code Section 10750 et seq. provides the Cambria Community Services District with the authority to adopt a Groundwater Management Plan within its jurisdiction; and

WHEREAS, after holding a noticed public hearing in accordance with Water Code Section 10753.2(a), the Board of Directors adopted Resolution 34-2015 regarding its intention to draft a Groundwater Management Plan in accordance with the requirements of Water Code Sections 10753 through 10753.10; and

WHEREAS, subsequent to the adoption of Resolution 34-2015, workshops were held in order to provide interested parties with an opportunity to participate in the development of the Groundwater Management Plan and opportunities were provided for the submittal of written and verbal comments and public input; and

WHEREAS, as required by Water Code Section 10753.5 and Government Code Section 6066, notice of a second public hearing relating to the Groundwater Management Plan was published and a second public hearing was conducted on November 12, 2015 by the Board of Directors of the Cambria Community Services District in order to receive and consider any protests on whether or not to adopt the Groundwater Management Plan. Pursuant to Water Code Section 10753.6(c)(3), the Board of Directors has determined that a majority protest has not been filed and therefore, the Board wishes to take action to adopt the Groundwater Management Plan.

NOW THEREFORE, BE IT ORDAINED by the Board of Directors of the Cambria Community Services District (CCSD) as follows:

Section 1. The foregoing Recitals are true and correct and are incorporated herein.

Section 2. Pursuant to Water Code Sections 10753 and 10753.6, the Cambria Community Services District Groundwater Management Plan, attached hereto as Exhibit A and incorporated herein by reference, is hereby adopted.

Section 3. The adoption of the Cambria Community Services District Groundwater Management Plan is hereby determined to be both statutorily and categorically exempt from the California Environmental Quality Act (CEQA) under CEQA Guidelines Sections 15262, 15306, 15307, and 15308. The General Manager is hereby authorized and directed to file a Notice of Exemption in accordance with the provisions of CEQA.

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Section 4. If any section, subsection, subdivision, paragraph, sentence, or clause of this Ordinance or any part thereof is for any reason held to be unlawful, such decision shall not affect the validity of the remaining portion of this Ordinance or any part thereof. The Board of Directors hereby declares that it would have passed each section, subsection, subdivision, paragraph, sentence, or clause thereof, irrespective of the fact that any one or more section, subsection, subdivision, paragraph, sentence, or clause be declared unconstitutional.

Section 5. This Ordinance shall take effect thirty (30) days after its adoption.

The foregoing Ordinance was adopted at a regular meeting of the Board of Directors of the Cambria Community Services District held on the day of 2015.

AYES:
NOES:
ABSENT:

Gail Robinette
President, Board of Directors

APPROVED AS TO FORM:

Monique Madrid
District Clerk

Timothy J. Carmel
District Counsel

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Cambria Community Services District Groundwater Management Plan

Special Board Meeting of November 12, 2015

Public Hearing to Consider Adoption of Groundwater Management Plan

Overview of Draft Groundwater Management Plan

Presentation Outline

Background
Purpose
Summary Review of Draft Plan Sections
Summary of Public Participation Process
Public Comments

General Groundwater Management Plan Background Information

- Groundwater Management Act (AB 3030) added to the Water Code in 1992
- CCSD had completed a 1980 basin management plan in response to permit conditions
- Groundwater Management Plan requirements are described in California Water Code Sections (Sections 10753 through 10753.10)
- Proposition 84 grant funding requirement
- Proposed plan will include the required components of a Groundwater Management Plan
- Proposed plan is not to be confused with the 2014 Sustainable Groundwater Management Planning Act requirements.

Plan Purpose

- Work with basin stakeholders to maintain a sustainable, reliable, high-quality groundwater supply.
- San Simeon Creek basin (3-35)
- Santa Rosa Creek basin (3-36)

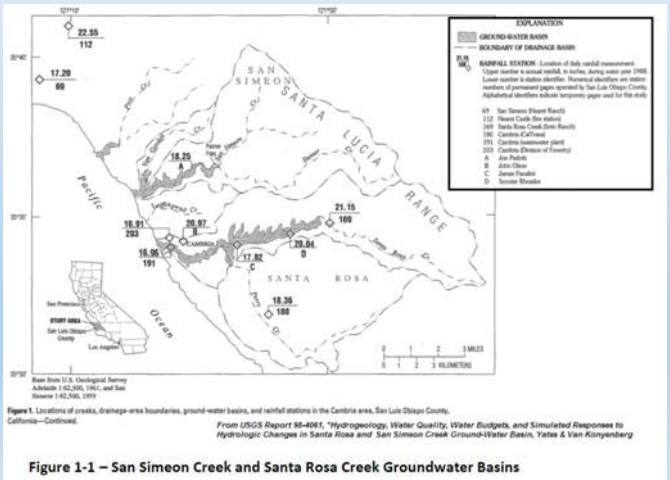

Figure 1-1 – San Simeon Creek and Santa Rosa Creek Groundwater Basins

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Draft Groundwater Management Plan Contents

1. Purpose & Background
2. Basin Management Objectives
3. Inter-Agency Coordination and Collaboration Plan
4. Groundwater Recharge and Mapping
5. Groundwater and Surface Water Monitoring
6. Wellhead Protection, Well Abandonment, & Well Construction Policies
7. Recommendations
8. References

   Appendices

Basin Management Objectives

1. Monitor & Manage Water and Wastewater Facilities to Ensure Protection of the Area's Fishery and Riparian Habitat
2. Operate, Plan, and Provide CCSD Water and Wastewater Facilities in a Manner to Prevent Seawater Intrusion and to Avoid Inelastic Ground Subsidence
3. Work Cooperatively with District Customers, the Agricultural Community, and Regulatory & Resource Agencies to Protect and Maintain Groundwater and Surface Water Quality
4. Continue to Monitor & Collect Baseline Groundwater Elevation and Quality Data for use by Resource and Regulatory Agencies in Assessing Progress, Developing Action Plans, and in Developing Future Groundwater Management Plan Updates

Inter-Agency Coordination and Collaboration Plan

- Inter-Agency Coordination
  - Outreach via noticing
  - Review & response to plan comments
- Inter-Agency Collaboration Plan
  - Financing to allow for future plan updating
  - Formation of a multi-agency steering committee
  - Review regulatory updates and trends that warrant planning updates
  - Action Plan for Update
  - Execute future updates

Groundwater Recharge & Mapping Update

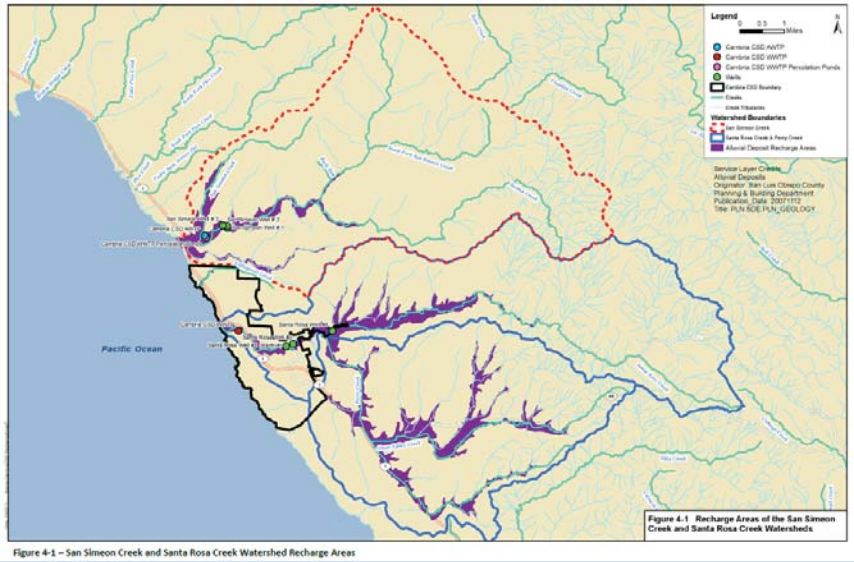

Figure 4-1 – San Simeon Creek and Santa Rosa Creek Watershed Recharge Areas

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Groundwater & Surface Water Monitoring

- Groundwater Elevation Monitoring
  - Participation in statewide effort (CASGEM)
  - Permitted/regulatory requirements
  - Operational need
- Groundwater Quality Monitoring
  - Permitted/regulatory requirements
  - Salt & nutrient management planning requirement for recycled water
  - Operational need
- Land Subsidence Monitoring
- Groundwater – Surface Water Interaction Monitoring
  - Permitted/regulatory requirements
  - Adaptive Management Plan – includes biological monitoring of habitat

Wellhead Protection, Well Abandonment, & Well Construction

- Administered by SLO County Environmental Health Department
- Standards include California Department of Water Resources Bulletins 74-81 and 74-90
- Very important for water quality protection due to:
  - Potential for contaminants to enter well bore casing
  - Contamination could travel between/move down well casing and borehole wall.
  - Contamination could move between underground formations
  - Potential for bore to be used for illegal waste disposal
- CCSD also required to complete Watershed Sanitary Survey Updates

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Recommendations

- Regularly review & gauge progress in meeting Basin Management Objectives
- 5-year review cycle suggested following UWMP Updating and Watershed Sanitary Surveys
- Could consider the Sustainable Groundwater Management Act requirements in future updates if Basin Management Objectives are not being met, or other concerns arise
- Foster collaboration with basin stakeholders.
- Allow more time for future plan updates to incorporate steering committee approach.
- Continue to pursue completion of regular Coastal Development Permit of Emergency Water Supply Project (I.e., Water Restoration Project)
- Financial planning and budgeting to allow funding of future plan updates and projects that support meeting Basin Management Objectives

Recommendations - continued

- Emergency water supply project's EIR and regular Coastal Development Permit
- Technical analyses of the Army Corps'-administered long-term water supply project's EIS
- Completion of a long-term water supply alternative
- Improvements to the CCSD wastewater treatment plant.
- Regular biological monitoring of the riparian habitat
- Continued data collection and laboratory water quality analyses.
- Additional remote sensing of the creeks and monitoring wells.
- 5-year updating to the Groundwater Management Plan.
- Additional monitoring wells that may be identified as a future monitoring need.
- Continuance of the CCSD water conservation program and related conservation demand offset program efforts.
- Continuation of efforts to extend SWRCB diversion permits 20387 and 17287

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Summary of Public Participation

- September 24, 2015 Board Meeting to consider completing a Groundwater Management Plan
- October 15, 2015 Workshop 1
- October 29, 2015, Workshop 2
- Updated report in response to review comments
- Posted report updates on cambriacsd.org web site.
- Revision log provided
- Published announcements per water code criteria are in Appendix A
- Comment letters with responses to comments provided in Appendix B

Today's Meeting is to Consider Adopting the Groundwater Management Plan by Ordinance 01-2015

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Cambria Community Services District

Groundwater Management Plan

Revisions Log

No.	Date	Revision Summary	Report pages
1	10/20/2015	Revised report date to 10/20/2015	cover
2	10/20/2015	Changed second public hearing meeting date shown in part 3.1 from 11/19/2015 to 11/12/2015.	15
3	10/28/2015	Revised listing of agencies and organizations shown under Step 2	16
4	10/28/2015	Added second sentence in first paragraph of subsection 5.4, which references Irrigated Agricultural Order R3-2012-011.	25
5	10/28/2015	Added recommendation 5, and renumbered subsequent recommendations.	30
6	10/28/2015	Revised the order of monitoring wells listed on Table 5-1 to begin at the furthest up-gradient wells and end at the lowest down-gradient well.	21
7	11/05/2015	Revised report date to 11/05/2015	cover
8	11/05/2015	Added sentence on basins being within SLO County	1
9	11/05/2015	Replaced the word “increasing” with “maximizing”	4
10	11/05/2015	Corrected typo on the word “expend” by replacing with “expand”	8
11	11/05/2015	Describe addition of Adaptive Management Plan as Appendix E	12

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12	11/05/2015	Added the word "Storage" to part 5. 3 header.	23
13	11/05/2015	Added last two sentences to part 5.5	25
14	11/05/2015	Providing comment letters for Appendix B	
15	11/05/2015	Providing Adaptive Management Plan as newly added Appendix E	
16	11/08/2015	Part 1.7; changed "to the most" to "to be the most"	8
17	11/08/2015	Part 1.7; changed "(remove nitrates) to "(to remove nitrates)"	9
18	11/08/2015	Part 1.9, changed "resulting" to "resulted"	10
19	11/08/2015	Part 2.3, changed Integrated Water" to "Integrated Regional Water"	13
20	11/08/2015	Part 5.2, Changed "design convert" to "designed to convert"	23
21	11/08/2015	Part 5.5, changed "1 feet" to 1 foot"	25
22	11/08/2015	Added materials to Appendices A, B, C, & D.	
23	11/09/2015	Revised titles used for Appendices A & B to indicate resolution number and ordinance number	TOC iii
24	11/09/2015	Part 3.1, Revised second paragraph to better match discussion in 11/12/2015 staff report.	15
25	11/09/2015	Revised date on front cover to 11/09/2015. Updated list of CCSD Board of Directors	cover
26	11/12/2015	Revised cover sheet date to 11/12/2015	cover

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27	11/12/2015	Approval sheet, which follows the cover sheet to indicate Ordinance (as opposed to earlier resolution reference)	After cover page
28	11/12/2015	Added footnotes 1 and 2 to Table 1-1 (this also revised the report's page break and subsequent page numbers)	5
29	11/12/2015	Added recommendation 3.k to the list of recommendations in Section 7	Page 30

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CAMBRIA COMMUNITY SERVICES DISTRICT

DIRECTORS:
GAIL ROBINETTE, President
MICHAEL THOMPSON, Vice President
JIM BAHRINGER
AMANDA RICE
GREG SANDERS

OFFICERS:
JEROME D. GRUBER, General Manager
MONIQUE MADRID, District Clerk
TIMOTHY J. CARMEL, District Counsel

1316 Tamsen Street, Suite 201 • P.O. Box 65 • Cambria CA 93428
Telephone (805) 927-6223 • Facsimile (805) 927-5584

November 5, 2015

Ms. Mary Webb
Greenspace, The Cambria Land Trust
P. O. Box 1505
Cambria, CA 93428-1505

Subject: October 29, 2015 Review Comments to Cambria CSD's Draft Groundwater Management Plan

Dear Ms. Webb,

Thank you for taking the time to review and comment on our draft Groundwater Management Plan. Where appropriate, we are updating the draft Groundwater Management Plan to incorporate your suggestions and requests. The following summarizes the updates we will be making, provides additional background information, or otherwise explains where answers to your questions can be found in the existing draft Groundwater Management Plan (GMP), which is posted on our website at cambriacsd.org. Our responses are also numbered in the same order as those shown on the attached annotated copy of your October 29, 2015 letter:

1) The Emergency Water Supply project was constructed per the County-issued Emergency Coastal Development Permit (CDP) and Coastal Zone Land Use Ordinance Section 23.03.045. The Emergency CDP included conditions requiring numerous protective measures that were followed during construction, including biological monitoring, archeological monitoring, and cultural resource monitoring. An environmental impact report (EIR) to support the project's regular CDP is currently being completed, with a 45-day public review period of the draft EIR estimated to begin around this coming mid-December to early January. In addition, part 1.7 of the GMP provides discussion on the CCSD's long-term water supply efforts, which will include completion of a NEPA-compliant Environmental Impact Statement (EIS) through a cooperative agreement with the Army Corps of Engineers.

The Emergency Water Supply project is abiding by permits that were issued by the County and the Water Board. The Water Board's permitting process contained detailed technical reviews, including their review of results from the project's tracer study that was conducted from July 24, 2014 to September 29, 2014. To meet the State's 60-day travel time, the re-injection rate into the aquifer and pumping rate from wells SS-1 and SS-2 out of the aquifer cannot exceed 400 gpm. The 400 gpm rate is lower than the average pumping rate during the tracer test, which was 435 gpm. The test results were used to calibrate the project's groundwater model, which resulted in meeting the 60-day minimum travel time requirement by limiting the extraction rate

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from existing wells SS1 and SS2 to no more than 400 gpm. A future tracer study test will be completed as a follow up to the Water Board's November 12, 2014 letter, which summarized their review of the tracer study. Since this letter was issued, the Water Board subsequently amended the timing of a future tracer study, which now allows for it to be completed next year.

Water quality violations were primarily related to mist from the emergency water supply project's mechanical evaporators momentarily drifting past the limits of the evaporation pond liner. Adjustments have since been completed to the evaporator system to prevent this from re-occurring. The "chlorine spill" you describe occurred when drinking-water-quality water entered the creek during a limited pipeline testing period. Detailed responses describing the corrections made to address these past events have been provided to the Water Board. On April 17, 2015 the Emergency Water Supply project was shut down one week earlier than planned due to nitrate concentrations exceeding the project's permitted value of 2.3 mg/l (with nitrate being expressed as nitrogen, I.e., NO_3-N), which were still well below the allowable drinking water limit of 10 mg/l (NO_3-N). Since then, the CCSD's wastewater treatment plant operators made adjustments to significantly lower nitrates within the plant's effluent before it is introduced into the percolation ponds. The Emergency Water Supply project was restarted on September 20, 2015, and is currently being operated eight-hours per day, Monday through Friday. There is also regular reporting to the Water Board on the facility's operations to ensure compliance with permit conditions. For further reference, GMP Table 1-2 provides a listing of the permits that were issued for the Emergency Water Supply Project.

2) The Emergency Water Supply project is re-injecting approximately 192,000 gallons per day of water, while it is operated over an 8-hour period per work day. This equates to 0.56 acre-ft per 8-hour work day shift. Of the re-injected water, approximately 40% will remain in the aquifer, with the remainder being pumped by wells SS1 and SS2.

3) The Emergency Water Supply project includes a design feature that provides 100 gallons per minute of water to the head of the San Simeon Creek lagoon during dry periods. This feature serves to benefit and protect coastal resources.

4) The Emergency Water Supply project is limited by the conditions found in the permits that are listed in Table 1-2 of the GMP.

5) The Emergency Water Supply project does not appropriate water beyond what has been previously permitted by the SWRCB (permit numbers 20387 & 17287) and the Coastal Commission (CDP 428-10). Water that is extracted by its supply well is treated and re-injected back into the same groundwater basin.

6) Our analyses found that the Emergency Water Supply project provides a beneficial impact to the riparian and lagoon habitat through its design feature that provides 100 gpm of flow to the upper end of the San Simeon Creek lagoon during dry conditions. The project's lagoon water design feature is also backed up by an existing Adaptive Management Plan (AMP), which is currently being followed, along with its supporting and ongoing biological monitoring of in-stream and riparian habitat associated with the San Simeon Creek and Van Gordon Creek. Our next posted update to the Groundwater Management Plan (GMP) will expand upon the discussion found under Part 2.1, "Basin Management Objective 1 – Monitor and Manage Water and Wastewater Facilities to Ensure Protection of the Area's Fishery and Habitat," which can found on page 12 of the draft GMP. We will reference the AMP and include it as an appendix within this same GMP update. We also believe the AMP is consistent with the GMP objective, which

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is why GMP Recommendation 3.e on page 29, includes planning and budgeting for "Regular biological monitoring of the riparian habitat."

7) The San Simeon Creek well levels during 2014 were influenced by the community's approximate 40 percent reduction in water demand from its unprecedented historic level of water conservation, as well as there being no diversion occurring from the San Simeon aquifer during the aforementioned tracer study, which occurred from July 24, 2014 to September 29,2014. Comparison between the 2013 and 2015 levels show a significant difference, with higher levels occurring in 2015 following start up and operation of the Emergency Water Supply project. Our Mid-October average San Simeon well elevations were 10.72 feet for 2015; 9.11 feet for 2014; and, 6.77 feet for 2013. These elevations are expressed as feet above mean sea level.

8) See related discussion under item 6).

9) We are cognizant of the steelhead recovery plan, which is described as a guidance document by NOAA. Per the aforementioned discussion in item 6), the Emergency Water Supply project serves to significantly improve habitat conditions within the lagoon during dry weather. This design feature is further backed up by biological monitoring being conducted per an Adaptive Management Plan (AMP). The AMP was developed, in part, as a means to avoid an incidental take of steelhead. Lastly, the CCSD had also issued an amendment to its EIR consultant to include permitting efforts that would cover a Section 7, Endangered Species Act consultation. Although the related Section 7 permitting consultation is on hold due to funding limitations, the CCSD intends to pursue this additional permitting effort after it completes the Groundwater Management Plan.

10) Discussion on the Total Maximum Daily Loading in San Simeon Creek can be found in sections 1.7 and 5.2 of the GMP. In addition, recommendation 3.d on page 29 of the GMP recommends planning and budgeting for improvements to the CCSD wastewater treatment plant, which will further improve water quality.

11) See response under item 6). The Adaptive Management Plan is being provided as an appendix to the next posted update of the GMP.

12) Please see the discussion on long-term planning, which is provided in section 1.7 of the GMP. Also see the related recommendation 2 on page 29 of the GMP.

13) Operation of the Emergency Water Supply project has no growth inducing impacts.

14) The GMP was developed to meet the requirements of State Water Code Sections 10753 et seq. The EIR currently being prepared for the Emergency Water Supply project will allow for further public review and comments per the process required of the California Environmental Quality Act.

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In closing, we appreciate your time and efforts in providing comments to the draft GMP. We will be posting an update to the GMP later this week and will notify you by email once an update is available on our cambriacsd.org web site.

Sincerely,

Robert C. Gresens
District Engineer
Cambria Community Services District

Attach (1)

cc w/attach: County of San Luis Obispo Public Works Department; Mladen Bandov
Department of Water Resources – Planning and Local Assistance; Monica Reis
California Department of Fish and Wildlife; Dr. Jeffrey R. Single
California State Parks; Brooke Gutierrez
California Coastal Commission; Tom Luster
Regional Water Quality Control Board; Ken Harris

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GREENSPACE
THE CAMBRIA LAND TRUST

October 29, 2015

Bob Gresens, Dist. Engineer
Cambria Community Services District
1316 Tamson Drive, Suite 201
Cambria, CA 93428

Via Email: bgresens@cambriacsd.org

RE: Cambria Community Services District "Draft" Groundwater Management Plan

Thank you for the opportunity to comment on the Draft Groundwater Management Plan. I understand the plan was rushed and comments are due today. The Districts "emergency" water project cannot be uncoupled from the Groundwater Management Plan.

1 The CSD 'emergency' water project was constructed without adequate environmental review or permits between August 2014 and December of 2014. The project did not pass a 60 day tracer test in the fall of 2014, failed to complete a 90 day test phase this year, caused numerous (13?) water quality violations including a chlorine spill into San Simeon Creek noticed by the Regional Water Quality Control Board in March of 2014, and was shut down due to the high cost of monitoring and reporting requirements and staffing shortfalls in April. The project is reportedly operating again, however it is unclear under what conditions it should be allowed to run given the lack of appropriate permits and agency review.

Greenspace is still awaiting responses to comments made on the Districts "emergency" water project in July of 2014 and a public scoping session of March of 2015 . The effects of the water project on the biological resources of both San Simeon and Santa Rosa Creek remains unknown . Unanswered project questions and concerns include but are not limited to:

2 • Amount of water to be produced by the project
3 • Timing of project operation that would protect coastal resources
4 • Limits of project operation
5 • Water rights and water use is in question based on project operations
6 • Project failed to provide adequate mitigation water to SanSimeon Creek Lagoon during operation
7 • Need for the project based on above average well levels since January of 2014
8 • Lack of instream flow studies to provide baselines to measure ecological impacts to the creek

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- 9 Impacts of the project on South-Central California Steelhead Recovery
- 10 Water quality concerns and questions on the TMDL loads from CSD wastewater at San Simeon Creek
- 11 Lack of specifics and need for independent oversight of a proposed “Adaptive Management Plan”
- 12 Lack of specifics on relationship between the “Brackish Water Desalination Emergency Project” and the “Long Term Public Works Project”.
- 13 Lack of funding for the Cambria Build Out Reduction Plan which is required mitigation for the growth inducing effects of desalination.

14 Until our questions, and all agency questions that were submitted between July 2014- March 2015 are answered by the CSD the groundwater management plan is incomplete for review.

We look forward to receiving responses to the detailed and lengthy comments that were submitted in the past. The way forward to a sustainable water supply for resident, tourists and businesses is one that does not cause harm to all the other life we treasure on the Central Coast.

For the Board of Directors of
Greenspace-the Cambria Land Trust
Mary Webb, Interim President

cc: Cambria CSD Board of Directors, Dept. of Water Resources, San Luis Obispo County, Coastal Commission, CA Fish and Wildlife, CA State Parks

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CAMBRIA COMMUNITY SERVICES DISTRICT

DIRECTORS:
GAIL ROBINETTE, President
MICHAEL THOMPSON, Vice President
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November 5, 2015

Mr. Tom Luster
California Coastal Commission
45 Fremont Street
Suite 2000
San Francisco, CA 94105-2219

Subject: October 29, 2015 Review Comments to Cambria CSD's Draft Groundwater Management Plan

Dear Mr. Luster,

Thank you for taking the time to review and comment on our draft Groundwater Management Plan. Where appropriate, we are updating the draft Groundwater Management Plan (GMP) to incorporate your suggestions and requests. The following summarizes the updates we will be making to the GMP, provides further background information, or otherwise explains where answers to your comments can be found within the existing draft GMP (The GMP is posted on our website at cambriacsd.org.). Our responses are also numbered in the same order as the numbered points in your October 29, 2015 letter, which began on page 2:

1) Our analyses found that the Emergency Water Supply project provides a beneficial impact to the riparian and lagoon habitat through its design feature that provides 100 gpm of flow to the upper end of the San Simeon Creek lagoon during dry conditions. This feature is also backed up by an existing Adaptive Management Plan (AMP), which is currently being followed, along with its supporting and ongoing biological monitoring of in-stream and riparian habitat associated with the San Simeon Creek and Van Gordon Creek. Our next posted update to the Groundwater Management Plan (GMP) will expand upon the discussion found under Part 2.1, "Basin Management Objective 1 – Monitor and Manage Water and Wastewater Facilities to Ensure Protection of the Area's Fishery and Habitat," which can found on page 12 of the draft GMP. We will reference the AMP and include it as an appendix within this same GMP update. We also believe the AMP is consistent with the GMP objective, which is why GMP Recommendation 3.e on page 29, includes planning and budgeting for "Regular biological monitoring of the riparian habitat."

   We also recognize there may be some confusion over the flow rates due to the emergency water supply project extracting, treating, and then re-injecting water back into the groundwater basin. The project also recycles a portion of the community's treated

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wastewater effluent, which is discharged into the percolation ponds near extraction well 9P7. To meet the State's 60-day travel time requirement for the indirect potable reuse of recycled water, the re-injection rate into the aquifer, as well as the total pumping rate from well field pumps SS-1 and SS-2 out of the aquifer, cannot exceed 400 gpm. The project's groundwater extraction well (aka Well 9P7) will pump at approximately 629 gpm. However, this pump cycles on and off during facility operation based on levels within a transfer tank that it discharges into prior to the treatment facility's microfiltration process. Therefore, the 629 gpm rate of the project's extraction well is not necessarily a continuous flow. Of the water pumped from well 9P7, 100 gpm of that water is returned to the head of the San Simeon Creek lagoon, which normally occurs after it passes through microfiltration. Another 40 gpm is returned back to the groundwater from the project's micro-filter backwash water, which is discharged into an existing percolation pond. To maximize water use efficiency, the project minimizes the amount of reverse osmosis reject water that is discharged into the evaporation pond by having three stages of reverse osmosis. This results in a 92 percent recovery rate, with only 40 gpm of RO reject water being discharged to the project's evaporation pond. Net production from the project will be less than the 400 gpm groundwater re-injection rate due to about 60 percent of the injected water being pumped by the CCSD's San Simeon potable wells (SS1 and SS2). Therefore, the net production from the project is estimated to be 60 percent of the 400 gpm re-injection rate, which is about 240 gpm of the 400 gpm of water being pumped out by wells SS1 and SS2.

The volume of water produced by the project will also vary by how long the facility operates each day. For example, since September 20, 2015, the facility has been operating during our water operators' 8-hour work day, which has been Monday through Friday.

2) Beyond the explanation provided in item 1) above, we believe your discussion may be more relevant as comments for the Emergency Water Supply Project's project EIR. Stream monitoring that the CCSD and its consultant conducted in 2014 was used to support analyses related to the project's 100 gpm lagoon flow value. This will be described in more detailed within the project's EIR, which will expand upon an explanation that was provided as part of an earlier August 27, 2014 presentation during our joint agency meeting at the Santa Cruz offices of the Coastal Commission. We also found many historical references that indicate the creek is not perennial, which date back to times before the CCSD facilities existed. Additionally, the 2014 regional assessment relied in part on a 2006 study, which did not include a specific evaluation of San Simeon Creek or the lagoon. Therefore, the 0.5 cfs summer time value of the 2014 flow assessment report is an overestimate, which was based on a rough approximating method when compared to the detailed analysis CCSD's consultant completed to support design of the emergency water supply project.

   We are also aware of the steelhead recovery plan, which is described as a guidance document by NOAA. Per the aforementioned discussion in item 1), the project serves to improve habitat conditions within the lagoon during dry weather. This design feature is further backed up by biological monitoring being conducted per an Adaptive Management Plan (AMP). The AMP was developed, in part, as a means to avoid an incidental take of steelhead. Lastly, the CCSD had also issued a contract amendment to its EIR consultant to include permitting efforts that would cover a Section 7,

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Endangered Species Act consultation. Although the related Section 7 permitting consultation is on hold due to funding limitations, the CCSD intends to pursue this additional permitting effort after it completes the Groundwater Management Plan and the CCSD's Proposition 84 grant reimbursement funding is received.

3) Respectfully, your assertion that CCSD's water rights applications have expired without being perfected is incorrect. The CCSD is aware of the need to extend its existing water right permits with the State Water Resources Control Board (SWRCB) and filed the appropriate petitions with the SWRCB during 2014. This filing also included the payment of a fee to cover what is to be used for the funding of prioritized instream flow studies by the state per Public Resource Code sections 10000-10005. The Groundwater Management Plan further acknowledged the related Coastal Development Permit 428-10 (See Table 1-1, on p. 5), which does not have a similar expiration timeline. The SWRCB is processing CCSD's extension petitions, and future GMP updates will reflect the outcome thereof.

4) The GMP's water quality discussion includes the Central Coast RWQCB's draft 2014 TMDL report on the San Simeon Creek, and can be found in the draft GMP's parts 5.2 and 5.4. The GMP's discussion includes mention that operation of the emergency water supply project serves to improve groundwater quality through its removal of salts and nutrients. This project benefit was also described by the RWQCB during their April 2014 presentation on the draft TMDL report in Cambria (by Howard Kolb of the RWQCB.). The GMP's recommendations also include financing and budgeting for improvements to the CCSD wastewater treatment plant (recommendation 3.d, on p. 29), which will also remove nutrients from its effluent before entering the groundwater percolation basins.

5) The CCSD plans to continue to abide by existing laws and regulations, as it has in completing the Groundwater Management Plan and past projects. Further discussion on applicable North Coast Area Plan regulatory requirements will also follow in the emergency water supply project's EIR.

In closing, we appreciate your time and efforts in providing comments to the draft GMP. We will be posting an update to the GMP later this week and will notify you by email once an update is available on our cambriacsd.org web site.

Sincerely,

Robert C. Gresens
District Engineer

Cambria Community Services District

cc: County of San Luis Obispo Public Works Department; Mladen Bandov
Department of Water Resources – Planning and Local Assistance; Monica Reis
Central Coast Regional Water Quality Control Board; Howard Kolb

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CALIFORNIA COASTAL COMMISSION
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October 29, 2015

Mr. Robert Gresens, P.E., District Engineer
Cambria Community Services District
1316 Tamson Drive, Suite 201
Cambria, CA 93428

VIA EMAIL: bgresens@cambriacsd.org

RE: Comments on Cambria Community Services District ("CCSD") Draft Groundwater Management Plan

Dear Mr. Gresens:

Thank you for the opportunity to comment on the above-referenced Draft Groundwater Management Plan ("GMP"). As we have discussed with you several times, we are acutely aware of the severity of Cambria's water supply issues and we remain supportive of the CCSD developing appropriate and environmentally sustainable long-term responses to address these issues. We welcome working with you to develop a groundwater management approach that will be consistent with the requirements for the proposed GMP as provided in Section 10753 *et seq*. of the California Water Code and will also address and fully conform to the water planning, resource protection, and growth management requirements of the Local Coastal Program (LCP) and the Coastal Act. Our comments below are focused on helping the Final GMP be consistent with those Water Code requirements in a manner consistent with these other related policies and regulations.

As detailed below, our primary comments identify elements of the Draft GMP that do not yet include relevant documentation about basin characteristics and relevant policies needed to adequately address Water Code requirements. The additional documentation and analyses needed in the Final GMP relate to the following:

- The role of the CCSD's emergency water project in affecting groundwater characteristics;
- The effects of CCSD's proposed measures on streamflow and the related protection of biological resources;
- The effects of the CCSD's limited water rights on implementing groundwater management objectives;
- The effects of water quality concerns in the basins on the CCSD's ability to implement groundwater management objectives; and,
- The role of existing baseline requirements on the GWP's proposed planning process.

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Comments and Recommendations

1) **Include descriptions and analyses of the CCSD's emergency water project related to groundwater management:** The Draft GMP includes some brief descriptions of CCSD operations in the San Simeon Creek basin, including mention of the emergency water supply project constructed last year. However, other than stating that the project includes a 100 gallon-per-minute mitigation flow, it does not describe the full effect of the project on surface and groundwater resources in the basin. We recommend the Final GMP more fully describe the amounts of water proposed to be extracted and produced by the project. Over the past year, project descriptions have stated that it would extract varying amounts of groundwater – from about 400 to 690 gallons per minute – and that it would produce similarly varying amounts.

   We additionally recommend that the Final GMP also include, or at least describe, that project's proposed Adaptive Management Plan that we understand the CCSD is preparing as part of the project EIR and permit applications. At a minimum, the Final GMP should include an evaluation of the proposed Adaptive Management Plan to ensure it is consistent with the Final GMP.

2) **Relationship of CCSD's groundwater management to streamflow and protection of biological resources:** The GMP must identify how the CCSD's proposed groundwater management measures are expected to affect streamflow and protect the basins' biological resources.[1] For example, the emergency water project is proposed to operate during periods when well levels are low and streamflows are below levels needed to protect fish and other aquatic species. We recommend the GMP's analyses incorporate findings of the January 2014 San Luis Obispo County *Regional Instream Flow Assessment*, which identified the necessary minimum flows for steelhead in San Simeon Creek as ranging from minimum flows of 1.5 to 1.6 cubic feet per second (cfs) in the spring to no less than 0.5 cfs in the summer. The project's proposed 100 gpm mitigation flow would provide only 0.223 cfs, or less than half, of the minimum amount needed to protect this threatened species. Groundwater management objectives and measures need to fully account for the biological productivity of these coastal zone resources, including ensuring adequate in stream flows to protect these resources and their related habitats.

   We also strongly recommend the Final GMP describe whether the CCSD's proposed groundwater management approach conforms to the December 2014 *South-Central California Steelhead Recovery Plan* published by the National Marine Fisheries Service. This Plan identifies the San Simeon Creek steelhead population as the highest priority area for recovery within the Plan boundaries and also identifies groundwater extraction in the San Simeon Creek watershed as one of the highest threats to recovery. The Final GMP should identify how the CCSD will manage basin groundwater resources to ensure protection of the

[1] For example, Section 10753.7(a)(1) states, in relevant part, that the GMP is to include basin management objectives that address "changes in surface flow and surface water quality that directly affect groundwater levels or quality or are caused by groundwater pumping in the basin." This is also necessary to allow the GMP to conform to relevant policies of the County's LCP and Coastal Zone Land Use Ordinance, such as those described later in this letter – e.g., LCP ESHA Policy 21, which requires development be compatible with continuance of streams' habitat values, and those in the North Coast Area Plan related to *Environmentally Sensitive Habitat – Coastal Creeks (ESH-CC)* requirements and *Cambria Program 11a* requirements for completion of an instream flow study prior to proposing any major water supply project that relies on San Simeon Creek.

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streamflows needed to support this and other species reliant on San Simeon Creek habitat. It may also be necessary for the Final GMP to identify any additional groundwater management provisions necessary for the CCSD to avoid "take" of steelhead. We strongly recommend this be incorporated into the Final GMP's Section 2.1 – *Basin Management Objective 1: Monitor and Manage Water and Wastewater Facilities to Ensure Protection of the Area's Fishery and Riparian Habitat.*

3) **Water rights and related agreements:** The Draft GMP (at Section 1.8, for example) describes just one of several water rights components the CCSD is subject to within the two basins – i.e., a 2006 agreement for the CCSD to provide up to 205 acre-feet of water per year to a property within the San Simeon basin. We believe it is necessary for the Final GMP to more completely identify the water rights that affect basin management, and evaluate how the CCSD's existing water rights will affect or limit the CCSD's ability to meet basin management objectives. The Final GMP should more thoroughly describe the CCSD's existing water rights and incorporate them into its analyses. As we understand it, the CCSD's current water rights are considerably less than the amount of water the CCSD has anticipated would be available for water production and groundwater basin management. As noted in our previous correspondences, the CCSD's original water rights applications expired without being perfected, so the currently available amounts are *less than half* the CCSD's expected amounts.[2] The Draft GMP does not appear to be based on these reduced water rights (see, for example, the expected "Municipal Pumpage" in Table 1-3), and thus we highly recommend that the Final GMP's analyses and objectives be consistent with the current/accurate water rights.

4) **Water quality:** The Draft GMP only briefly describes water quality concerns in the two basins and the effect of water quality changes on basin groundwater. The Final GMP should provide more detailed evaluations of water quality issues – i.e. limitations that may be imposed on groundwater basin management objectives due to high nitrates, TMDL listings, low dissolved oxygen levels, and other water quality concerns that have been described in other CCSD documents.

5) **Coordination and Planning:** The Draft GMP describes (at Section 3) a proposed Interagency Coordination and Collaboration Plan that includes a proposal to *Review and Identify Regulatory Updates and Any Recent Trends That May Require Related Groundwater Management Plan Updating*. We strongly recommend the Final GMP add a provision that coordination and planning will also evaluate the CCSD's conformity to **existing** regulatory requirements, including the following:

   - The County's North Coast Area Plan (NCAP) and its applicable provisions/standards and Combining Designations requirements, including areas of the groundwater basins subject to provisions applicable to *Geologic Study Area* (*GSA*) and *Flood Hazard* (*FH*) designations, and Sensitive Resource Areas (*SRAs*), Environmentally Sensitive Habitat –

[2] We understand that the CCSD's initial applications were for water rights of up to 798 acre-feet per year from the Santa Rosa watershed and up to 1230 acre-feet per year from the San Simeon watershed (including a maximum dry season diversion from San Simeon of no more than 370 acre-feet). When those applications expired several years ago, it is our understanding that the "perfected" amounts are now about 218 acre-feet per year in the Santa Rosa watershed and about 798 acre-feet in the San Simeon watershed. The available amount in the San Simeon watershed is further reduced by the above-referenced contractual obligation of the CCSD to provide approximately 205 acre-feet per year to a neighboring property.

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Coastal Creeks (*ESH-CC*), and Terrestrial Habitat (*TH*). The NCAP is a part of the County's LCP.

- NCAP Planning Area Standards (Chapter 7) Community Wide Standards.
- NCAP Cambria Programs 11a, which requires the CCSD to prepare an instream flow study before proposing any major water supply project that relies on additional water supplied by San Simeon Creek.
- LCP Coastal Plan ESHA policies, including LCP ESHA Policy 21, which requires that all development be compatible with continuance of stream habitat values.

Thank you for your attention to these comments. We are happy to help revise the GMP in response to these comments and we look forward to the interagency coordination anticipated by the GMP. Please contact me at 415-904-5248 or tluster@coastal.ca.gov if you have any questions.

Sincerely,

Tom Luster

Tom Luster
Senior Environmental Scientist

Cc: County of San Luis Obispo Public Works Department
Department of Water Resources – Planning and Local Assistance

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Bob Gresens

From: Michael Broadhurst <mdbroadhurst@att.net>
Sent: Saturday, October 24, 2015 7:50 PM
To: George Kendall; Monique Madrid; Bob Gresens
Subject: Re: Comments on CCSD's proposed Groundwater Management Plan

Thanks to George for his comments on the draft Groundwater Management Plan. I agree fully with his comments. This is a good plan. I have also reviewed selected sections of the draft plan. My comments are as follows:
1. I felt the conservation section was weak and did not mention positive measures that have been taken of which I am aware. Nonetheless, you know best what is required to meet the requirements of such a plan.
2. A steering committee sounds to be a good idea that includes relevant stakeholders. To be effective, however, it will need a strong commitment from staff and your Board. I served as an agricultural representative on a similar committee in Cambria a number of years ago and found a lack of commitment or interest made effective recommendations impossible.
3. I strongly feel that Cambria should make a commitment now to become the lead SGA for the two basins our community relies on for their water supply. I found no mention of SGMA in this report. Limited experience suggests there is a lack of understand of SGMA and its impact by staff and the Board. I know the deadlines for SGPs is 7 years off, but without a good approach process, Cambria will likely be left to devices of other agencies. As Chair of the US-LT RCD Board of Directors, I am currently leading an initiative for our agency to consider becoming an SGA.

Mike Broadhurst

On Saturday, October 24, 2015 3:40 PM, George Kendall <georgekendall01@gmail.com> wrote:

Dear Monique and Bob,

Attached please find a word document with my comments on the proposed groundwater management plan. I will likely be unable to attend the October 29 public workshop, but I appreciate your consideration of the comments.

Thank you,
George Kendall

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To:
M. Madrid
CCSD District Clerk
P O Box 65
Cambria, CA 93428

From:
George Kendall
4330 Santa Rosa Creek Rd.
Cambria, CA 93428
(805) 924-1008

Re: Draft of CCSD Groundwater Management Plan

To whom it concerns:

Thank you for posting the Cambria CSD's draft Groundwater Management Plan on your web site. The plan appears to be thorough and should be a good foundation for future management efforts.

I am encouraged by your intention to reach out to basin stakeholders. As a farmer in the Santa Rosa Creek Valley, I especially appreciate your inclusion of the county Farm Bureau and the Upper Salinas - Las Tablas Resource Conservation District in your list of organizations to solicit for inclusion in a multi-agency steering committee. You may also want to consider the Cattleman's Association and the Natural Resources Conservation Service.

Many of the farmers along Santa Rosa Creek are members of the Santa Rosa Creek Valley Groundwater Monitoring Cooperative for the purposes of monitoring groundwater quality to satisfy requirements of the RWQCB's Irrigated Agricultural Order (R3-2012-0011). We sample selected irrigation wells along the creek for several potential contaminants on a multi-year schedule. As co-leader of the cooperative, I can say that we will appreciate good communication with the CCSD regarding any groundwater quality issues or concerns along Santa Rosa Creek. The cooperative's contacts are George Kendall (924-1008) and Mike Broadhurst (924-1260).

The possibility of future groundwater recharge in the lower Santa Rosa Creek Valley, possibly using treated water, was mentioned in the plan. This possibility could both improve groundwater levels in the lower basin and have environmental benefits. I encourage you to pursue this idea as time and funding allow.

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One of your basic references is USGS Report 98-4061 covering the hydrology and related topics of the Santa Rosa and San Simeon basins. I have found this report to be an excellent source of information and analysis for these two groundwater basins.

Thank you for the opportunity to comment on the CCSD's draft groundwater management plan.

Sincerely,

George W. Kendall

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Appendix C

Plots of Historic Groundwater Elevations

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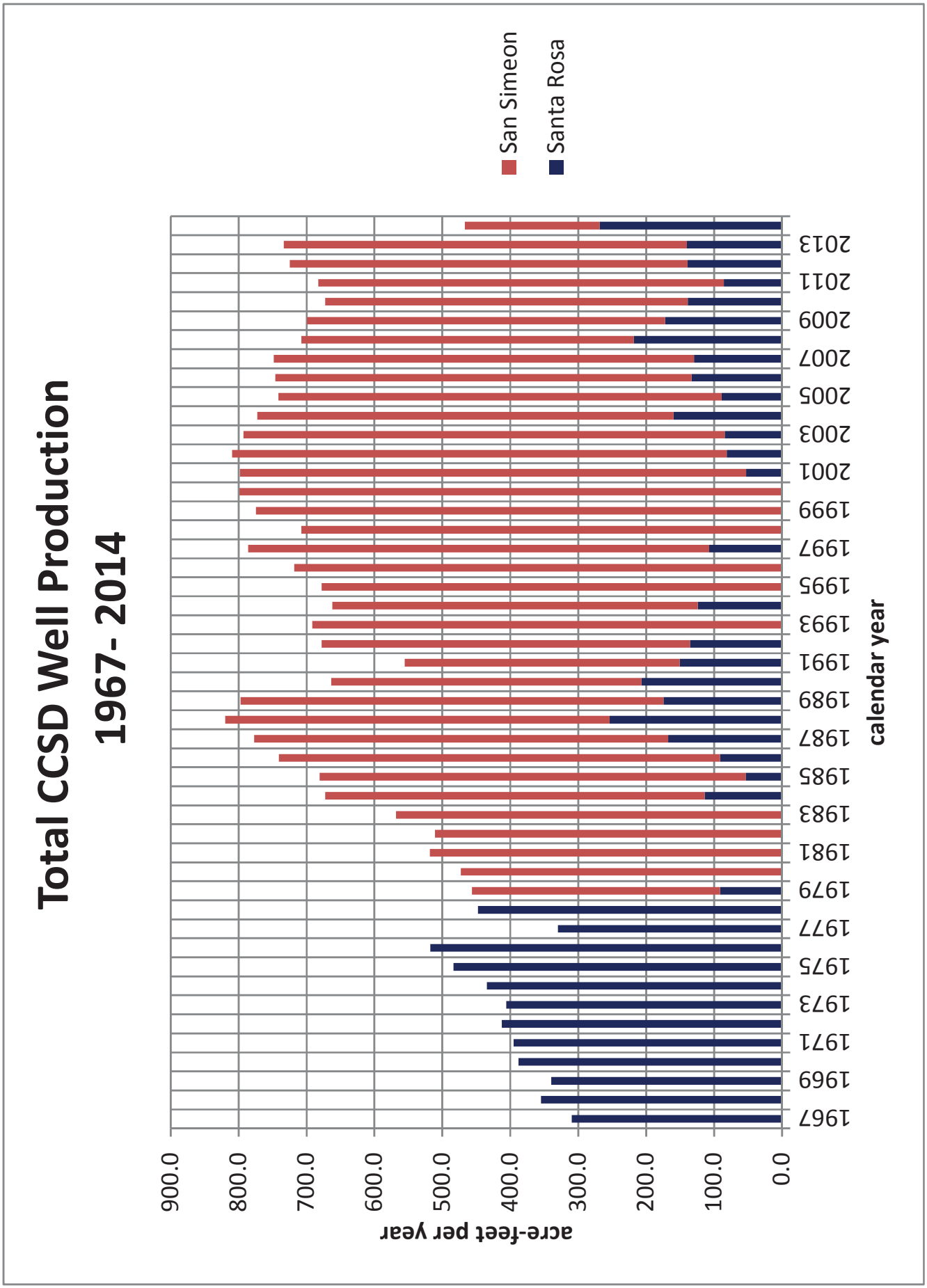

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2015

CAMBRIA COMMUNITY SERVICES DISTRICT
WATER PRODUCTION, BY SOURCE
ACRE-FEET

YEAR	SOURCE	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	1000.0 TOTAL	YEAR
	S.S.	51.20	57.90	63.20	47.30	57.40	44.20	50.00	51.70	41.90	37.40	27.40	36.00	565.60	
1988	S.R.	0.00	0.00	0.00	16.30	15.70	30.70	31.20	34.90	36.00	34.90	35.20	19.00	253.90	1988
	TOTAL	51.20	57.90	63.20	63.60	73.10	74.90	81.20	86.60	77.90	72.30	62.60	55.00	819.50	
	S.S.	51.00	47.90	53.90	61.90	57.20	62.20	69.20	60.90	36.30	38.70	42.60	40.60	622.40	
1989	S.R.	0.00	0.00	0.00	1.00	13.80	13.50	17.90	28.00	42.00	22.60	17.60	18.20	174.60	1989
	TOTAL	51.00	47.90	53.90	62.90	71.00	75.70	87.10	88.90	78.30	61.30	60.20	58.80	797.00	
	S.S.	45.70	47.00	55.28	44.75	31.46	32.34	40.00	38.00	31.91	31.40	29.40	29.90	457.14	
1990	S.R.	8.70	0.80	0.50	18.03	32.30	26.79	22.30	22.20	20.64	20.20	19.30	14.90	206.66	1990
	TOTAL	54.40	47.80	55.78	62.78	63.76	59.13	62.30	60.20	52.55	51.60	48.70	44.80	663.80	
	S.S.	26.90	23.10	32.70	39.60	48.60	44.10	40.10	34.80	30.50	28.00	26.40	30.10	404.90	
1991	S.R.	15.30	13.10	0.50	0.10	0.10	5.50	15.00	21.60	20.20	21.00	19.70	18.70	150.80	1991
	TOTAL	42.20	36.20	33.20	39.70	48.70	49.60	55.10	56.40	50.70	49.00	46.10	48.80	555.70	
	S.S.	45.30	42.20	45.90	55.20	64.00	58.10	44.90	41.80	35.00	32.80	34.00	43.10	542.30	
1992	S.R.	0.80	0.30	0.10	0.40	0.50	6.10	22.70	28.10	26.30	25.10	19.50	5.50	135.40	1992
	TOTAL	46.10	42.50	46.00	55.60	64.50	64.20	67.60	69.90	61.30	57.90	53.50	48.60	677.70	
	S.S.	50.10	45.70	52.60	56.30	68.30	68.80	68.10	69.80	59.80	56.10	51.40	43.50	690.50	
1993	S.R.	0.50	0.30	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.90	1993
	TOTAL	50.60	46.00	52.60	56.30	68.40	68.80	68.10	69.80	59.80	56.10	51.40	43.50	691.40	
	S.S.	47.00	38.60	48.60	52.00	54.60	63.40	69.30	47.80	31.70	30.80	28.20	26.00	538.00	
1994	S.R.	0.00	0.00	0.00	0.00	0.10	0.00	0.00	25.00	30.20	27.70	21.20	19.90	124.10	1994
	TOTAL	47.00	38.60	48.60	52.00	54.70	63.40	69.30	72.80	61.90	58.50	49.40	45.90	662.10	
	S.S.	41.30	41.10	47.10	52.14	53.50	59.00	74.70	74.10	65.40	64.70	55.30	47.60	675.94	
1995	S.R.	1.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.90	1995
	TOTAL	43.20	41.10	47.10	52.14	53.50	59.00	74.70	74.10	65.40	64.70	55.30	47.60	677.84	
	S.S.	46.66	43.40	47.39	56.95	66.18	70.83	75.70	77.27	68.23	65.58	50.37	49.43	717.99	
1996	S.R.	0.01	0.03	0.03	0.03	0.03	0.01	0.03	0.02	0.01	0.02	0.02	0.02	0.26	1996
	TOTAL	46.67	43.43	47.42	56.98	66.21	70.84	75.73	77.29	68.24	65.60	50.39	49.45	718.25	
	S.S.	50.61	49.20	65.66	68.65	76.18	79.14	82.31	57.02	37.32	27.50	38.96	45.96	678.51	
1997	S.R.	0.02	0.08	0.02	0.02	0.02	0.02	0.38	25.92	31.54	36.85	12.41	0.01	107.29	1997
	TOTAL	50.63	49.28	65.68	68.66	76.20	79.16	82.69	82.94	68.86	64.35	51.37	45.97	785.80	
	S.S.	44.39	46.36	47.00	50.53	56.43	63.43	77.75	80.30	68.35	66.58	54.06	52.13	707.31	
1998	S.R.	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.09	0.01	0.00	0.00	0.00	0.16	1998
	TOTAL	44.40	46.37	47.01	50.54	56.43	63.44	77.76	80.39	68.36	66.58	54.06	52.13	707.47	
	S.S.	56.40	45.26	52.16	57.40	70.43	71.35	85.41	82.68	69.45	68.04	57.78	57.69	774.05	
1999	S.R.	0.01	0.01	0.01	0.04	0.02	0.07	0.01	0.02	0.32	0.02	0.00	0.00	0.53	1999
	TOTAL	56.41	45.27	52.17	57.44	70.45	71.42	85.42	82.70	69.77	68.06	57.78	57.69	774.58	
	S.S.	56.41	50.43	55.27	65.40	70.84	73.60	85.00	84.68	73.30	65.60	58.49	59.80	798.82	
2000	S.R.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2000
	TOTAL	56.41	50.43	55.27	65.40	70.84	73.60	85.00	84.68	73.30	65.60	58.49	59.80	798.82	
	S.S.	56.16	48.05	55.92	60.69	73.30	77.51	85.01	78.50	53.45	56.21	48.16	52.29	745.25	
2001	S.R.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.78	21.08	16.87	8.06	0.89	52.68	2001
	TOTAL	56.16	48.05	55.92	60.69	73.30	77.51	85.01	84.28	74.53	73.08	56.22	53.18	797.93	
	S.S.	54.43	52.23	60.70	65.43	60.75	55.13	66.79	73.35	66.59	62.03	56.36	53.98	727.77	
2002	S.R.	1.28	1.27	1.10	1.11	14.82	22.79	19.54	9.67	3.52	4.02	2.04	0.55	81.71	2002
	TOTAL	55.71	53.50	61.80	66.54	75.57	77.92	86.33	83.02	70.11	66.05	58.40	54.53	809.48	
	S.S.	52.73	49.97	57.35	58.32	62.82	68.22	65.05	63.34	58.91	67.08	56.20	48.84	708.83	
2003	S.R.	0.70	1.11	0.48	0.94	1.84	5.63	19.77	22.04	16.00	6.58	3.12	5.84	84.05	2003
	TOTAL	53.43	51.08	57.83	59.26	64.66	73.85	84.82	85.38	74.91	73.66	59.32	54.68	792.88	
	S.S.	55.83	51.40	58.56	64.33	67.98	52.62	47.04	39.68	41.06	34.80	49.30	49.92	612.52	
2004	S.R.	0.00	0.61	1.17	4.84	8.68	22.08	30.80	36.30	27.32	24.95	1.73	1.63	160.11	2004
	TOTAL	55.83	52.01	59.73	69.17	76.66	74.70	77.84	75.98	68.38	59.75	51.03	51.55	772.63	
	S.S.	50.05	46.16	51.09	55.01	65.70	68.81	80.52	61.60	48.71	47.08	40.83	36.70	652.26	
2005	S.R.	0.00	0.62	0.93	0.76	0.76	0.73	1.64	17.32	20.25	21.69	16.92	7.36	88.98	2005
	TOTAL	50.05	46.78	52.02	55.77	66.46	69.54	82.16	78.92	68.96	68.77	57.75	44.06	741.24	
	S.S.	50.81	49.10	48.82	49.65	60.58	65.65	56.12	59.67	52.49	42.86	34.46	42.75	612.96	
2006	S.R.	0.00	0.78	0.00	0.62	0.74	2.56	23.58	20.72	20.17	23.88	26.46	13.63	133.14	2006
	TOTAL	50.81	49.88	48.82	50.27	61.32	68.21	79.70	80.39	72.66	66.74	60.92	56.38	746.10	
	S.S.	57.70	47.45	56.47	60.50	56.11	51.21	55.95	63.48	58.72	37.58	34.83	38.61	618.61	
2007	S.R.	0.00	0.00	0.60	1.81	14.47	22.24	23.47	12.37	5.29	18.70	21.20	9.42	129.57	2007
	TOTAL	57.70	47.45	57.07	62.31	70.58	73.45	79.42	75.85	64.01	56.28	56.03	48.03	748.18	
	S.S.	43.35	45.35	51.55	52.59	40.45	33.03	40.15	47.57	47.24	41.53	21.47	25.41	489.69	
2008	S.R.	2.33	0.67	0.71	2.20	24.69	33.55	32.94	24.87	18.26	21.03	32.21	24.46	217.92	2008
	TOTAL	45.68	46.02	52.26	54.79	65.14	66.58	73.09	72.44	65.50	62.56	53.68	49.87	707.61	
	S.S.	28.17	37.57	50.95	58.52	48.56	37.47	48.80	40.69	31.99	44.62	53.05	46.55	526.94	
2009	S.R.	24.83	3.81	0.00	0.00	13.53	26.06	25.21	34.10	32.64	11.02	0.00	1.34	172.54	2009
	TOTAL	53.00	41.38	50.95	58.52	62.09	63.53	74.01	74.79	64.63	55.64	53.05	47.89	699.48	
	S.S.	45.44	40.48	47.48	48.39	56.26	55.29	50.73	44.58	35.05	37.61	36.14	36.45	533.90	
2010	S.R.	0.00	0.00	0.77	0.62	0.68	8.74	21.96	27.30	32.52	21.71	14.48	9.73	138.51	2010
	TOTAL	45.44	40.48	48.25	49.01	56.94	64.03	72.69	71.88	67.57	59.32	50.62	46.18	672.41	
	S.S.	48.05	43.36	45.17	52.11	53.94	49.27	60.52	55.52	45.40	45.67	46.28	51.87	597.16	
2011	S.R.	0.00	0.70	0.00	0.76	6.65	11.03	12.97	14.82	19.45	14.15	5.19	0.00	85.72	2011
	TOTAL	48.05	44.06	45.17	52.87	60.59	60.30	73.49	70.34	64.85	59.82	51.47	51.87	682.88	
	S.S.	50.12	48.09	52.60	50.52	60.06	56.53	48.17	41.12	36.72	42.22	48.70	50.88	585.73	
2012	S.R.	3.54	0.79	0.00	0.66	1.44	11.14	27.95	33.22	29.98	21.43	8.86	0.00	139.01	2012
	TOTAL	53.66	48.88	52.60	51.18	61.50	67.67	76.12	74.34	66.70	63.65	57.56	50.88	724.74	
	S.S	51.09	47.40	54.72	55.27	63.18	46.01	60.82	72.32	57.73	29.84	26.72	28.61	593.70	
2013	S.R.	0.00	0.00	0.00	4.27	5.28	27.57	18.12	3.50	7.62	22.56	25.38	25.61	139.91	2013
	TOTAL	51.09	47.40	54.72	59.54	68.45	73.58	75.82	75.82	65.41	52.40	52.11	54.22	733.61	
	S.S	22.93	16.97	24.90	25.03	19.39	14.40	11.94	0.00	0.76	24.32	13.74	23.81	198.17	
2014	S.R.	34.69	19.85	10.00	10.44	18.88	24.19	30.89	43.09	36.26	12.06	18.63	9.62	268.59	2014
	TOTAL	57.62	36.82	34.90	35.04	38.27	41.02	42.82	43.09	37.01	36.37	32.36	33.44	466.76	
	S.S	19.95	16.65	17.16	17.79	16.18	14.14	15.14	17.39	20.36	26.17			180.91	
2015	S.R.	14.77	14.90	20.53	20.68	20.99	26.51	29.51	27.78	21.94	16.05			213.66	2015
	AWTP									3.03	8.97			12.00	
	TOTAL	34.72	31.55	37.69	38.47	37.17	40.65	44.65	45.17	42.30	42.22			394.57	
	DIFFERENCE	-22.91	-5.27	2.79	3.43	-1.10	-0.37	1.83	2.08	5.29	5.85	-19.74	-20.79	-72.19	

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Example Cambria CSD Well Levels Summary

11/2/15

CAMBRIA COMMUNITY SERVICES DISTRICT
WELL WATER LEVELS FOR 11/2/15

Well Code	Distance Ref. Point to Water Level	Reference Point Distance Above Sea Level	Depth of Water to Sea Level	Remarks
		SANTA ROSA CREEK WELLS		
23R	45.61	83.42	37.81	
SR4	43.08	82.00	38.92	
SR3	32.40	54.30	21.90	
SR1	23.06	46.40	23.34	
RP#1	23.22	46.25	23.03	
RP#2		33.11		Not Read
21R3	9.16	12.88	3.72	37892
WBE	12.95	16.87	3.92	
WBW	13.25	17.02	3.77	

AVERAGE LEVEL OF CCSD SANTA ROSA WELLS SR1 & SR3 = 22.62 FEET
CCSD SANTA ROSA WELL SR4 = 38.92 FEET

		SAN SIMEON CREEK WELLS		
16D1	6.69	11.36	4.67	
MW4	11.10	15.95	4.85	
MW1	23.11	42.11	19.00	
MW2	22.10	38.10	16.00	
MW3	29.30	49.56	20.26	
9M1	34.50	65.63	31.13	
9P2	13.95	19.11	5.16	
9P7	11.81	20.69	8.88	
9L1	18.00	27.33	9.33	
RIW	17.28	25.41	8.13	
SS4	17.91	25.92	8.01	**SS4 to 9P2 Gradient = + 2.85**
MIW	19.70	29.89	10.19	
SS3	23.03	33.73	10.70	
SS2	22.71	33.16	10.45	
SS1	22.57	32.37	9.80	
11B1	50.80	105.43	54.63	
11C1	44.29	98.20	53.91	
PFNW		93.22		Not Read
10A1	43.41	78.18	34.77	
10G2	32.81	62.95	30.14	
10G1	30.79	59.55	28.76	
10F2	38.96	66.92	27.96	
10M2	34.65	55.21	20.56	
9J3	26.81	43.45	16.64	

AVERAGE LEVEL OF CCSD SAN SIMEON WELLS SS1,SS2 & SS3 = 10.32 FEET

Red Font are the CCSD's Production Wells, as measured on 11/2/15
Reference point on 16d1,miw1,miw2,miw3,9p7,riw,miw1,ss1,ss2 and ss3 updated 2/17/2015

Example Cambria CSD
Santa Rosa Creek Well Levels Plot

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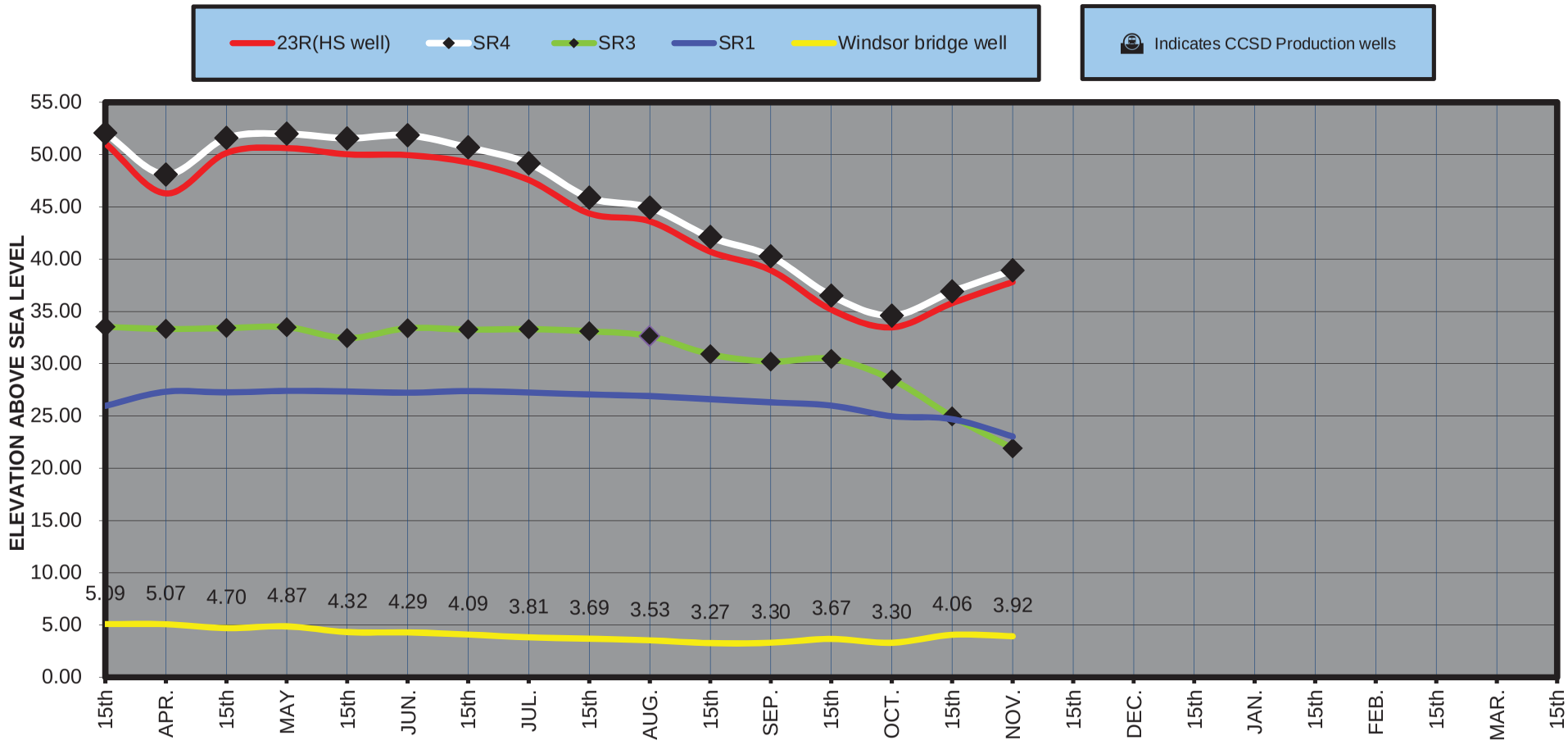
SANTA ROSA CREEK WELL LEVELS
March 15th, 2015 - Current



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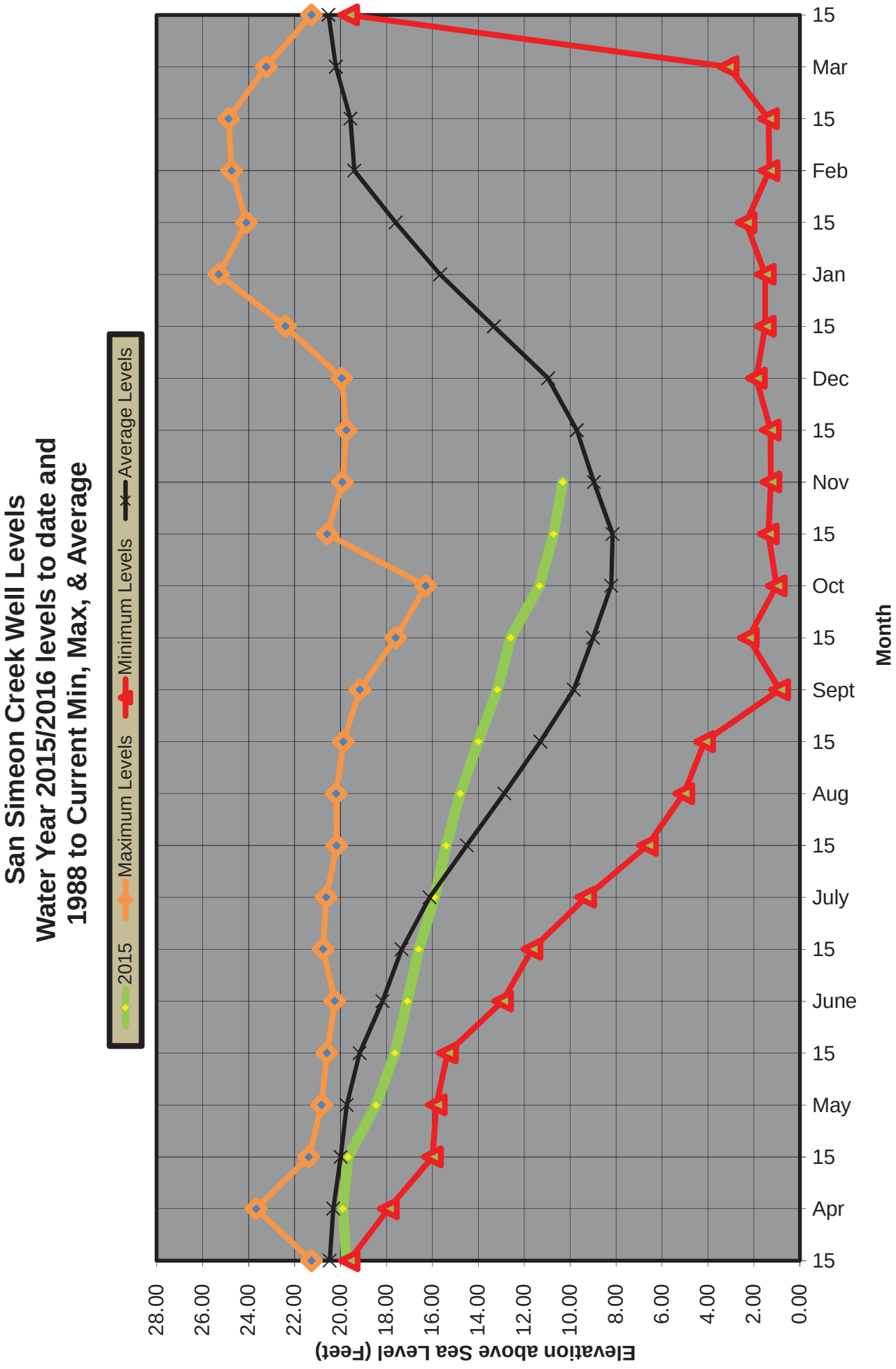

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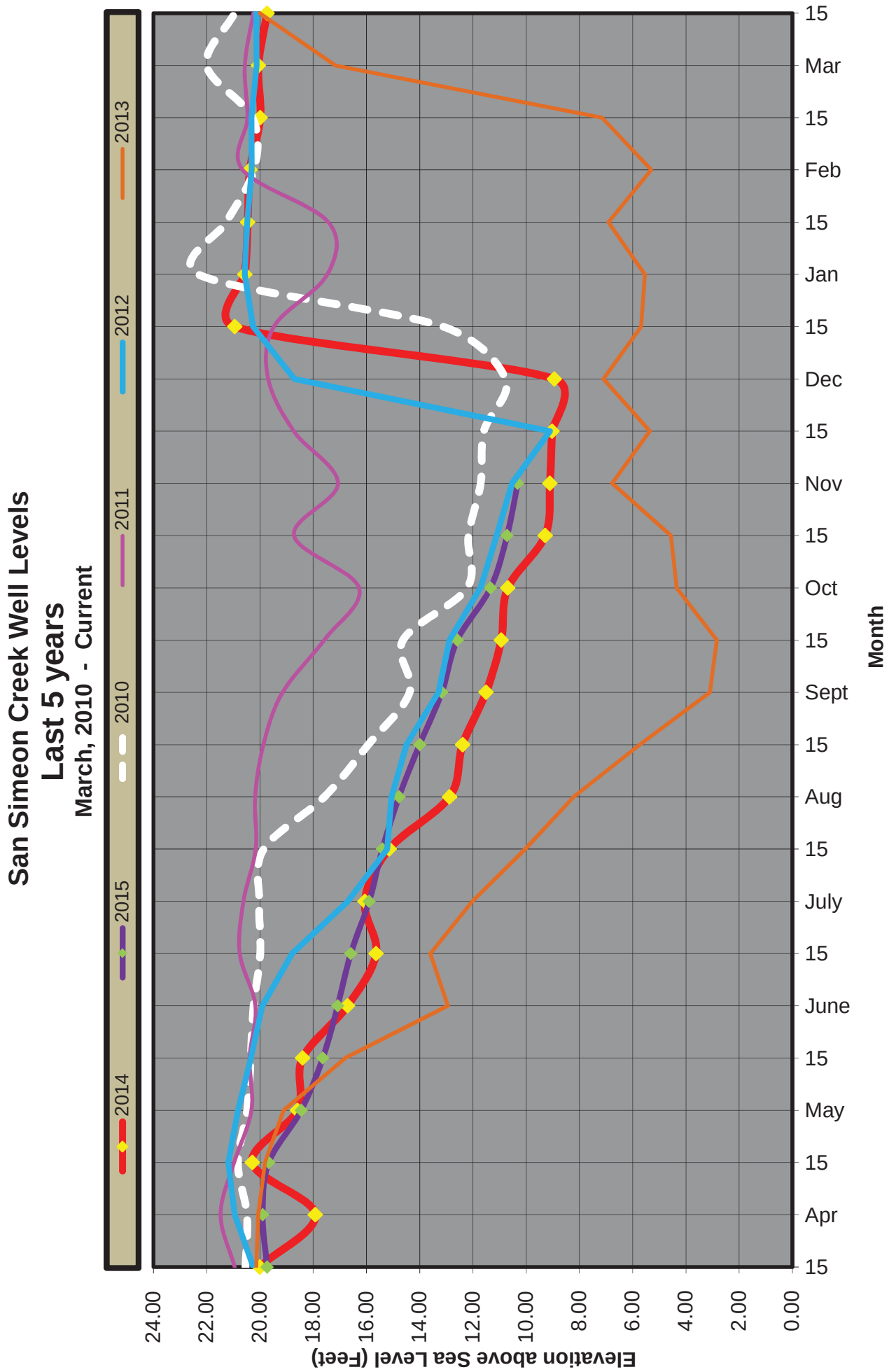

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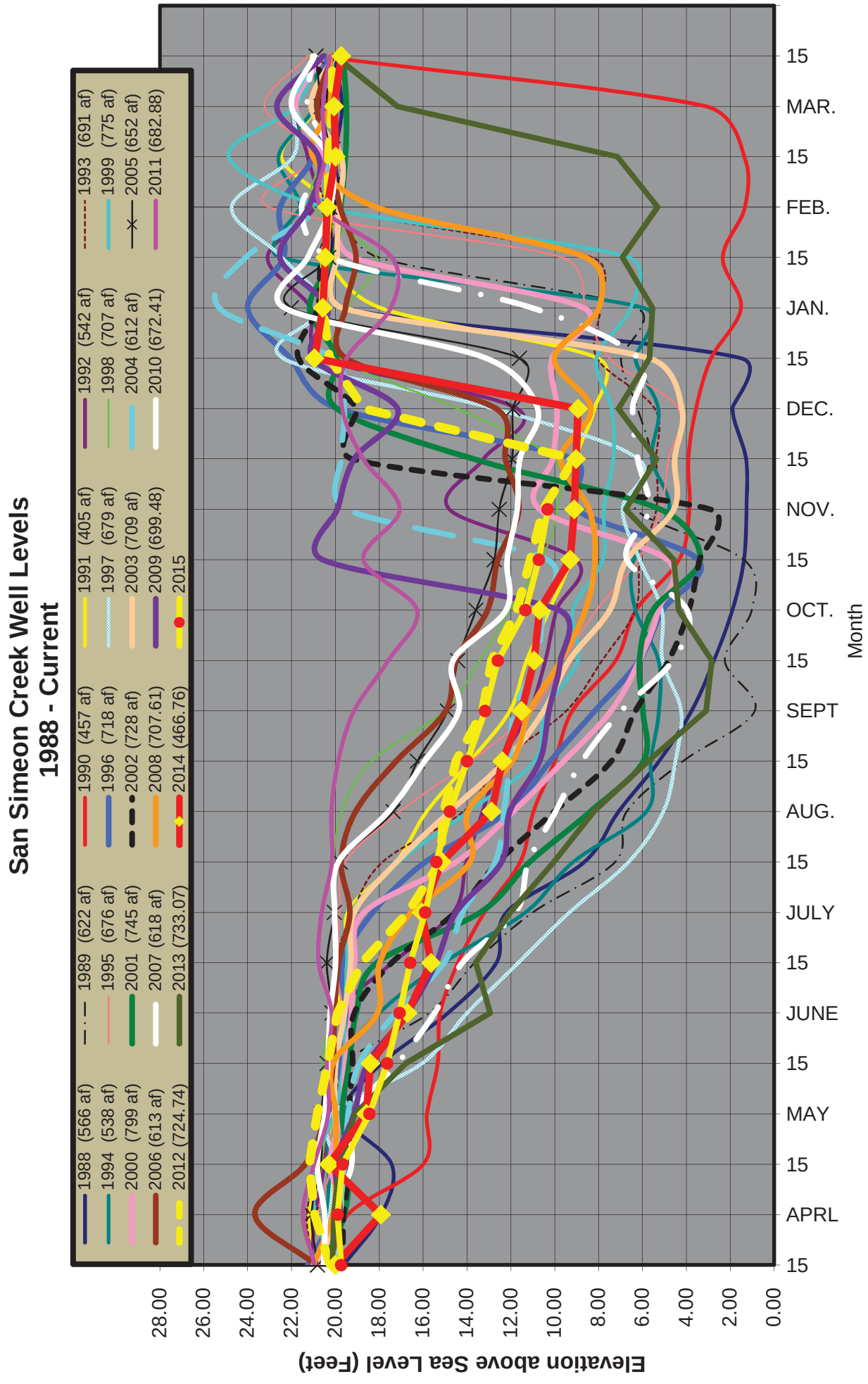

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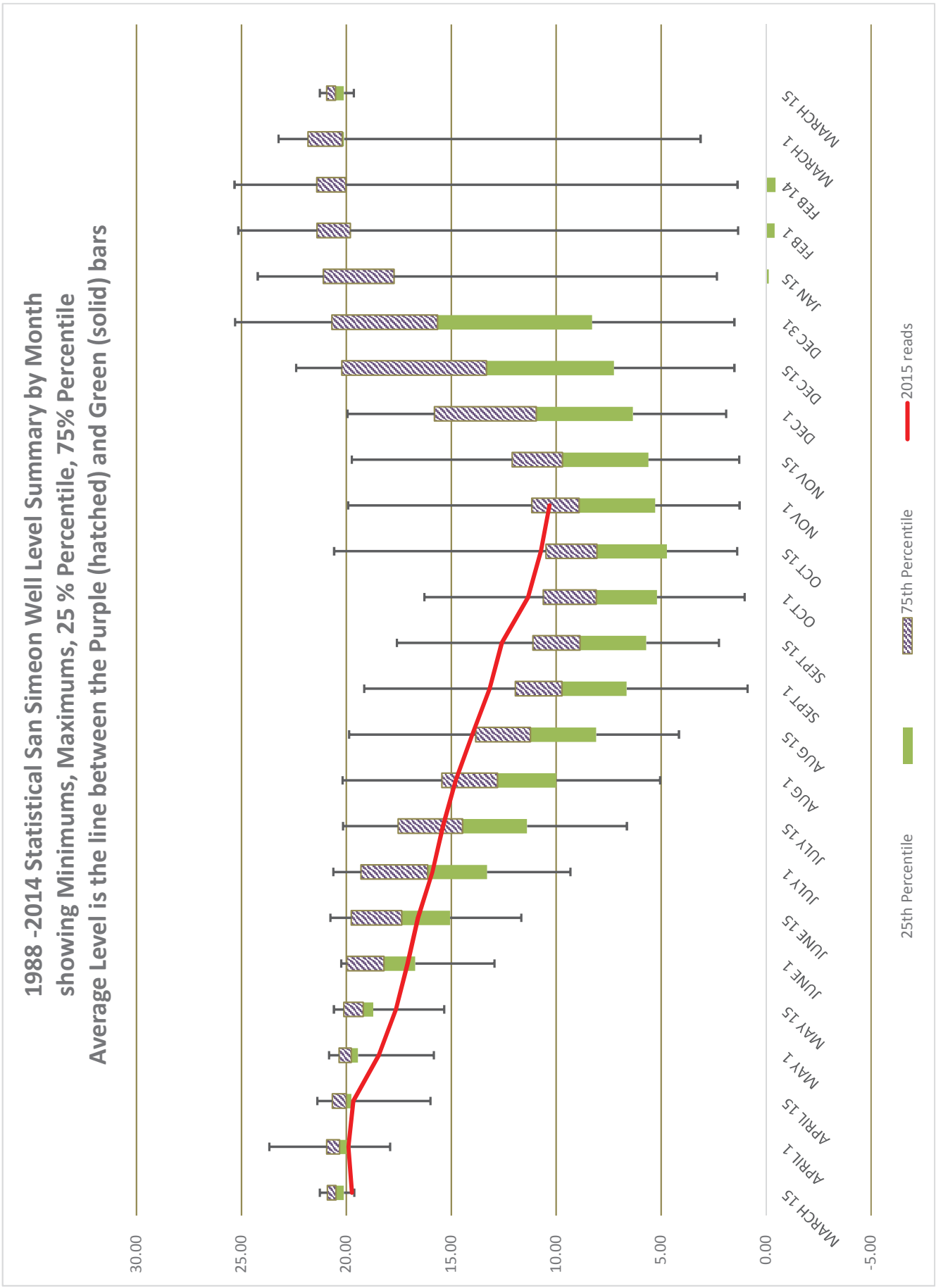

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Appendix D

Section 18 – Proposed Monitoring and Reporting Program of the Operations, Maintenance, and Monitoring Program for the Cambria Emergency Water Supply Program

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Prepared by:

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Operations, Maintenance and Monitoring Plan for the Cambria Emergency Water Supply Project

REVISED FINAL

Prepared for:

Cambria Community Services District
1316 Tamson Street
Cambria, California 93428

CDM Smith Project No. 138760-104133

January 6, 2015

Docusign Envelope ID: CD1B5FD8-CD5C-8D03-8169-6EA25443FA19

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Section 18

PROPOSED MONITORING AND REPORTING PROGRAM

18.1 AWTP Monitoring

18.1.1 General Monitoring Provisions

The CCSD will monitor the flow and quality of the following according to the manner and frequency specified in this MRP:

- Influent to the AWTP;
- AWTP product water;
- Receiving groundwater (monitoring well specified in Section 2); and,
- For the production wells nearest to the injection well, as identified in Section 2, the CCSD will review and evaluate the publicly available Title 22 monitoring data.

Monitoring reports will include, but not limited to, the following:

- Analytical results;
- Location of each sampling station where representative samples are obtained, including a map, at a scale of 1 inch equals 1,200 feet or less, that clearly identifies the locations of all injection wells, monitoring wells, and production wells;
- Analytical test methods used and the corresponding minimum reporting levels (MRLs);
- Name(s) of the laboratory, which conducted the analyses;
- Copy of laboratory certifications by the DDW's Environmental Laboratory Accreditation Program (ELAP); and,
- Quality assurance and control information, including documentation of chain of custody.

The CCSD will instruct its laboratories to establish calibration standards so that the MRLs (or its equivalent if there is a different treatment of samples relative to calibration standards) are the lowest calibration standard.

Upon request by the CCSD, the RWQCB, in consultation with the DDW Quality Assurance Program, may establish minimum reporting limits (MRLs), in any of the following situations:

- When the pollutant has no established method under 40 CFR 141,
- When the method under 40 CFR 14,1 in the Code of Federal Regulations, for the pollutant has a MRL higher than the limit specified in the amended WDR/WRR, or

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- When the CCSD agrees to use a test method that is more sensitive than those specified in 40 CFR Part 141.

For regulated constituents, the laboratory conducting the analyses will be certified by ELAP or approved by the RWQCB, or the DDW, for a particular pollutant or parameter.

Samples will be analyzed within allowable holding time limits as specified in 40 CFR Part 141. All QA/QC analyses will be run on the same dates that samples are actually analyzed. The CCSD will retain the QA/QC documentation in its files and make available for inspection and/or submit them when requested by the RWQCB, or the DDW. Proper chain of custody procedures will be followed and a copy of this documentation will be submitted with the quarterly report.

For all bacterial analyses, sample dilutions will be performed so the range of values extends from 1 to 800. The detection methods used for each analysis will be reported with the results of the analyses.

Quarterly monitoring for effluent and groundwater will be performed during the months of February, May, August, and November, provided the Emergency Water Supply is in operation or has been operated within the previous two months. Semiannual monitoring for effluent will be performed during the months of February and August. Semiannual monitoring for groundwater will be performed during the months of May and November. Should there be instances when monitoring could not be done during these specified months, the CCSD will conduct the monitoring as soon as it can and state the reason in the monitoring report the reason that the monitoring could not be conducted during the specified month. Results of quarterly analyses will be reported in the quarterly monitoring report following the analysis.

For unregulated chemical analyses, the CCSD will select methods according to the following approach:

- Use drinking water methods, if available,
- Use DDW-recommended methods for unregulated chemicals, if available,
- If there is no DDW-recommended drinking water method for a chemical, and more than a single USEPA-approved method is available, use the most sensitive of the USEPA-approved methods, or
- If there is no USEPA-approved method for a chemical, and more than one method is available from the scientific literature and commercial laboratory, after consultation with DDW, use the most sensitive method.

18.1.2 Influent Monitoring

Influent monitoring will be conducted to determine compliance with water quality conditions and standards and to assess AWTP performance. The date and time of sampling will be reported with the analytical values determined. Sampling of plant influent will only be conducted during weeks, months, or quarters when the facility is operational. **Table 18-1** constitutes the influent monitoring program:

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Table 18-1: Influent Monitoring (Order No. R3-2014-0050, Table M-2)

Constituents	Units	Type of Sample	Minimum Frequency of Analysis
Total Flow	mgd	Recorder	Continuous [1]
pH	pH units	Recorder	Continuous
Turbidity	NTU	Recorder	Continuous [1]
Ammonia-N	mg/L	Grab	Weekly
BOD_5	mg/L	24-hour Composite	Weekly
Boron	mg/L	Grab	Weekly
Chloride	mg/L	24-hour Composite	Weekly
Nitrate-N	mg/L	Grab	Weekly
Nitrite-N	mg/L	Grab	Weekly
Nitrate plus Nitrate	mg/L	Grab	Weekly
Sodium	mg/L	24-hour Composite	Weekly
Sulfate	mg/L	Grab	Weekly
Total Suspended Solids	mg/L	24-hour Composite	Weekly
Total Coliform	mg/L	Grab	Weekly
Total Dissolved Solids	mg/L	24-hour Composite	Weekly
Total Kjeldahl Nitrogen-N	mg/L	Grab	Weekly
Total Nitrogen [2]	mg/L	Grab	Weekly
TOC	mg/L	24-hour Composite	Weekly

[1] For those pollutants that are continuously monitored, the CCSD shall report the monthly minimum and maximum, and daily average values.
[2] Total Nitrogen includes nitrate-N, nitrite-N, ammonia-N, and organic-N.

18.1.3 AWTP Product Water Monitoring

Product water monitoring will be implemented to:

- Determine compliance with conditions contained in Order No. R3-2014-0050;
- Identify operational problems and aid in improving facility performance; and,
- Provide information on product water characteristics and flows for use in interpreting water quality and biological data.

Tables 18-2 through 18-12 constitute the proposed AWTP product water monitoring program, consistent with the GWR Regulations published on June 18, 2014 and the DDW's Recycled Water Policy amended on January 22, 2013. Sampling of plant product water will only be conducted during weeks, months, or quarters when the facility is operational. Some parameters include increased monitoring frequency during the first one or two years of operation.

In keeping with the current practice, product water samples will be collected from the channel downstream of the sodium hypochlorite injection point. Should the need for a change in the sampling station(s) arises in the future, the CCSD will seek approval of the proposed station by the RWQCB Executive Officer prior to use.

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Table 18-2: AWTP Product Water Monitoring (Order No. R3-2014-0050, Table M-4)

Constituent/Parameters	Units	Type of Sample	Minimum Frequency of Analysis [1]
Total Recycled Water Flow	mgd	Metered	Continuous
pH	pH units	Metered	Continuous
Turbidity	NTU	Metered	Continuous
Conductivity [2]	mmho/cm	Metered	Continuous
Free residual chlorine	mg/L	Metered	Continuous
Total Coliform	MPN/100 ml	Grab	Daily
TOC	mg/L	Grab	Weekly
Temperature	°C	Metered	Continuous
Total Nitrogen	mg/L	24-hour comp or grab	Twice per week at least 3 days apart [3]
Ammonia-N	mg/L	Grab	Weekly
Nitrate-N	mg/L	Grab	Weekly
Nitrite-N	mg/L	Grab	Weekly
Nitrate plus Nitrate	mg/L	Grab	Weekly
Total Kjeldahl Nitrogen-N	mg/L	Grab	Weekly
Inorganics with primary MCLs [4]	mg/L	Grab	Quarterly
Constituents/parameters with secondary MCL [5]	various	Grab	Quarterly
Radioactivity [6],[14]	pci/L	Grab	Monthly for first 12 consecutive months
Regulated organic chemicals [7],[14]	µg/L	Grab	Monthly for first 12 consecutive months
Disinfection byproducts [8],[14]	µg/L	Grab	Monthly for first 12 consecutive months
General physical [9]	various	Grab	Quarterly
General minerals [9]	µg/L	Grab	Quarterly
Constituents with Notification Levels [10],[14]	µg/L	Grab	Monthly for first 12 consecutive months
Remaining priority pollutants [11]	µg/L	Grab	Annually
Constituents of Emerging Concerns (CECs) [12]	ng/L	Grab	Varies
Surrogates [13]	Varies	Varies	Varies

[1] For those pollutants that are continuously monitored, the CCSD shall report the monthly minimum and maximum, and daily average values.
[2] Monitor the effluent of each RO unit (Stage 1 and 2) and the third stage RO unit (Stage 3). Report the average and maximum conductivity from the effluent of each unit daily.
[3] If no problem is detected, analysis of nitrogen can be reduced to weekly after 12 months of data collection.
[4] For specific constituents to be monitored and their monitoring frequency, refer to Table 18-3 (Order No. R3-2014-0050, Table M-5).
[5] For specific constituents to be monitored and their monitoring frequency, refer to Table 18-4 (Order No. R3-2014-0050, Table M-6).
[6] For specific constituents to be monitored and their monitoring frequency, refer to Table 18-5 (Order No. R3-2014-0050, Table M-7).
[7] For specific constituents to be monitored and their monitoring frequency, refer to Table 18-6 (Order No. R3-2014-0050, Table M-8).
[8] For specific constituents to be monitored and their monitoring frequency, refer to Table 18-7 (Order No. R3-2014-0050, Table M-9).
[9] For specific constituents to be monitored and their monitoring frequency, refer to Table 18-8 (Order No. R3-2014-0050, Table M-10).
[10] For specific constituents to be monitored and their monitoring frequency, refer to Table 18-9 (Order No. R3-2014-0050, Table M-11).
[11] For specific constituents to be monitored and their monitoring frequency, refer to Table 18-10 (Order No. R3-2014-0050, Table M-12).
[12] For specific constituents to be monitored and their monitoring frequency, refer to Table 18-11 (Order No. R3-2014-0050, Table M-13).
[13] For specific constituents to be monitored and their monitoring frequency, refer to Table 18-12 (Order No. R3-2014-0050, Table M-14).
[14] Each month, the CCSD shall collect samples (grab or composite) representative of the effluent of the advanced treatment process and have the samples analyzed for contaminants having MCLs and notification levels (NLs). After 12 consecutive months with no results exceeding an MCL or NL, the CCSD may apply for a reduced monitoring frequency. The reduced monitoring frequency shall be no less than quarterly. The effluent of the advanced treatment process shall not exceed an MCL or NL.

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Table 18-3: Inorganics with Primary MCLs (Order No. R3-2014-0050, Table M-5)

Constituents		
Aluminum	Beryllium	Nickel
Antimony	Cadmium	Nitrite (as nitrogen)
Arsenic	Chromium	Selenium
Asbestos	Cyanide	Thallium
Barium	Mercury	Fluoride

Type of Sample: Grab
Monitoring Frequency: Quarterly

Table 18-4: Constituents/parameters with secondary MCL (Order No. R3-2014-0050, Table M-6)

Constituents		
Aluminum	Iron	Silver
Copper	Manganese	Thiobencarb
Corrosivity	Methyl-tert-butyl-ether (MTBE)	Turbidity
Foam Agents (MBAS)	Odor - Threshold	Zinc

Type of Sample: Grab
Monitoring Frequency: Quarterly

Table 18-5: Radioactivity (Order No. R3-2014-0050, Table M-7)

Constituent		
Gross Alpha Particle Activity (Including Radium-226 but Excluding Radon and Uranium)	Combined Radium-226 and Radium-228	Tritium
Gross Beta Particle Activity	Strontium-90	Uranium

Type of Sample: Grab
Monitoring Frequency: Monthly. Each month, the CCSD shall collect samples (grab) representative of the effluent of the advanced treatment process and have the samples analyzed for contaminants having MCLs and notification levels (NLs). After 12 consecutive months with no results exceeding an MCL or NL, the CCSD may apply for a reduced monitoring frequency. The reduced monitoring frequency shall be no less than quarterly. The effluent of the advanced treatment process shall not exceed an MCL or NL.

Table 18-6: Regulated Organics (Order No. R3-2014-0050, Table M-8)

Constituents		
(a) Volatile Organic Chemicals	1,1,1-Trichloroethane	Endothall
Benzene	1,1,2-Trichloroethane	Endrin
Carbon Tetrachloride (CTC)	Trichloroethylene (TCE)	Ethylene Dibromide (EDB)
1,2-Dichlorobenzene	Trichlorofluoromethane	Glyphosate
1,4-Dichlorobenzene	1,1,2-Trichloro-1,2,2-Trifluoroethane	Heptachlor
1,1-Dichloroethane	Vinyl Chloride	Heptachlor Epoxide
1,2-Dichloroethane (1,2-DCA)	Xylenes (m,p)	Hexachlorobenzene
1,1-Dichloroethene (1,1-DCE)	**(b) Non-Volatile synthetic Organic Constituents**	Hexachlorocyclopentadiene
Cis-1,2-Dichloroethylene	Alachlor	Lindane
Trans-1,2-Dichloroethylene	Atrazine	Methoxychlor
Dichloromethane	Bentazon	Molinate
1,2-Dichloropropane	Benzo(a)pyrene	Oxamyl
1,3-Dichloropropene	Carbofuran	Pentachlorophenol
Ethylbenzene	Chlordane	Picloram

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Table 18-6: Regulated Organics (Order No. R3-2014-0050, Table M-8)

Constituents		
Methyl-tert-butyl-ether (MTBE)	2,4-D	Polychlorinated Biphenyls
Monochlorobenzene	Dalapon	Simazine
Styrene	1,2-Dibromo-3-chloropropane (DBCP)	Thiobencarb
1,1,2,2-Tetrachloroethane	Di(2-ethylhexyl)adipate	Toxaphene
Tetrachloroethylene (PCE)	Di(2-ethylhexyl)phthalate	2,3,7,8-TCDD (Dioxin)
Toluene	Dinoseb	2,4,5-TP (Silvex)
1,2,4-Trichlorobenzene	Diquat	

Type of Sample: 24-hour Composite
Monitoring Frequency: Monthly. Each month, the CCSD shall collect samples (24-hour composite) representative of the effluent of the advanced treatment process and have the samples analyzed for contaminants having MCLs and notification levels (NLs). After 12 consecutive months with no results exceeding an MCL or NL, the CCSD may apply for a reduced monitoring frequency. The reduced monitoring frequency shall be no less than quarterly. The effluent of the advanced treatment process shall not exceed an MCL or NL.

Table 18-7: Disinfection Byproducts (Order No. R3-2014-0050, Table M-9)

Constituent		
Total Trihalomethanes (TTHM)	Haloacetic acid (five) (HAA5)	Bromate
Bromodichloromethane	Monochloroacetic acid	Chlorite
Bromoform	Dichloroacetic acid	
Chloroform	Trichloroacetic acid	
Dibromochloromethane	Monobromoacetic acid	
	Dibromoacetic acid	

Type of Sample: 24-hour Composite
Monitoring Frequency: Monthly. Each month, the CCSD shall collect samples (24-hour composite) representative of the effluent of the advanced treatment process and have the samples analyzed for contaminants having MCLs and notification levels (NLs). After 12 consecutive months with no results exceeding an MCL or NL, the CCSD may apply for a reduced monitoring frequency. The reduced monitoring frequency shall be no less than quarterly. The effluent of the advanced treatment process shall not exceed an MCL or NL.

Table 18-8: General Physical and General Minerals (Order No. R3-2014-0050, Table M-10)

Constituents		
Asbestos	Potassium	Foaming Agents
Calcium	Sodium	Odor
Chloride	Sulfate	Specific Conductance
Copper	Zinc	Total Dissolved Solids
Iron	Color	Total Hardness
Manganese	Corrosivity	

Type of Sample: Grab.
Monitoring Frequency: Quarterly

Table 18-9: Constituents with Notification Levels (Order No. R3-2014-0050, Table M-11)

Constituents	Units	Type of Sample	Minimum Frequency of Analysis [1]
Boron	µg/L	Grab	Quarterly
n-Butylbenzene	µg/L	Grab	Annually
sec-Butylbenzene	µg/L	Grab	Annually
tert-Butylbenzene	µg/L	Grab	Annually
Carbon disulfide	µg/L	Grab	Quarterly

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Table 18-9: Constituents with Notification Levels (Order No. R3-2014-0050, Table M-11)

Constituents	Units	Type of Sample	Minimum Frequency of Analysis [1]
Chlorate	µg/L	Grab	Quarterly
2-Chlorotoluene	µg/L	Grab	Annually
4-Chlorotoluene	µg/L	Grab	Annually
Diazinon	µg/L	Grab	Annually
Dichlorodifluoromethane (Freon 12)	µg/L	Grab	Annually
1,4-Dioxane	µg/L	Grab	Quarterly
Ethylene glycol	µg/L	Grab	Annually
Formaldehyde	µg/L	Grab	Annually
HMX	µg/L	Grab	Annually
Isopropylbenzene	µg/L	Grab	Annually
Manganese	µg/L	Grab	Quarterly
Methyl isobutyl ketone (MIBK)	µg/L	Grab	Annually
Naphthalene	µg/L	Grab	Annually
n-Nitrosodiethyamine (NDEA)	µg/L	Grab	Annually
n-Nitrosodimethylamine (NDMA)	µg/L	Grab	Quarterly
n-Nitrosodi-n-propylamine (NDPA)	µg/L	Grab	Annually
Propachlor	µg/L	Grab	Annually
n-Propylbenzene	µg/L	Grab	Annually
RDX	µg/L	Grab	Annually
Tertiary butyl alcohol (TBA)	µg/L	Grab	Quarterly
1,2,3-Trichloropropane (1,2,3-TCP)	µg/L	Grab	Annually
1,2,4-Trimethylbenzene	µg/L	Grab	Annually
1,3,5-Trimethylbenzene	µg/L	Grab	Annually
2,4,6-Trinitrotoluene (TNT)	µg/L	Grab	Annually
Vanadium	µg/L	Grab	Annually

[1] Monitoring Frequency: Monthly. Each month, the CCSD shall collect samples (24-hour composite) representative of the effluent of the advanced treatment process and have the samples analyzed for contaminants having MCLs and notification levels (NLs). After 12 consecutive months with no results exceeding an MCL or NL, the CCSD may apply for a reduced monitoring frequency. The reduced monitoring frequency shall be no less than quarterly. The effluent of the advanced treatment process shall not exceed an MCL or NL.

Table 18-10: Remaining Priority Pollutants (Order No. R3-2014-0050, Table M-12)

Constituents		
Pesticides	**Metals**	Di-n-butyl phthalate
Aldrin	Chromium III	Di-n-octyl phthalate
Dieldrin	Chromium VI	Diethyl phthalate
4,4'-DDT	**Base/Neutral Extractibles**	Dimethyl phthalate
4,4'-DDE	Acenaphthene	Benzo(a)anthracene
4,4'-DDD	Benzidine	Benzo(a)fluoranthene
Alpha-endosulfan	Hexachloroethane	Benzo(k)fluoranthene
Beta-endosulfan	Bis(2-chloroethyl)ether	Chrysene
Endosulfan sulfate	2-chloronaphthalene	Acenaphthylene
Endrin aldehyde	1,3-dichlorobenzene	Anthracene
Alpha-BHC	3,3'-dichlorobenzidine	1,12-benzoperylene
Beta-BHC	2,4-dinitrotoluene	Fluorene

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Table 18-10: Remaining Priority Pollutants (Order No. R3-2014-0050, Table M-12)

Constituents		
Delta-BHC	2,6-dinitrotoluene	Phenanthrene
Acid Extractibles	1,2-diphenylhydrazine	1,2,5,6-dibenzanthracene
2,4,6-trichlorophenol	Fluoranthene	Indeno(1,2,3-cd)pyrene
P-chloro-m-cresol	4-chlorophenyl phenyl ether	Pyrene
2-chlorophenol	4-bromophenyl phenyl ether	**Volatile Organics**
2,4-dichlorophenol	Bis(2-chloroisopropyl)ether	Acrolein
2,4-dimethylphenol	Bis(2-chloroethoxyl)methane	Acrylonitrile
2-nitrophenol	Hexachlorobutadiene	Chlorobenzene
4-nitrophenol	Isophorone	Chloroethane
2,4-dinitrophenol	Nitrobenzene	1,1-dichloroethylene
4,6-dinitro-o-cresol	N-nitrosodiphenylamine	Methyl chloride
Phenol	Bis(2-ethylhexyl)phthalate	Methyl bromide
	Butyl benzyl phthalate	2-chloroethyl vinyl ether

Type of Sample: Grab
Monitoring Frequency: Annually

Table 18-11: Constituents of Emerging Concern (Order No. R3-2014-0050, Table M-13)

Constituents	Relevance/ Indicator Type	Type of Sample	Minimum Frequency of Analysis	Reporting Limit (µg/L)	Monitoring Locations [1]	
					Prior to RO	Following Treatment Prior to Well Injection
17β-estradiol	Health	Grab	Annually	0.001		X
Caffeine	Health & Performance	Grab	Annually	0.05	X	X
NDMA	Health & Performance	Grab	Quarterly	0.002	X	X
Triclosan	Health	Grab	Annually	0.05	X	X
DEET	Performance	Grab	Annually	0.05	X	X
Sucralose	Performance	Grab	Quarterly	0.1	X	X

[1] The January 22, 2013 Recycled Water Policy Attachment A makes a distinction between health-based and performance-based CEC indicators for purposes of monitoring locations. For subsurface applications, the health-based CECs are 17β-estradiol, caffeine, NDMA, and triclosan, with monitoring required for final recycled water only. The health-based and performance-based CECs are caffeine, NDMA, DEET, and sucralose, with monitoring required prior to Reverse Osmosis and post- treatment prior to release to the aquifer. Caffeine and NDMA serve both as health-based and performance based indicators

Table 18-12: Surrogates (Order No. R3-2014-0050, Table M-14)

Constituents	Type of Sample	Minimum Frequency of Analysis	Monitoring Locations	
			Prior to RO	Following Treatment Prior to Well Injection
Electrical Conductivity	Online	Continuous [1]		X
TOC	24-hour Composite	Weekly	X	X

[1] Since monitoring will be continuous using online analyzers, monthly averages for each monitoring location shall be reported in the quarterly compliance monitoring reports.

18.1.4 Groundwater Monitoring

Groundwater monitoring will be done to assess any impacts from the recharge of AWTP product water. The proposed groundwater monitoring program will be developed at a later date through

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discussions between the CCSD, the DDW, and the RWQCB. **Tables 18-13 through 18-15** includes a preliminary framework for groundwater monitoring.

If any of the monitoring results indicates that an MCL has been exceeded or that coliforms are present as a result of the AWTP water injected into the aquifer, the CCSD will notify the DDW within 72 hours of receiving the results and make note of any positive finding in the next monitoring report submitted to the RWQCB. Sampling of monitoring wells MIW-1 and SS-3 will only be conducted during weeks, months, or quarters when the facility is operational or within two months of when the facility was last operational.

The salinity of the groundwater extracted from Wells SS-1 and SS-2 will be monitored to determine the impacts of operating the AWTP and associated wells on the groundwater quality. If significant increases in salinity are observed (greater than 10 percent increase above historic levels), Well 9P7 pumping will be reduced.

Table 18-13: Groundwater Monitoring (Order No. R3-2014-0050, Table M-16)

Constituents/Parameters	Units	Type of Sample	Minimum Frequency of Analysis
Water level elevation [1]	feet	---	Quarterly
Chlorine residual	mg/L	Grab	Quarterly
Chloride	mg/L	Grab	Quarterly
Nitrate-N	mg/L	Grab	Quarterly
Nitrite-N	mg/L	Grab	Quarterly
Nitrate plus Nitrite	mg/L	Grab	Quarterly
pH	pH units	Grab	Quarterly
Sodium	mg/L	Grab	Quarterly
Sulfate	mg/L	Grab	Quarterly
TOC	mg/L	Grab	Quarterly
Total coliform	MPN/100ml	Grab	Quarterly
BOD_5 20 °C	mg/L	Grab	Semiannually
Oil and Grease	mg/L	Grab	Quarterly
Total Nitrogen	mg/L	Grab	Quarterly
Total Suspended Solids	mg/L	Grab	Semiannually
Turbidity	NTU	Grab	Quarterly
Inorganics with primary MCLs [2]	µg/L	Grab	Quarterly
Constituents/parameters with secondary MCLs [2]	---	Grab	Annually
Fluoride [2]	µg/L	Grab	Quarterly
Radioactivity [2]	pci/L	Grab	Semiannually
Regulated organics [2]	mg/L	Grab	Semiannually
Disinfection byproducts (DBPs) [2]	mg/L	Grab	Semiannually
General physical [3]	various	Grab	Monthly
General minerals [3]	µg/L	Grab	Monthly
Chemicals with NLs [2]	µg/L	Grab	Annually
N-Nitrosopyrrolidine [2]	µg/L	Grab	Annually
Remaining priority pollutants [2]	µg/L	Grab	Annually

[1] Water level elevations shall be measured to the nearest 0.01 feet, and referenced to mean sea level.
[2] For specific constituents to be monitored and their monitoring frequency, refer to Table 18-14 (Order No. R3-2014-0050, Table M-17).
[3] For specific constituents to be monitored and their monitoring frequency, refer to Table 18-15 (Order No. R3-2014-0050, Table M-18).

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Table 18-14: Groundwater Monitoring Frequency (Order No. R3-2014-0050, Table M-17)

Constituents	Monitoring Frequency						
	RIW-1	MIW-1	SS1	SS2	SS3	9P7	16D1
Total Suspended Solids (TSS)	Qtrly	Qtrly	Qtrly	Qtrly	Qtrly	Qtrly	Qtrly
Turbidity	Qtrly	Qtrly	Qtrly	Qtrly	Qtrly	Qtrly	Qtrly
Radioactivity							
Gross Alpha Particle Activity (including Radium-226 but excluding radon and uranium)	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
Gross Beta Particle Activity	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
Radium-226	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
Radium-226 & Radium-228 (Combined)	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
Radium-228	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
Strontium-90	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
Tritium	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
Uranium	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
Organic Chemicals							
(a) Volatile Organic Chemicals							
1,1,1-Trichloroethane	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
1,1,2,2-Tetrachloroethane	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
1,1,2-Trichloro-1,2,2-Trifluoroethane	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
1,1,2-Trichloroethane	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
1,1-Dichloroethane	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
1,1-Dichloroethene (1,1 DCE)	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
1,2,4-Trichlorobenzene	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
1,2-Dichlorobenzene	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
1,2-Dichloroethane (1,2 DCA)	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
1,2-Dichloropropane	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
1,3-Dichloropropene	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
1,4-Dichlorobenzene	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
Benzene	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
Carbon Tetrachloride (CTC)	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
cis-1,2-Dichloroethylene	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
Dichloromethane	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
Ethylbenzene	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
Methyl-tert-butyl-ether(MTBE)	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
Monochlorobenzene	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
Styrene	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
Tetrachloroethylene(PCE)	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
Toluene	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
trans-1,2-Dichloroethylene	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
Trichloroethylene(TCE)	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
Trichlorofluoro-methane	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
Vinyl Chloride	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
Xylenes (m, p)	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly

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Table 18-14: Groundwater Monitoring Frequency (Order No. R3-2014-0050, Table M-17)

Constituents	Monitoring Frequency						
	RIW-1	MIW-1	SS1	SS2	SS3	9P7	16D1
(b) non-volatile synthetic organic chemical							
1,2-Dibromo-3-Chloropropane (DBCP)	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
2,3,7,8-TCDD (Dioxin)	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
2,4,5-TP (Silvex)	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
2,4-Dichlorophenoxyacetic acid (2,4-D)	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Alachlor	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Atrazine	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Bentazon	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Benzo (a) pyrene	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Carbofuran	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Chlordane	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Dalapon	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Di (2-ethylhexyl) adipate	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Di (2-ethylhexyl) phthalate	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Annual
Dinoseb	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Diquat	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Endothal	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Endrin	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Ethylene Dibromide (EDB)	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Glyphosate	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Heptachlor	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Heptachlor Epoxide	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Hexachlorobenzene	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Hexachlorocyclo-pentadiene	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Lindane (Gamma BHC)	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual

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Table 18-14: Groundwater Monitoring Frequency (Order No. R3-2014-0050, Table M-17)

Constituents	Monitoring Frequency						
	RIW-1	MIW-1	SS1	SS2	SS3	9P7	16D1
Methoxychlor	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Molinate	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Oxamyl	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
PCB 1016	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
PCB 1221	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
PCB 1232	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
PCB 1242	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
PCB 1248	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
PCB 1254	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
PCB 1260	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Pentachlorophenol	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Annual
Picloram	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Simazine	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Thiobencarb	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Toxaphene	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Disinfection Byproducts							
Bromate	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Bromodichloro-methane	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Bromoform	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Chlorite	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Chloroform	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Dibromoacetic Acid	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Dibromochloro-methane	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Dichloroacetic Acid	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Haloacetic Acid (Five) (HAA5)	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual

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Table 18-14: Groundwater Monitoring Frequency (Order No. R3-2014-0050, Table M-17)

Constituents	Monitoring Frequency						
	RIW-1	MIW-1	SS1	SS2	SS3	9P7	16D1
Monobromoacetic Acid	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Monochloroacetic Acid	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Total Trihalomethanes	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Trichloroacetic Acid	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Chemicals with Notification Levels							
1,2,3-Trichloropropane (1,2,3 TCP)	Annual	Annual	Annual	Annual	Annual	Annual	Annual
1,2,4-Trimethylbenzene	Annual	Annual	Annual	Annual	Annual	Annual	Annual
1,3,5-Trimethylbenzene	Annual	Annual	Annual	Annual	Annual	Annual	Annual
1,4-Dioxane	Annual	Annual	Annual	Annual	Annual	Annual	Annual
2-Chlorotoluene	Annual	Annual	Annual	Annual	Annual	Annual	Annual
2,4,6-Trinitrotoluene (TNT)	Annual	Annual	Annual	Annual	Annual	Annual	Annual
4-Chlorotoluene	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Boron	Qtrly	Qtrly	Qtrly	Qtrly	Qtrly	Qtrly	Qtrly
Carbon Disulfide	Annual	Annual	Annual	Annual	Annual	Semi Annual	Annual
Chlorate	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Diazinon	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Dichlorodifluoro-methane (Freon 12)	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Ethylene Glycol	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Formaldehyde	Annual	Annual	Annual	Annual	Annual	Annual	Annual
HMX	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Isopropylbenzene	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Manganese	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual
Methyl-isobutyl-keytone (MIBK)	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Naphthalene	Annual	Annual	Annual	Annual	Annual	Annual	Annual
n-Butylbenzene	Annual	Annual	Annual	Annual	Annual	Annual	Annual
n-Nitrosodiethyl-amine (NDEA)	Annual	Annual	Annual	Annual	Annual	Annual	Annual
n-Nitrosodimethylamine (NDMA)	Qtrly	Qtrly	Qtrly	Qtrly	Qtrly	Qtrly	Qtrly
n-Nitrosodi-n-propylamine (NDPA)	Annual	Annual	Annual	Annual	Annual	Annual	Annual
n-Propylbenzene	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Propachlor	Annual	Annual	Annual	Annual	Annual	Annual	Annual
RDX	Annual	Annual	Annual	Annual	Annual	Annual	Annual
sec-Butlybenzene	Annual	Annual	Annual	Annual	Annual	Annual	Annual
tert-Butylbenzene	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Tertiary-butyl-alcohol (TBA)	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Vanadium	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Remaining Priority Pollutants							

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Table 18-14: Groundwater Monitoring Frequency (Order No. R3-2014-0050, Table M-17)

Constituents	Monitoring Frequency						
	RIW-1	MIW-1	SS1	SS2	SS3	9P7	16D1
Pesticides							
4,4,4'-DDD	Annual	Annual	Annual	Annual	Annual	Annual	Annual
4,4,4'-DDE	Annual	Annual	Annual	Annual	Annual	Annual	Annual
4,4,4-DDT	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Aldrin	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Alpha BHC	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Alpha Endosulfan	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Beta BHC	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Beta Endosulfan	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Chromium III	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Chromium VI	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Delta BHC	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Dieldrin	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Endosulfan Sulfate	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Endrin Aldehyde	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Acid Extractables							
2,4,6-Trichlorophenol	Annual	Annual	Annual	Annual	Annual	Annual	Annual
2,4-Dichlorophenol	Annual	Annual	Annual	Annual	Annual	Annual	Annual
2,4-Dimethylphenol	Annual	Annual	Annual	Annual	Annual	Annual	Annual
2,4-Dinitrophenol	Annual	Annual	Annual	Annual	Annual	Annual	Annual
2-Chlorophenol	Annual	Annual	Annual	Annual	Annual	Annual	Annual
2-Nitrophenol	Annual	Annual	Annual	Annual	Annual	Annual	Annual
4,6-Dinitro-o-Cresol (2-Methly-4,6-Dinitrophenol)	Annual	Annual	Annual	Annual	Annual	Annual	Annual
4-Nitrophenol	Annual	Annual	Annual	Annual	Annual	Annual	Annual
p-Chloro-m-Cresol (3-Methyl-4-Chlorophenol)	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Phenol	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Base/Neutral Extractables							
1,12-Benzoperylene ((Benzo(g,h,i)-perylene))	Annual	Annual	Annual	Annual	Annual	Annual	Annual
1,2,5,6-Dibenzanthracene ((Dibenzo(a,h)anthracene))	Annual	Annual	Annual	Annual	Annual	Annual	Annual
1,2-Diphenylhydrazine	Annual	Annual	Annual	Annual	Annual	Annual	Annual
1,3-Dichlorobenzene	Annual	Annual	Annual	Annual	Annual	Annual	Annual
2,4-Dinitrotoluene	Annual	Annual	Annual	Annual	Annual	Annual	Annual
2,6-Dinitrotoluene	Annual	Annual	Annual	Annual	Annual	Annual	Annual
2-Chloronaphthalene	Annual	Annual	Annual	Annual	Annual	Annual	Annual
3,3'-Dichlorobenzidine	Annual	Annual	Annual	Annual	Annual	Annual	Annual
4-Bromophenyl phenyl ether	Annual	Annual	Annual	Annual	Annual	Annual	Annual
4-Chlorophenyl phenyl ether	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Acenaphthene	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Acenaphthylene	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Anthracene	Annual	Annual	Annual	Annual	Annual	Annual	Annual

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Table 18-14: Groundwater Monitoring Frequency (Order No. R3-2014-0050, Table M-17)

Constituents	Monitoring Frequency						
	RIW-1	MIW-1	SS1	SS2	SS3	9P7	16D1
Benzidine	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Benzo(a)anthracene	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Benzo(b)fluoranthene	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Benzo(k)fluoranthene	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Bis(2-chloroethoxyl)-methane	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Bis(2-chloroethyl)ether	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Bis(2-chloroisopropyl)ether	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Butyl benzyl phthalate	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Chrysene	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Di(2-ethylhexyl) phthalate	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Dimethyl phthalate	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Di-n-butyl phthalate	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Di-n-octyl phthalate	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Fluoranthene	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Fluorene	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Hexachlorobutadiene	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Hexachloroethane	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Indeno(1,2,3-cd) pyrene	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Isophorone	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Nitrobenzene	Annual	Annual	Annual	Annual	Annual	Annual	Annual
n-Nitrosodi-n-propylamine	Annual	Annual	Annual	Annual	Annual	Annual	Annual
n-Nitrosodiphenylamine	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Phenanthrene	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Pyrene	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Volatile Organics							
1,1-Dichloroethylene	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
2-Chloroethyl vinyl ether	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
Acrolein	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
Acrylonitrile	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
Chlorobenzene	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
Chloroethane	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
Methyl bromide	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
Methyl chloride	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly

Table 18-15: General Physical and General Minerals (Order No. R3-2014-0050, Table M-18)

Constituents		
Asbestos	Potassium	Foaming Agents
Calcium	Sodium	Odor
Chloride	Sulfate	Specific Conductance
Copper	Zinc	Total Dissolved Solids
Iron	Color	Total Hardness
Manganese	Corrosivity	

Type of Sample: Grab.

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Monitoring Frequency: Monthly

18.1.5 Evaluation of Pathogenic Microorganism Removal

For the purposes of evaluating the performance of the following treatment facilities/units with regards to pathogenic microorganism removal, the CCSD will include the results of the monitoring specified below in its quarterly compliance monitoring reports:

- WWTP: For the purpose of demonstrating that the log reductions assumed in Section 5 are achieved at the WWTP, the CCSD will report the daily average and maximum turbidity, percent of time more than 5 NTU, and daily coliform results associated with the WWTP.
- MF: For each day of operation, PDT will be performed, and the daily "Pass" or "Fail" results will be reported. Daily average and maximum turbidity will be reported, along with the percent of time more than 0.2 NTU. In addition, the CCSD will report the daily average and maximum turbidity of the MF permeate, along with the percent of time more than 0.2 NTU.
- UV/peroxide: For each day of operation, the CCSD will report the calculated daily peroxide dose (based on the peroxide pump speed and bulk feed concentration) and the applied UV power. For UV, the CCSD will report the UV system dose (expressed as greater than a certain threshold such as 300 mJ/cm^2), UV transmittance (daily minimum, maximum, and average), and UV intensity (daily minimum, maximum, and average).
- Free Chlorine: For each day of operation, the CCSD will report average and minimum free chlorine residual leaving the AWTP, the average and maximum pH, the average and minimum temperature, the minimum travel time to the injection well, the minimum CT achieved, and the maximum CT required for 2-log inactivation of viruses.
- Based on the calculation of log reduction achieved each day by the entire treatment system, the CCSD will report "Yes" or "No" for each day as to whether the necessary log reductions (i.e. 10-logs for *Giardia*, 10-logs for *Cryptosporidium*, and 12-logs for virus) have been attained. An overall log reduction calculation will be provided only for those days when a portion of the treatment system does not achieve the proposed credits.
- The CCSD will immediately notify the DDW and the RWQCB if the AWTP tails to meet the pathogen reduction criteria longer than 4 consecutive hours, or more than a total of 8 hours during any 7-day period.
- If the effectiveness of a treatment train's ability to reduce enteric virus is less than 10-logs, or *Giardia* cyst or *Cryptosporidium* oocyst reduction is less than 8-logs, the CCSD will immediately notify the DDW and the RWQCB, and discontinue delivery of product water to RIW, unless directed otherwise by the DDW or the RWQCB.

18.1.6 Additional RO Monitoring

During initial plant start-up, the CCSD will sample for TDS and conductivity in the feed water, second stage concentrate, primary system permeate (combined first and second stage), and third stage permeate. These samples will be used to develop a correlation between TDS and conductivity for each sample location. During normal plant operation, the CCSD will report the calculated daily average and minimum TDS reduction across each of the primary RO systems and the third stage RO system. TDS

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reduction will be calculated using measured conductivity values (continuously monitored) and the previously identified correlation factor for each sample location.

During the first twenty weeks of operation, TOC will be measured by grab sample weekly in the combined RO permeate and sent to an outside laboratory for analysis. The CCSD will report the percent of time permeate TOC exceeds the laboratory practical quantitation limit of 0.3 mg/L.

18.1.7 MF Backwash Monitoring

Table 18-16 includes a preliminary framework for monitoring the water quality of MF backwash waste discharge to Percolation Ponds.

Table 18-16: MF Backwash Waste Monitoring (Order No. R3-2014-0050, Table M-3b)

Constituents/Parameters	Units	Type of Sample	Minimum Frequency of Analysis
Total flow	mgd	Metered	Continuous [1]
pH	pH units	Metered	Continuous [1]
Total coliform	MPN/100 ml	Grab	Daily
Ammonia-N	mg/L	grab	Weekly
BOD5	mg/L	24-hour composite	Weekly
Boron	mg/L	grab	Weekly
Chloride	mg/L	24-hour composite	Weekly
Nitrate-N	mg/L	grab	Weekly
Nitrite-N	mg/L	grab	Weekly
Nitrate plus Nitrite	mg/L	grab	Weekly
Sodium	mg/L	24-hour composite	Weekly
Sulfate	mg/L	grab	Weekly
Total Dissolve Solids	mg/L	24-hour composite	Weekly
Total Kjeldahl nitrogen-N	mg/L	grab	Weekly
Total nitrogen [2]	mg/L	grab	Weekly
TOC	mg/L	grab	Weekly
Total Suspended Solids	mg/L	24-hour composite	Weekly
Turbidity	NTU	24-hour composite	Weekly

[1] For those constituents that are continuously monitored, the CCSD shall report the monthly minimum and maximum, and daily average values.
[2] Total Nitrogen includes nitrate-N, nitrite-N, ammonia-N, and organic-N.

18.2 Lagoon Monitoring Plan

This section outlines the planned monitoring and response plan for the San Simeon Creek Lagoon mitigation water supply proposed as a component of the Emergency Water Supply Project. The San Simeon Creek Lagoon is located west of the Project site, at the downstream end of San Simeon Creek. It crosses under SR-1 and spreads onto San Simeon State Beach, providing valuable habitat for fish including federally endangered and state species of special concern tidewater goby, federally

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threatened and state species of special concern steelhead, and threespine stickleback. The Lagoon is designated as Critical Habitat for tidewater goby and steelhead.

The lagoon is bounded on the western edge by a seasonally closed sand bar along the coastline When closed, the sand bar restricts water from the shore resulting in a freshwater lagoon habitat. The sand bar generally opens in late fall and closes again by mid-spring; while the sand bar is open, oceanic salt water combines with the freshwater of San Simeon Creek to create an estuary. The opening and closing of the sandbar is influenced by rainfall event flows in San Simeon Creek and wave action along the coast. The creek is intermittent in its lower reaches and is generally inundated from late fall to late spring/early summer and dry the rest of the year.

The AWTP has the potential to affect water levels in the lagoon while it is being operated by utilizing groundwater from the aquifer that would otherwise contribute to water flows in San Simeon Creek in the area adjacent to and downstream of the CCSD percolation ponds, and support water levels in the lagoon in dry water years. The magnitude of this potential effect is detailed in the Cambria Emergency Water Supply Project San Simeon Creek Basin Groundwater Modeling Report (GMR) (CDM Smith, May 14, 2014).

Reductions in water levels in the lagoon while water is being pumped from Well 9P7 and treated at the AWTP is in operation could impact the lagoon's freshwater habitat and the fish species that depend on that habitat. To mitigate these potential effects, the EWSP has been designed with a lagoon mitigation water component that would divert 100 gpm of MF filtrate water or a blend of MF filtrate water and product water to the lagoon to maintain water levels at or slightly above baseline conditions. The monitoring and response plans described in this section outlines how the CCSD will implement an adaptive monitoring and response program to track the performance of the lagoon mitigation water supply. In addition to this monitoring and response program, CCSD is developing an Adaptive Management Plan as a part of the CEQA compliance process for the long term operation of the EWSP. It is anticipated that this adaptive management plan will include specific monitoring requirements for species in the lagoon, but the plan will be developed to not conflict with the monitoring or response requirements described in this plan.

18.2.1 Monitoring Plan

The CCSD will monitor the performance of the lagoon mitigation water supply utilizing both real time monitoring of discharge quality and regular in person observations of conditions in the lagoon. **Tables 18-17 and 18-18** include a preliminary framework for monitoring the water quality of lagoon protection water, along with water levels in the lagoon.

The MF filtrate discharge to the lagoon will be monitored consistent with the monitoring requirements presented in Table M-3a of the Monitoring and Reporting Program Order NO. R3-2014-0050 (See **Table 18-17**). Monitoring of the MF filtrate discharge water quality will be completed during start-up of the AWTP, prior to any discharge of the lagoon mitigation supply, to verify that constituent levels do not exceed provisions established for discharge by the Low Threat to Water Quality, National Pollutant Discharge Elimination System General Permit No. CAG993001, Waste Discharge Requirements Order No. R3-2011-0223 (Low Threat General Permit).

Table 18-17: Membrane Filtrate Discharge Monitoring (Order No. R3-2014-0050, Table M-3a)

Constituents/Parameters	Units	Type of Sample	Minimum Frequency of Analysis
Total Flow	mgd	Metered	Continuous [1]

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Table 18-17: Membrane Filtrate Discharge Monitoring (Order No. R3-2014-0050, Table M-3a)

Constituents/Parameters	Units	Type of Sample	Minimum Frequency of Analysis
pH	pH units	Metered	Continuous [1]
Turbidity	NTU	Metered	Continuous [1]
Total Coliform	MPN/100 mL	Grab	Daily
Ammonia-N	mg/L	grab	Weekly
BOD5	mg/L	24-hour composite	Weekly
Boron	mg/L	grab	Weekly
Chloride	mg/L	24-hour composite	Weekly
Nitrate-N	mg/L	grab	Weekly
Nitrite-N	mg/L	grab	Weekly
Nitrate plus Nitrite	mg/L	grab	Weekly
Sodium	mg/L	24-hour composite	Weekly
Sulfate	mg/L	grab	Weekly
Total Dissolve Solids	mg/L	24-hour composite	Weekly
Total Kjeldahl Nitrogen-N	mg/L	grab	Weekly
Total Nitrogen [2]	mg/L	grab	Weekly
TOC	mg/L	grab	Weekly
Total Suspended Solids	mg/L	24-hour composite	Weekly

[1] For those constituents that are continuously monitored, the CCSD shall report the monthly minimum and maximum, and daily average values.
[2] Total Nitrogen includes nitrate-N, nitrite-N, ammonia-N, and organic-N.

Table 18-18: Lagoon Monitoring

Constituents/Parameters	Units	Type of Sample	Minimum Frequency of Analysis
Erosion at Discharge Site		Visual/Photo Observation	Weekly
Lagoon Water Levels	Ft (msl)	Visual/Photo Observation	Weekly
Groundwater Level Monitoring	Ft (bgs)	Hand probe	Weekly

Weekly water level monitoring will be completed at the lagoon by the CCSD staff during operation of the AWTP and for one month following shutdown of the plant for the first two seasons of operation in consultation with the RWQCB. It is assumed that following the first two seasons of operation this monitoring plan will be revisited with the RWQCB Staff to compare observed levels against projected levels and determine the need for any additional monitoring. Until a revised monitoring is approved by the RWQCB, lagoon level monitoring will continue as described above.

The lagoon water level monitoring will be completed by visual inspection of a staff gauge that will be installed on the San Simeon Creek Trail Bridge crossing San Simeon Creek to identify any changes in water levels in the lagoon not forecast in the groundwater and lagoon modeling completed during project design and included in the Title 22 Engineering Report. This visual inspection will be recorded in both monitoring logs and with photos that will be shared with the RWQCB upon request. In addition to the lagoon water level monitoring, groundwater levels adjacent to the lagoon will be monitored utilizing either Well 16D1 or a new monitoring well developed up gradient of the lagoon discharge point.

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In addition to the weekly water level monitoring, the CCSD staff will inspect the lagoon mitigation supply discharge site for any evidence of scour or erosion into the lagoon.

18.2.2 Response Plan

The monitoring approach listed above will be used to identify any changes in the quality of the mitigation water and water levels in the lagoon during operation of the AWTP to identify any need for implementation of the response plan. The lagoon mitigation water system has been designed to allow for some flexibility in the both the volume of water and the level of treatment completed on the water delivered to the lagoon.

In response to changes in conductivity/TDS levels in the mitigation supply delivered to the lagoon measured continuously at the AWTP or any observed changes in the other constituents monitored as required under Tables M-2 and M-3a of the Monitoring and Reporting Program Order NO. R3-2014-0050, a portion of the 100 gpm of mitigation water can be shifted from the MF filtrate supply to include product water that has received full RO treatment. Water quality issues that cannot be addressed through blending of MF filtrate supply and RO product water will result in the shutoff of the lagoon mitigation discharge by AWTP operators. The RWQCB will be notified within 48 hours of any shutdown of this discharge during operation of the AWTP.

Water levels observed in the lagoon during the weekly sampling efforts that correspond with drops in groundwater levels observed in either Well 16D1 or a new monitoring well developed up gradient of the lagoon discharge point will trigger an evaluation of the performance of the lagoon mitigation supply in coordination with the RWQCB staff. If the evaluation indicates that pumping in support of the AWTP is resulting in lowered lagoon water levels, changes in groundwater pumping rates at well 9P7 or increases in flow rates in the lagoon mitigation supply will be implemented.

The mitigation supply system has been designed to allow for the delivery of up to 150 gpm to the lagoon or alternately depending on groundwater level conditions on site pumping rates from well 9P7 could be reduced. The decision on how best to address changes in lagoon water levels observed utilizing this monitoring protocol that are different from the conditions forecast during design of the Emergency Water Supply Project will be made by the AWTP operators.

Any erosion or scour observed by the CCSD staff during the weekly visual inspection of the discharge site will be addressed by either adjustment to or placement of additional rip rap below the discharge pipe.

18.3 Reporting

The CCSD will submit the required reports outlined in the following paragraphs to the SWRCB's Geotracker database (in Electronic Data Format[1]) and to the Division of Drinking Water (DDW), Drinking Water Field Operations, by the dates indicated.

All reports to the SWRCB's Geotracker will reference the Order No. R3-2014-0050. Compliance monitoring reports will be submitted separately from other technical reports.

[1] For help with EDF go to http://www.waterboards.ca.gov/ust/electronic_submittal/

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All reports will be submitted as a pdf file and uploaded electronically to the SWRCB's Geotracker and provided via email to the DDW (if the file exceeds 10 MB, either a CD containing the file will be mailed to DDW, or a link for downloading an electronic copy of the file will be provided). Upon request the data will be provided in excel format.

By the reporting due dates specified in Table 18-1 (Order No. R3-2014-0050, Table M-1), groundwater data will be uploaded electronically to the SWRCB's Geotracker in an electronic deliverable format specified by the SWRCB[2]. Upon request the data will be provided in excel format.

18.3.1 Startup 30 day report

The Discharger must evaluate and field validate the operating assumptions for the AWTP (quality of: water supply, membrane filter backwash discharge, membrane filtrate discharge, reverse osmosis product water re-injection, and lagoon condition) and compare the pre-project assumptions to documented operating data. The Discharger must submit a report detailing differences between documented operating values and assumed concentrations/conditions. The report must be submitted within 10 days following the first 30 days of AWTP operation.

18.3.2 Monthly Reports

Consistent with section III. REPORTING REQUIREMENTS, monthly reports for monitoring and reporting requirements included in the Operations Maintenance and Monitoring Plan will be submitted by the 15th day of each month following the first monthly monitoring period.

18.3.3 Quarterly Monitoring

Quarterly Monitoring Reports will be submitted by the 15th day of the second month following the end of each quarterly monitoring period according to **Table 18-19** (Order No. R3-2014-0050, Table M-1).

Table 18-19: Quarterly Report Periods and Due Dates (Order No. R3-2014-0050, Table M-1)

Reporting Period	Report Due
January – March	May 15
April – June	August 15
July – September	November 15
October - December	February 15

The contents of the Geotracker Quarterly Monitoring Report will include a one-page summary of operational concerns that addresses changes in reporting conditions, including influent, recycled water, and groundwater monitoring results, since the last report.

[2] http://www.waterboards.ca.gov/ust/electronic_submittal/

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18.3.4 Annual Summary

The Annual Summary Report will be submitted by April 15 of each year. This Annual Summary Report will contain a discussion of the previous calendar year's analytical results, as well as graphical and tabular summaries of the monitoring analytical data.

Public water systems and owners of small water systems and other active production wells having downgradient sources potentially affected by the CCSD groundwater injection project or within 10 years groundwater travel time from the CCSD groundwater injection project will be notified by direct mail and/or electronic mail of the availability of the annual report.

18.3.5 Operation Plan Revisions

After six months of operation of the Plant, the OMMP will be updated as necessary and submitted to the RWQCB and the DDW for review and approval.

During the first year of operation of the Cambria AWTP, all treatment processes will be operated in a manner to provide optimal reduction of microbial, regulated and nonregulated contaminants. Based on this experience and anytime operational changes are made, the OMMP will be updated.

Significant changes in the operation of any of the treatment processes will be reported to the DDW and the RWQCB. Significant changes in the approved OMMP must be approved by the DDW and the RWQCB prior to instituting changes. The CCSD is responsible for ensuring that the OMMP is, at all times, representative of the current operations, maintenance, and monitoring of the Cambria AWTP.

18.3.6 Five-Year Engineering Report

The CCSD will update the 2013 Title 22 Engineering Report and submit the updated report to the SWRCB's Geotracker and the DDW five years after the startup of the Cambria AWTP, and every five years thereafter.

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Appendix E – Adaptive Management Plan

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Michael Baker
INTERNATIONAL

CAMBRIA EMERGENCY WATER SUPPLY PROJECT

San Luis Obispo County, California

Adaptive Management Plan

Prepared For:
Cambria Community Services District
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March 2015
JN: 141290

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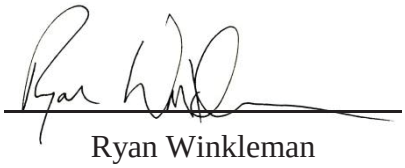
CAMBRIA EMERGENCY WATER SUPPLY PROJECT

COMMUNITY OF CAMBRIA, SAN LUIS OBISPO COUNTY, CALIFORNIA

Adaptive Management Plan

The undersigned certify that the statements furnished in this report and exhibits present data and information required for this biological evaluation, and the facts, statements, and information presented is a complete and accurate account of the findings and conclusions to the best of our knowledge and beliefs.



Ryan Winkleman
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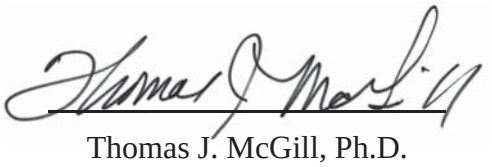

Thomas J. McGill, Ph.D.
Vice President
Natural Resources

March 2015

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LIST OF ACRONYMS

AMP	Adaptive Management Plan
AWTP	Advanced Water Treatment Plant
BM	Biological Monitor
C	Celsius
CCSD	Cambria Community Services District
CDFW	California Department of Fish and Wildlife
CRAM	California Rapid Assessment Method
DO	Dissolved Oxygen
F	Fahrenheit
gpm	Gallons Per Minute
PHABSIM	Physical Habitat Simulation
ppm	Parts Per Million
ppt	Parts Per Thousand
RBF	RBF Consulting
RIW	Recharge Injection Well
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WUA	Weighted Usable Area

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Section 1 Background and Objectives

The Cambria Community Services District (CCSD or the District) proposes to install and operate the Cambria Emergency Water Supply Project to help alleviate an emergency water shortage in the Community of Cambria, San Luis Obispo County, California (Project). The Project would be located on previously-disturbed areas within CCSD's existing San Simeon well field and percolation pond system property. The Project proposes to both utilize existing, as well as construct and operate, the following water facilities: one extraction well (existing Well 9P7); an Advanced Water Treatment Plant (AWTP); a Recharge Injection Well (RIW); an evaporation pond (rehabilitate/modify an existing storage pond); lagoon surface discharge, proposed as mitigation to protect the San Simeon Creek and Lagoon; four monitoring wells; and four pipelines.

1.1 EMERGENCY WATER SUPPLY PROJECT

1.1.1 Project Location

The Project site is generally located east of State Route 1 (SR 1), south of the Community of San Simeon, and north of the Community of Cambria in unincorporated San Luis Obispo County, California (Exhibit 1, *Regional Vicinity Map*). The Project site is located in Sections 9, 16, and 17 of Township 27 South, Range 8 East of the Cambria quadrangle of the United States Geological Survey (USGS) 7.5-minute topographic map series (Exhibit 2, *Local Vicinity Map*). Specifically, the site is east of Van Gordon Creek Road, north of San Simeon Creek, and south of San Simeon-Monterey Creek Road. It is located adjacent to but not within Hearst San Simeon State Park (Exhibit 3, *Project Site Map*).

1.1.2 Project Background

All of Cambria's potable water is supplied by groundwater wells in the San Simeon and Santa Rosa Creek aquifers. The San Simeon and Santa Rosa Creek aquifers are relatively shallow and porous, with the groundwater levels typically recharged every year during the rainy season. Groundwater levels generally exhibit a consistent pattern of high levels during the wet season, steady decline during the dry season, and rapid rise when the wet season resumes. To minimize loss or contamination of potable groundwater at the aquifer and ocean interface, treated wastewater effluent is percolated into the San Simeon Creek aquifer downstream from its production wells. This practice also helps prevent saltwater intrusion into the freshwater water aquifer. If the groundwater level drops too far, treated effluent and seawater could migrate toward the water supply wells, deteriorating the water quality and potentially rendering the freshwater non-potable. The percolation of treated wastewater

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CAMBRIA EMERGENCY WATER SUPPLY PROJECT
ADAPTIVE MANAGEMENT PLAN

Regional Vicinity Map

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0 2.5 5 10 Miles

Source: ESRI Relief Map, National Highway Planning Network

Exhibit 1

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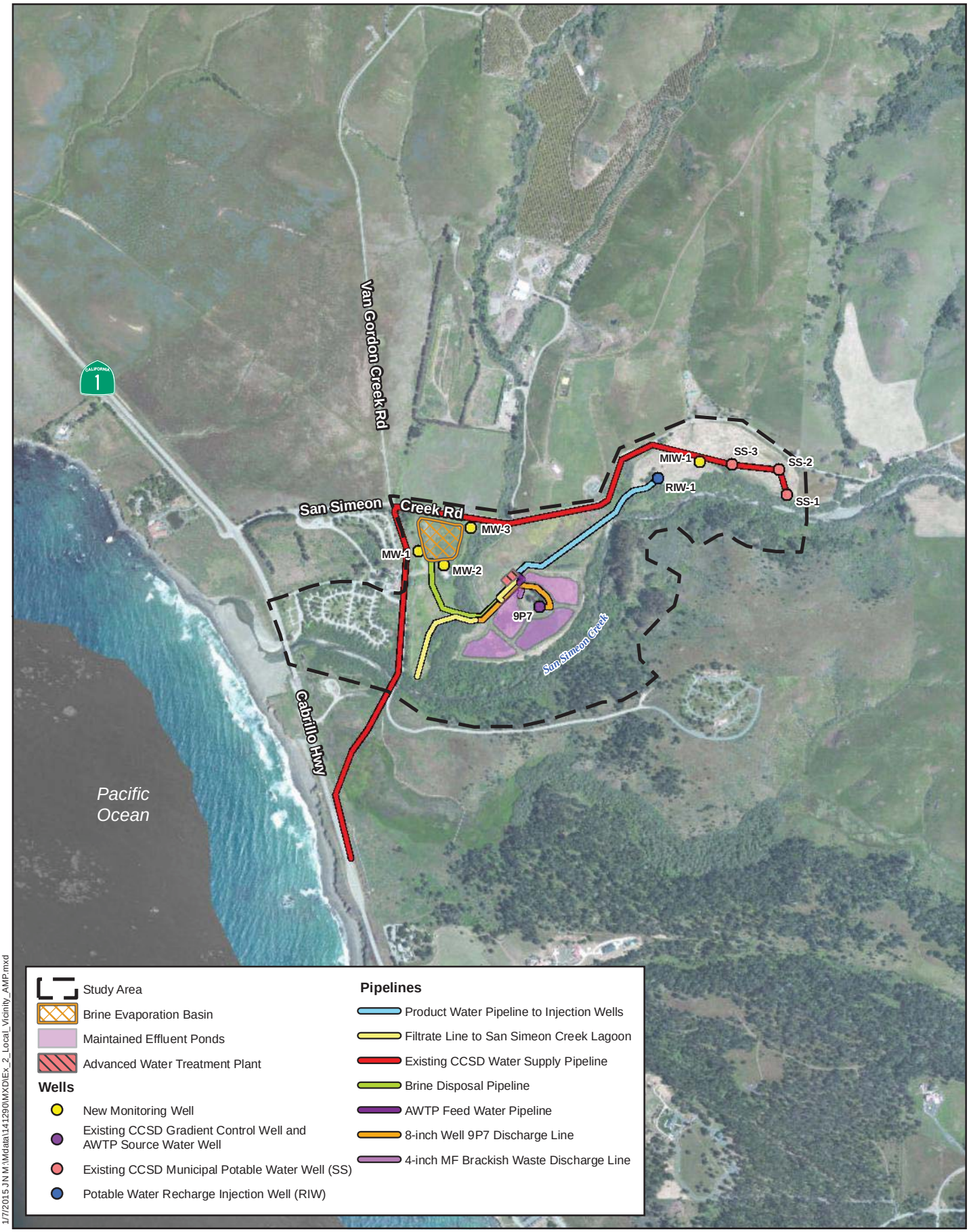

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CAMBRIA EMERGENCY WATER SUPPLY PROJECT
ADAPTIVE MANAGEMENT PLAN

Local Vicinity Map

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0 0.25 0.5 Miles

Source: CDM Smith, ESRI World Topographic Map

Exhibit 2

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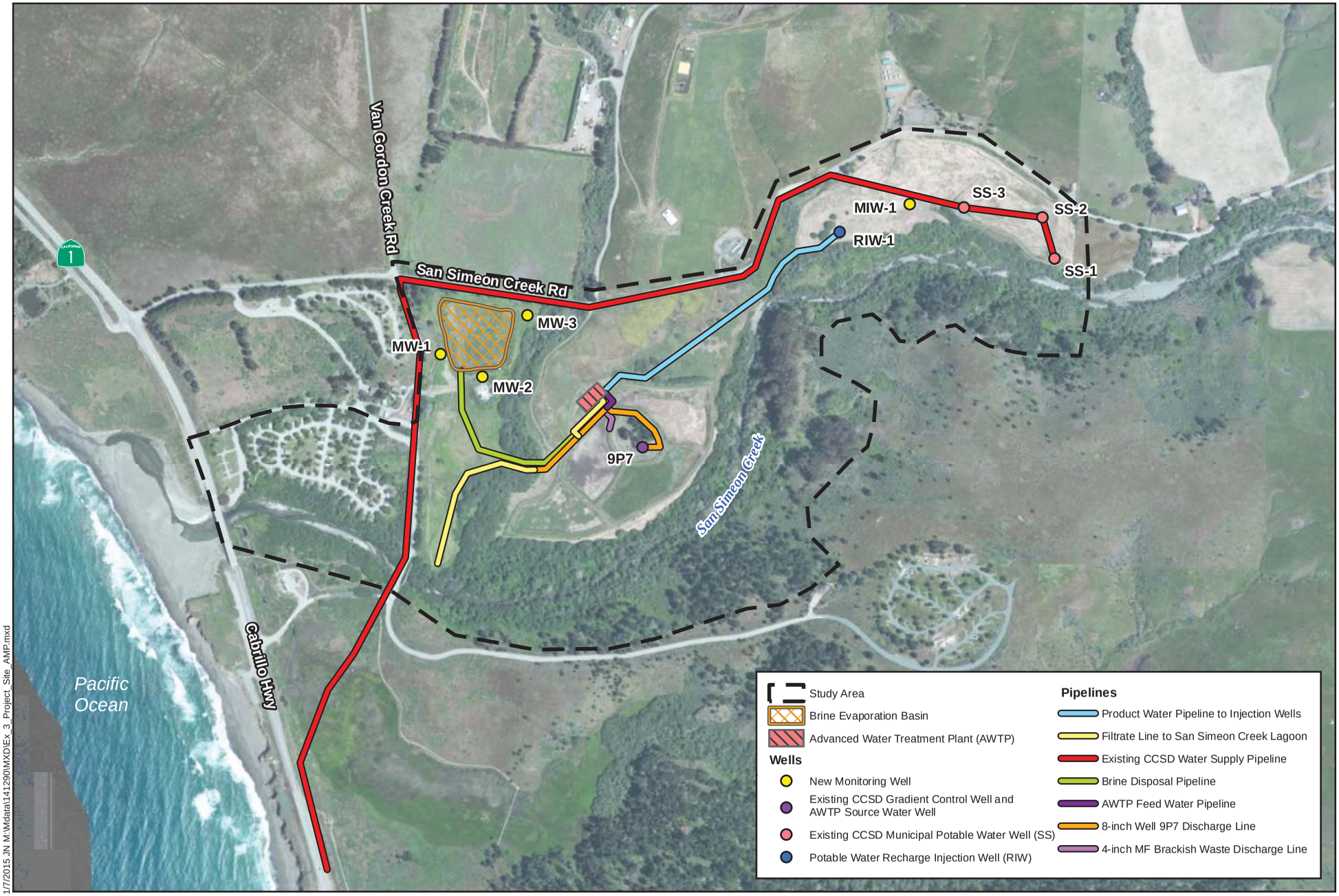

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0 400 800 1,600 Feet

Source: National Hydrography Dataset, CDM Smith, ESRI World Imagery Basemap

CAMBRIA EMERGENCY WATER SUPPLY PROJECT
ADAPTIVE MANAGEMENT PLAN

Project Site Map

Exhibit 3

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effluent develops groundwater mounding below the percolation basins, which forms a positive differential between the percolation pond area and the ocean that results in subsurface discharge of fresh water to the ocean. CCSD operations also monitor the groundwater mound throughout the year to maintain a positive differential from CCSD's up-gradient production wells and the down-gradient percolation ponds area. During the summer dry season, and depending upon the prior year's precipitation, the Cambria Community Services District may periodically pump groundwater from its percolation fields in order to maintain this differential. When this occurs, water is lost to the ocean as subsurface underflow and the volume of up-gradient freshwater storage is diminished.

In January 2014, the CCSD declared a Stage 3 water shortage emergency, the most stringent of three levels. In response to this emergency status, the CCSD is constructing the Cambria Emergency Water Supply Project.

1.1.3 Project Description

The Project's source water is the San Simeon Creek aquifer from existing Well 9P7, which is located in the south end of a flat park-like area in the middle of the existing percolation ponds (Refer to Exhibit 3). The extracted groundwater is transferred to an Advanced Water Treatment Plant (AWTP) that treats brackish water to produce potable water. The AWTP consists of multiple unit processes including ultrafiltration membranes, reverse osmosis membrane, advance oxidation, and post-treatment and disinfection facilities. A feed water pipeline transports the brackish water between existing Well 9P7 and the AWTP. To meet California Department of Public Health and Regional Water Quality Control Board regulations, the treated AWTP product water is re-introduced/pumped for injection into the groundwater basin so that it is available in the existing San Simeon well field. To inject the product water into the basin, a new potable water recharge injection well (RIW) is located at the existing potable water well-field, approximately 1,000 feet east of existing potable water Well SS-3. A Project water pipeline transports the product water between the AWTP and RIW well. A separate pipeline from the AWTP to the head of the San Simeon Creek lagoon area provides mitigation water.

The Project's mitigation water flows in a pipeline from the AWTP to an area on CCSD property, which is just upstream from the head of the fresh water lagoon, approximately 1,500 feet southwest of existing Well 9P7. The AWTP generated waste stream (reverse osmosis concentrate) is pumped in a pipeline from the AWTP to an existing holding basin, which has been modified to meet State Title 27 criteria. Both natural and mechanically

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assisted evaporation of the waste stream occurs within the modified holding basin, which serves as the Project's evaporation pond.

The AWTP is capable of producing an average of 452 gpm of treated water for injection at the District's well field. During facility operations, a maximum of approximately 385 gpm could be extracted for use from CCSD's existing potable wells SS-1 or SS-2. The 452 gpm injection flow may be lower depending upon how much product water is required for blending with the 100 gpm of mitigation water being provided for the San Simeon Creek fresh water lagoon area to meet RWQCB quality criteria. For example, if a 50% blend is required, the 452 gpm would be reduced by 50 gpm. The amount of blending to occur with the mitigation water will be determined as part of the AWTP's commissioning and start-up testing.

1.2 ENVIRONMENTAL SETTING

1.2.1 Soils

Based on the U.S. Department of Agriculture Soil Survey, the Project site and survey area are underlain by the following soil units (Exhibit 4, *Soils Map*): Beaches, Capistrano sandy loam (rolling), Concepcion loam (5 to 9 percent slopes), Lodo clay loam (5 to 15 percent slopes), Los Osos loam (5 to 9 percent slopes), Los Osos loam (30 to 50 percent slopes), Los Osos-Diablo complex (15 to 30 percent slopes), Marimel sandy-clay loam (occasionally flooded), Riverwash, and Salinas silty clay loam (0 to 2 percent slopes).

1.2.2 Vegetation

Eight (8) plant communities were identified within the survey area during the initial habitat assessment (Exhibit 5, *Vegetation Map*): Central Coast Arroyo Willow Riparian Forest, Monterey Pine Stand/Monterey Pine Forest, Coyote Brush Scrub, California Bulrush Marsh, Annual Grassland, Wild Oats Scrub, Upland Mustards, and Eucalyptus Stand. In addition, areas were identified that would be classified as Landscaped Campground, Percolation Pond, Lagoon/Estuary, Disturbed, and Developed. Table 1 provides the acreage of each plant community or noted feature within the survey area, as well as the percentage that each encompasses within the total survey area. The plant communities are described in further detail below.

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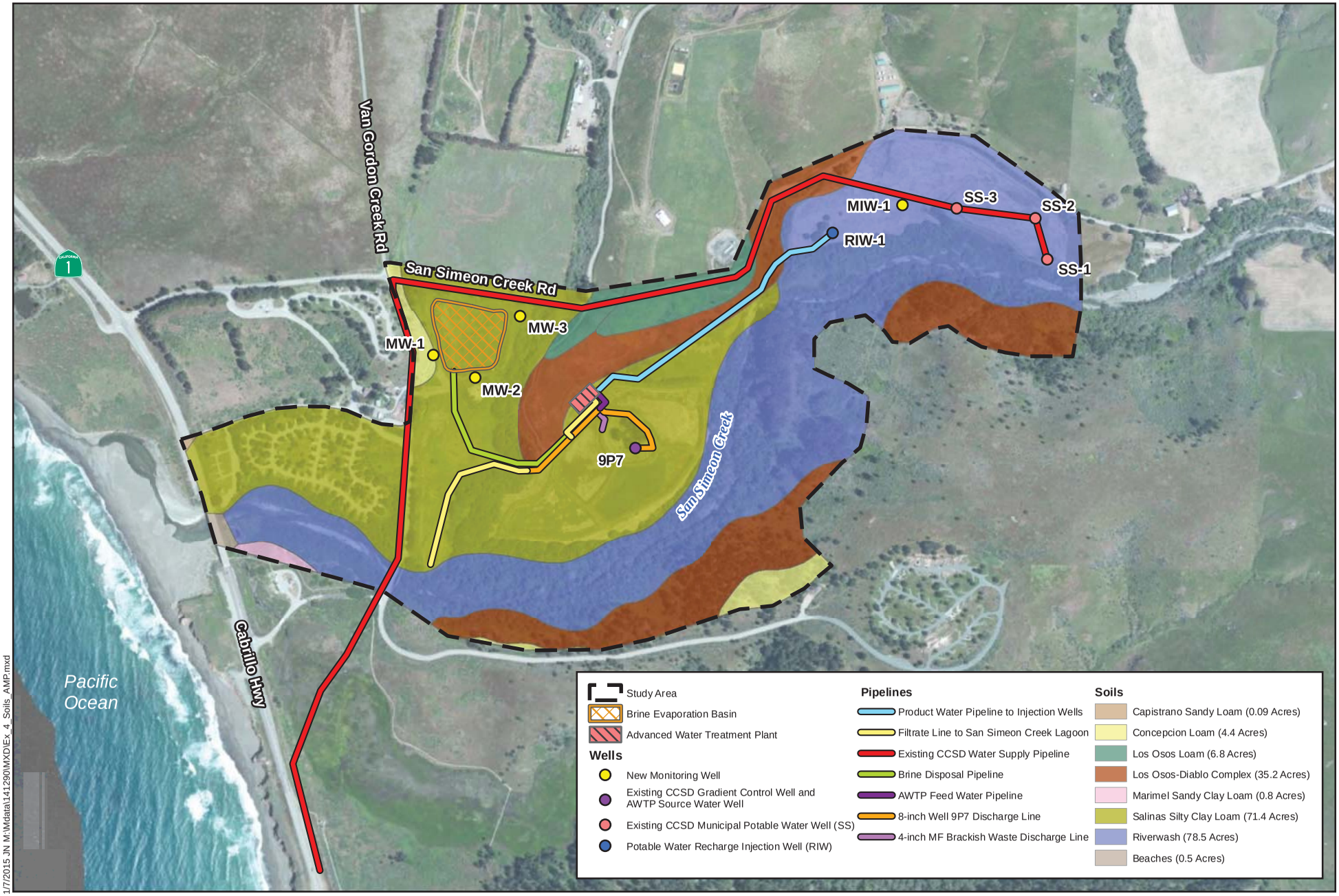

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Michael Baker INTERNATIONAL

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Source: NRCS Soils ca-664, CDM Smith, ESRI World Imagery Basemap

CAMBRIA EMERGENCY WATER SUPPLY PROJECT
ADAPTIVE MANAGEMENT PLAN

Soils Map

Exhibit 4

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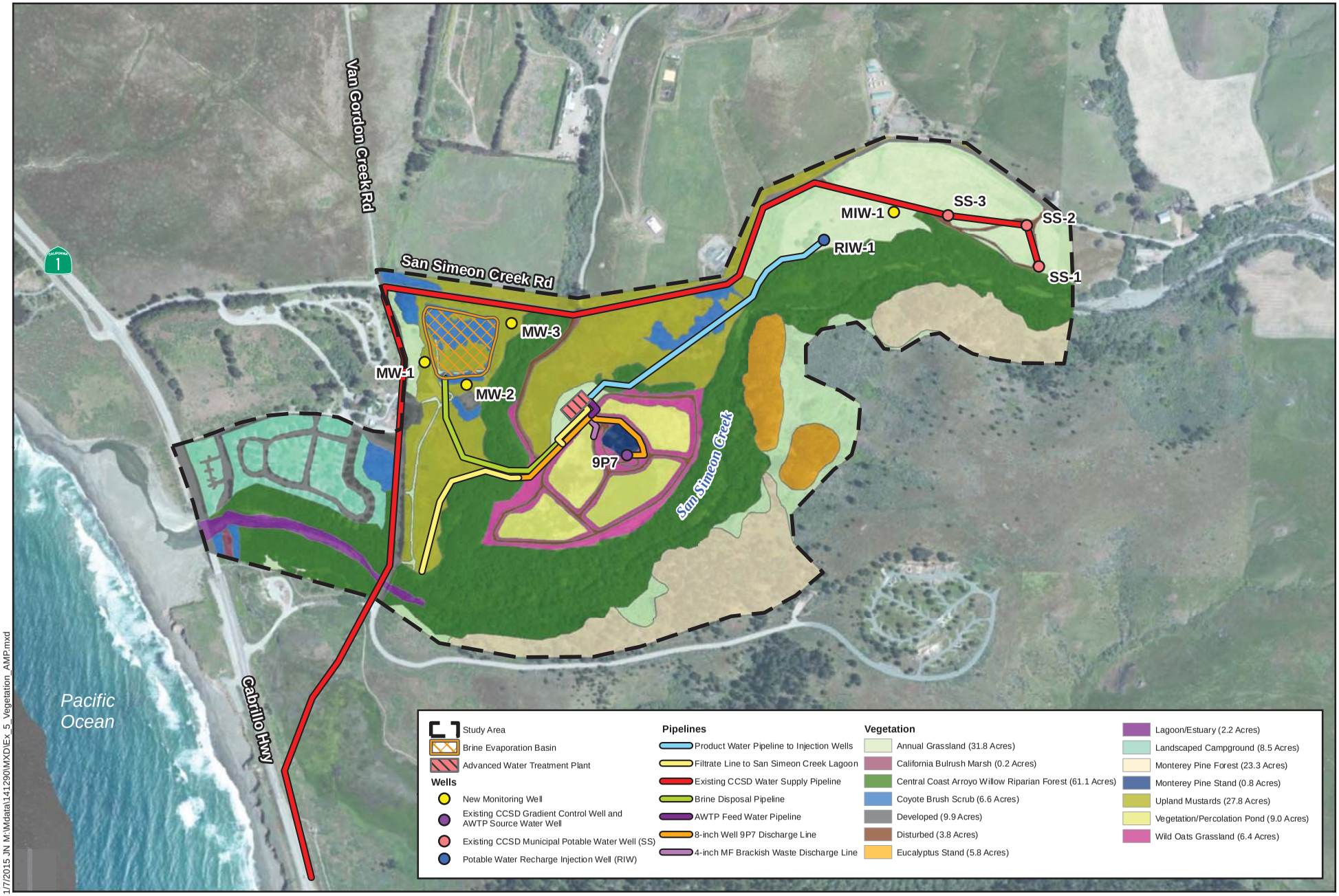

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Michael Baker INTERNATIONAL

0 400 800 1,600 Feet

Source: CDM Smith, ESRI World Imagery Basemap

CAMBRIA EMERGENCY WATER SUPPLY PROJECT
ADAPTIVE MANAGEMENT PLAN

Vegetation Map

Exhibit 5

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Table 1: Plant Communities

Plant Community	Acreage	Percentage
Central Coast Arroyo Willow Riparian Forest	61.1	31.0%
Monterey Pine Stand	0.8	0.4%
Monterey Pine Forest	23.3	11.8%
Coyote Brush Scrub	6.6	3.3%
California Bulrush Marsh	0.2	0.1%
Annual Grassland	31.8	16.1%
Wild Oats Grassland	6.5	3.3%
Upland Mustards	27.9	14.1%
Eucalyptus Stand	5.9	3.0%
Landscaped Campground	8.5	4.3%
Percolation Pond	9.0	4.6%
Lagoon/Estuary	2.2	1.1%
Disturbed	3.8	1.9%
Developed	9.9	5.0%
Total	**197.6**	**100%**

Central Coast Arroyo Willow Riparian Forest

The Central Coast Arroyo Willow Riparian Forest is characterized by a dense, low, closed-canopy forest dominated by arroyo willow (*Salix lasiolepis*). It typically occurs in low gradient stream reaches in areas that are moist to saturated sandy or gravelly soil, especially in areas within the coastal fog incursion zone. Other common species along the edge of San Simeon Creek include western sycamore (*Platanus racemosa*), eucalyptus (*Eucalyptus* sp.), and cape ivy (*Delairea odorata*).

Monterey Pine Stand/Monterey Pine Forest

There is one small stand of Monterey pine (*Pinus radiata*) located within the Project site. It is located in the center of the percolation ponds, with Well 9P7 located underneath the trees. The canopy cover in this area is composed entirely of Monterey pines, with the understory composed mostly of ripgut brome (*Bromus diandrus*) and wild oats (*Avena fatua*). In addition, a Monterey pine forest is located on the south side of San Simeon Creek.

Coyote Brush Scrub

Coyote brush scrub is scattered throughout the Project site, but is concentrated in patches primarily south of the vicinity of the intersection of Van Gordon Creek Road with San Simeon-Monterey Creek Road around the brine evaporation pond. It is also present north of the percolation ponds, to the east of the San Simeon Creek Campground within Hearst San Simeon State Park, and on the south side of San Simeon Creek Lagoon east of SR 1. It is dominated by coyote brush (*Baccharis pilularis*) and is intermixed with black mustard (*Brassica nigra*) and non-native grasses.

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California Bulrush Marsh

California bulrush marsh is located on the western edge of the Project site, immediately east of the SR 1 crossing and on the south side of San Simeon Creek Lagoon. It consists of a narrow channel dominated by dense California bulrush (*Schoenoplectus californicus*). The upland slopes are covered in coyote brush scrub. This channel is a tributary to San Simeon Creek Lagoon.

Annual Grassland

Annual grasslands are located in the northeastern portion of the Project site between San Simeon-Monterey Creek Road and San Simeon Creek, as well as south of San Simeon Creek. This community is dominated largely by canary grass (*Phalaris aquatica*), wild oat, ripgut brome, dandelions (*Taraxacum officinale*), coyote brush, and other herbaceous vegetation.

Wild Oats Grassland

Wild oats grassland is primarily located along the upper edges of and between the percolation ponds. It is dominated almost exclusively by thick stands of wild oats, but is intermixed with light coverage of ripgut brome, shortpodded mustard (*Hirschfeldia incana*), and canary grass.

Upland Mustards

Upland mustard communities are located primarily in the center of the Project site, both east and west of Van Gordon Creek and north of the percolation ponds. This community intermixes with coyote brush scrub. It is dominated by thick, tall stands of black mustard with low-growing grasses (canary grass and bromes), milk thistle (*Silybum marianum*), dandelion, poison hemlock (*Conium maculatum*), and giant horse tail (*Equisetum telmateia* ssp. *braunii*).

Eucalyptus Stand

Some small eucalyptus stands are located on the eastern side of the Project site on the south/eastern shore of San Simeon Creek. These are predominantly characterized by tall eucalyptus trees that are bordered and surrounded by the Central Coast Arroyo Willow Riparian Forest.

Landscaped Campground

The landscaped campground (San Simeon Creek Campground) is located on the western side of the Project site, west of Van Gordon Creek Road and north of San Simeon Creek Lagoon. It is underlain by non-native ornamental grasses and contains larger trees and shrubs including cypress (*Cupressus* sp.), western sycamore, and toyon (*Heteromeles arbutifolia*).

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Percolation Pond

There are four (4) percolation ponds located in the center of the Project site, northeast of the confluence of Van Gordon and San Simeon Creeks. While the upland edges of these are dominated by wild oats grasslands, the bottoms get periodically flooded for water treatment purposes and therefore undergo dynamic changes, sometimes holding dense vegetation, sometimes being bare and dry, and sometimes being inundated with water depending on the current flooding schedule.

Lagoon/Estuary

San Simeon Creek Lagoon/Estuary is located from just east of Van Gordon Creek Road to just west of SR 1. It is surrounded by the Central Coast arroyo willow riparian forest. When the sandbar is closed (typically late spring through fall or winter) this habitat is characterized as a lagoon. When it is open (typically fall or winter through early spring) it is characterized as an estuary where saltwater and freshwater merge. In some years the sandbar may not open at all, resulting in only a lagoon habitat, and in others the sandbar may be artificially breached by an excess of water, resulting in premature or untimely estuary habitat.

Disturbed

Disturbed areas within the survey area can be described as unpaved dirt roads, particularly those surrounding the percolation ponds and those passing through the eastern well field. These areas are not vegetated. It is also noted that the brine evaporation pond was previously disturbed when originally constructed to serve as a holding basin.

Developed

Developed areas within the survey area include existing wells and buildings, as well as the main access road to Well 9P7. These areas are not vegetated.

1.2.1 Wildlife

Plant communities provide food sources, along with foraging, nesting and denning sites, cover, and protection from adverse weather or predation. This section provides a discussion of those wildlife species observed, expected or not expected to occur on-site. The discussion is to be used as a general reference and is limited by the season, time of day, and weather condition in which the survey was conducted. Wildlife observations were based on calls, songs, scat, tracks, burrows and actual sightings of animals.

Amphibians

Much of the Project site and its immediate surrounding area would constitute suitable habitat for amphibians. Two amphibians were detected on-site, the common species Sierran chorus

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frog (*Pseudacris sierrae*) and the federally threatened California red-legged frog (*Rana draytonii*). Other common amphibian species that could occur in San Simeon Creek or during heavy rainfall and subsequent ponding of water in the percolation ponds include western toad (*Anaxyrus boreas*), American bullfrog (*Lithobates catesbeianus*), ensatina (*Ensatina eschscholtzii*), and various species of slender salamander (*Batrachoseps* sp.). The Project site and surrounding area have the potential to support multiple special-status amphibians, including foothill yellow-legged frog (*Rana boylii*) and Coast Range newt (*Taricha torosa*).

Reptiles

The Project site has the potential to support both terrestrial and aquatic reptiles. Three reptile species were observed during surveys conducted by RBF Consulting (RBF), the common species western fence lizard (*Sceloporus occidentalis*) and coast garter snake (*Thamnophis elegans terrestris*), and the California species of special concern western pond turtle (*Emys marmorata*). The immediate Project site is primarily composed of disturbed, altered areas that are presently overgrown with vegetation. Two creeks, Van Gordon Creek and San Simeon Creek, traverse portions of the Project site. The general Project vicinity has the potential to support a number of reptilian species including gopher snakes (*Pituophis catenifer*), garter snakes (*Thamnophis* ssp.), California kingsnake *(Lampropeltis getula californiae*), northern Pacific rattlesnake (*Crotalus oreganus oreganus*), alligator lizard (*Elgaria multicarinata*), and side-blotched lizard (*Uta stansburiana*). The Project site and surrounding area also have the potential to support two-striped garter snake (*Thamnophis hammondii*).

Avian

The Project site and adjacent area support a high variety of avian species. Because of the high number of species observed, only the most numerous are mentioned here. Those that were observed in the greatest quantities included mallard (*Anas platyrhynchos*), turkey vulture (*Cathartes aura*), California gull (*Larus californicus*), Pacific-slope flycatcher (*Empidonax difficilis*), chestnut-backed chickadee (*Poecile rufescens*), bushtit (*Psaltriparus minimus*), cedar waxwing (*Bombycilla cedrorum*), song sparrow (*Melospiza melodia*), red-winged blackbird (*Agelaius phoeniceus*), and house finch (*Haemorhous mexicanus*). The Project site and surrounding area have the potential to support special-status raptors such as ferruginous hawk (*Buteo regalis*) and prairie falcon (*Falco mexicanus*).

Mammals

The plant communities within the Project site are anticipated to provide suitable habitat for a number of mammalian species acclimated to heavy disturbance. However, most mammal species are nocturnal and are difficult to observe during a diurnal field visit. Mammals observed during RBF's surveys include mule deer (*Odocoileus hemionus*), striped skunk (*Mephitis mephitis*), and feral pig (*Sus scrofa*), with additional sign from coyote (*Canis*

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latrans) and woodrat (*Neotoma* sp.). Common mammalian species expected to occur on the Project site include California ground squirrel (*Otospermophilus beecheyi*), Botta's pocket gopher (*Thomomys bottae*), California vole (*Microtis californicus*), deer mouse (*Peromyscus maniculatus*), raccoon (*Procyon lotor*), cottontail rabbits (*Sylvilagus audubonii*), and opossum (*Didelphis virginiana*). The Project site and surrounding area have the potential to support special-status mammals, including fringed myotis (*Myotis thysanodes*) and Yuma myotis (*Myotis yumanensis*).

Fish

When wetted, San Simeon Creek, Van Gordon Creek, the San Simeon Creek Lagoon, and their tributaries would provide suitable habitat for fish. Threespine stickleback (*Gasterosteus aculeatus*) and the federally endangered tidewater goby (TWG, *Eucyclogobius newberryi*) were observed during the habitat assessment in San Simeon Creek and San Simeon Creek Lagoon. In addition to tidewater goby, the aforementioned waterways have the potential to support another special-status fish species, South-Central California Coast steelhead trout (*Oncorhynchus mykiss irideus*).

1.2.2 Wildlife Movement Corridors

The eastern portion of the Project site abuts the foothills of the Santa Lucia Mountains. This mountain range provides a natural corridor to the north and south along the Coast Ranges. However, while the Project vicinity is considered to be a north-south migratory linkage along the mountains, no formal east-west linkage has been recognized along San Simeon Creek or the other waterways by connectivity assessments such as Missing Linkages (Penrod et al. 2001) or the California Essential Habitat Connectivity Project (Spencer et al. 2010). Regardless, San Simeon Creek and the other waterways are likely to provide valuable migration habitat for birds and fish. San Simeon Creek is recognized by the California Coastal Commission and by the California Department of Fish and Wildlife (CDFW) as an essential creek for steelhead migration, and the lagoon that forms at the mouth of San Simeon Creek can host both juvenile steelhead and tidewater goby (CCC 1998). While California red-legged frog can migrate or move to upland areas during the nonbreeding season, this is decided by individual frogs and is not necessarily a feature of every frog in a population. Nevertheless, frogs that may be present in San Simeon Creek or other waterways in the Project vicinity may migrate up and down the waterways or leave the water and head to upland grasslands during seasonal migrations.

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1.2.3 Surface Waters

1.2.4 Groundwater

1.3 REGULATORY REQUIREMENTS

1.3.1 California Environmental Quality Act

The California Environmental Quality Act (CEQA) provides for the protection of the environment within the State of California. If a Project is determined to be subject to CEQA, the lead agency will be required to conduct an Initial Study (IS); if the IS determines that the Project may have significant impacts on the environment, the lead agency will subsequently be required to write an Environmental Impact Report (EIR). A finding of non-significant effects will require either a Negative Declaration or a Mitigated Negative Declaration instead of an EIR. However, in certain conditions a project may be entirely exempt from the CEQA process.

In January 2014, California Governor Edmund G. "Jerry" Brown issued an emergency drought declaration and proclamation. In this emergency declaration, the Governor stated that the Department of Water Resources and the Water Board may take actions to make water immediately available, and that CEQA and all regulations adopted pursuant to CEQA "are suspended on the basis that strict compliance with them will prevent, hinder, or delay the mitigation of the effects of the emergency." The Governor's subsequent Proclamation of a Continued State of Emergency, issued on April 25, 2014, suspended the California Environmental Quality Act (Public Resources Code 21000 and following) for all actions taken by local agencies that were identified by the California Department of Public Health as vulnerable to acute drinking water shortages and that were necessary to implement solutions to such shortages if the Office of Planning and Research "concurs that local action is required." (Proclamation No. 4-25-2014, #12 & #19). On September 12, 2014, the Governor's Office of Planning and Research concurred that the Cambria Emergency Water Supply Project was subject to the Governor's April 2014 executive orders that suspended CEQA.

To abide by the conditions of the Emergency Coastal Development Pemit issued by San Lius Obispo County and support the District's Regular Coastal Development Permit application with the County, the District has commissioned the completion of an EIR, which is following construction of the Emergency Water Supply Project. This atypical completion process was necessitated by the area's extreme drought conditions and allowed for in the Governor's April 2014 Executive Orders.

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1.3.2 California Coastal Act §30000 et seq.

Chapter 3 of the California Coastal Act contains policies to protect water quality and the biological productivity of coastal waters (PRC Section 30231); avoid and minimize dredging, diking, and filling sediments (PRC Section 30233); and mitigate wetland impacts (PRC Section 30607.1).

In addition, under the California Coastal Act "environmentally sensitive area means any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments" (PRC Section 30107.5).

The California Coastal Act requires that jurisdictions protect Environmentally Sensitive Habitat Areas (ESHA). Specifically, PRC Section 30240 states that:

a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on such resources shall be allowed within such areas.
b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade such areas, and shall be compatible with the continuance of such habitat areas.

The Coastal Act generally protects ESHAs where they exist and also protects "against any significant disruption of habitat values." Section 30007.5 of the Coastal Act states that where there is a conflict between policies that it:

> *…be resolved in a manner, which on balance is the most protective of significant coastal resources. In this context, the Legislature declares that broader policies which, for example, serve to concentrate development in close proximity to urban and employment centers may be more protective, overall, than specific wildlife habitat and other similar resource policies.*

The Project is located within the jurisdiction of the Coastal Zone, is adjacent to San Simeon Creek and and San Simeon Creek Lagoon, both ESHAs, and is adjacent to Hearst San Simeon State Park.

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1.3.3 Local Policies

Local Coastal Program

Under Section 30500 of the California Coastal Act, each local government within the California Coastal Zone must prepare or have the Coastal Commission prepare for it a Local Coastal Program (LCP). The San Luis Obispo County LCP is a comprehensive four-part management program that is intended to assist with the management and protection of the Coastal Zone and to ensure compliance with the California Coastal Act; it was certified by the California Coastal Commission in 1987. This LCP is composed of four separate documents: *Framework for Planning*, *Coastal Plan Policies* (CPP), Area Plans, and *Coastal Zone Land Use Ordinance* (CZLUO).

a) *Framework for Planning*: San Luis Obispo County is split into 13 separate land use categories. The Framework for Planning document (SLO County 1988a) describes each of those categories in detail, including purposes and definitions ("characters"). In addition, the Framework for Planning contains Coastal Table "O," a table which lists approved uses within each land use category.
b) *Coastal Plan Policies*: The San Luis Obispo County CPP (SLO County 1988b) are intended to help the county carry out the preservation policies of the Coastal Act of 1976. As such, this document recommends policies and standards to be implemented for development within the Coastal Zone and to remain in compliance with the Coastal Zone Land Use Ordinance. Among many others, the CPP includes provisions for development that may affect riparian vegetation, terrestrial habitats, wetlands, or that may require habitat restoration. Much of the CPP works in tandem with and is implemented pursuant to the CZLUO.
c) *North Coast Area Plan*: San Luis Obispo County is divided into eight separate planning areas, four of which fall within the Coastal Zone; the Project is located within the North Coast Planning Area. The North Coast Planning Area extends from the northern San Luis Obispo County border south to Point Estero and east to the main ridge of the Santa Lucia Range, encompassing the communities of San Simeon and Cambria. The North Coast Area Plan (NCAP) (SLO County 1980) allocates land use within this planning area through the use of land use categories. Through these land use categories, the NCAP designates residential, commercial, and recreational development standards within the planning area to best protect and conserve natural resources and the overall land use plan. In addition to land use categories, there are "Combining Designations" (CDs). As defined by the NCAP, "Combining Designations are special overlay land use categories applied in areas of the county with potentially hazardous conditions or significant natural resources. In these areas more detailed project review is needed to avoid or minimize adverse environmental impacts, or effects of hazardous conditions on proposed projects." A 1998 update to

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the NCAP (CCC 1998) more specifically defined ESHAs and other protected areas within the planning area.

d) *Coastal Zone Land Use Ordinance*: The CZLUO (SLO County 1986) is enacted as Title 23 of the San Luis Obispo County Code. It is the implementation portion of the LCP and regulates development and land use within the unincorporated areas of the California Coastal Zone. Chapter 7 of the CZLUO deals with CD standards, and Sections 23.07.160 to 23.07.178 pertain specifically to environmentally sensitive areas, including Sensitive Resource Areas (SRAs), ESHAs, wetlands, streams and riparian vegetation, terrestrial habitat, and marine habitat. This document works in tandem with the CPP and provides in many cases more detailed instructions and requirements for development in or adjacent to environmentally sensitive areas.

1.4 POTENTIAL IMPACTS TO SENSITIVE SPECIES

Based on habitat requirements for specific species, availability and quality of habitats needed by sensitive species, and known distribution in and around the Project site, it was determined that the following species occur or have a high potential to occur in the surrounding aquatic habitat. These species could be affected by Project implementation.

Amphibian and Reptile Species

Based on historical survey results and the results of RBF's surveys, it was determined that the habitat in and around the Project site supports or is likely to support the following sensitive amphibian and reptile species.

Western Pond Turtle

The western pond turtle is designated by the CDFW as a California species of special concern. It typically inhabits slow-moving streams, ponds, and marshes with exposed banks, logs, and other suitable locations for basking. Pond turtles mate and lay eggs in spring and summer in upland grassland habitat, and in most of their range will overwinter between October and April.

Western pond turtle has been previously documented in San Simeon Creek and San Simeon Creek Lagoon. Suitable habitat is located within these two areas, particularly in the downstream reaches of San Simeon Creek where the creek substrate gives way from rocks to sandy or muddy bottoms, which are often utilized by pond turtles for hiding during evasive movements. This species was observed by RBF biologists in San Simeon Creek Lagoon.

California Red-legged Frog

The California red-legged frog is federally listed as threatened and is designated by the CDFW as a California species of special concern. It is a year-round resident in the Project

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vicinity. The life cycle of this species entails breeding between winter and early spring, followed by tadpole development and metamorphosis in summer. The California red-legged frog typically breeds between February and April in permanent or ephemeral water sources including lakes, ponds, reservoirs, slow streams, marshes, bogs, and swamps. During the non-breeding season, individuals of this species may leave and migrate elsewhere, but California red-legged frogs generally stay in one place year-round if the habitat is inundated. The California red-legged frog is primarily found near ponds in humid forests, woodlands, grasslands, coastal scrub, and streamsides with plant cover and is most common in lowlands or foothills.

In September and October 2014, RBF biologists conducted a California red-legged frog population count in San Simeon Creek Lagoon and lower San Simeon Creek consisting of two nocturnal mark-recapture surveys. No upland surveys were conducted. Surveys were spaced one week apart and an attempt was made to capture every frog. Using the Lincoln-Petersen population index and the mark-recapture data, the population of California red-legged frogs in San Simeon Creek Lagoon at the time of the surveys was estimated to be 54 frogs constituting a mixture of adults and juveniles. Overwintering tadpoles were not observed. The entire Project site is located within California red-legged frog Critical Habitat Unit SLO-2. Observed wetted habitat within San Simeon Creek during the habitat assessment was highly suitable for this species. This species was observed by RBF biologists in San Simeon Creek Lagoon.

Two-striped Garter Snake

The two-striped garter snake is designated by the CDFW as a California species of special concern. It is primarily an aquatic species and is typically found in or near permanent or semi-permanent water including creeks, pools, stockponds, and other areas. Surrounding vegetation is typically made up of chaparral, forest, woodland, and grassland, and may vary according to the season. This species is primarily active between spring and fall, and in many cases will retreat into a burrow for the winter. Breeding occurs in the spring after the snakes emerge into the active season again.

There is suitable habitat for this species in San Simeon Creek. While it is more likely to be found in the downstream sections where there is more water, it could occur throughout the creek. This species was not observed during RBF's surveys, but has been recorded in this area in the past and has a high potential to occur in San Simeon Creek, San Simeon Creek Lagoon, and Van Gordon Creek.

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Fish Species

Tidewater Goby

The tidewater goby is federally listed as endangered and is designated by the CDFW as a California species of special concern. Tidewater goby is a year-round resident of San Simeon Creek Lagoon, generally only living for one year. It occurs primarily in coastal lagoons and estuaries and has only been captured in marine environments in very few instances. In their habitat, tidewater gobies are generally present in the upper estuary where the freshwater and saltwater mix, and will range upstream into pure freshwater and downstream into areas of majority salt water (up to about 75%). Though they can be present in water where salinity ranges up to 28 parts per thousand, they are predominantly found in areas where salinity is less than 12 parts per thousand, i.e. on the upper edges of tidal bays and in coastal lagoons. Tidewater gobies reproduce throughout the year but peak reproduction occurs in spring and late summer while the lagoon sandbar is closed.

There is occupied habitat for this species downstream of the Project site in San Simeon Creek Lagoon. This species was observed by RBF biologists in San Simeon Creek Lagoon, which is also tidewater goby designated Critical Habitat Unit SLO-5, during RBF's habitat assessment. A tidewater goby population estimate was also conducted in October 2014 by D.W. Alley and Associates under contract to RBF. The tidewater goby population estimate effort consisted of one survey in San Simeon Creek Lagoon using seine nets. A total of 1,002 tidewater goby were captured in San Simeon Creek Lagoon during this survey effort.

Steelhead (South/Central California Coast DPS)

Steelhead is federally listed as threatened and is designated by the CDFW as a California species of special concern. The population in the Project vicinity ranges from Santa Cruz County south to, but not including, the Santa Maria River. Typical freshwater steelhead habitat consists of gravel-bottomed, fast-flowing, well-oxygenated rivers and streams. Dissolved oxygen levels should be at least seven parts per million, and streams should have deep, low-velocity pools for wintering. The life cycle of this species is such that adult steelhead return to San Simeon Creek from the ocean in winter and early spring to spawn upstream. As the dry season returns and the creek begins to dry into isolated pools, young steelhead fry will either move into deep pools upstream or move downstream into the lagoon to mature while the sandbar is closed. When the sandbar opens again, steelhead smolt that have been summering in the lagoon will either move out to sea or remain in the lagoon and continue to grow for another year or more. Juveniles will typically spend between one and three years maturing in a freshwater or estuarine environment before migrating out to sea. After a typical span of one to four years of maturation in the ocean, the fish will return to their natal waters to spawn again.

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There is suitable habitat for this species in San Simeon Creek. This species has been historically recorded over many years to occur within the creek, both in the creek and downstream in the lagoon. San Simeon Creek and Van Gordon Creek are part of the steelhead designated Critical Habitat unit that is located within the Estero Bay Hydrologic Unit. Based on local accounts, the sandbar across the mouth of the lagoon has not opened for the last couple years, preventing returning adult steelhead from spawning in San Simeon Creek and likely leading to the death of steelhead smolt that may have been maturing in the lagoon. At the time of the surveys in October 2014, no steelhead are believed to have been present in San Simeon Creek Lagoon or the lower reaches of San Simeon Creek. However, this species is expected to have a high potential for occurrence and should be assumed to be present in these water bodies under a normal rainfall year (i.e. not under drought conditions).It is noted that historically, both San Simeon Creek and Santa Rosa Creek were stocked with steelhead by the CDFW and local ranchers.

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Section 2 Monitoring Program

Concern has been expressed regarding the Project's potential to lower groundwater levels and create a cone of depression that would impact surface flows in San Simeon Creek as well as riparian vegetation along the banks of San Simeon Creek.[1] This concern is also related to the potential lowering of general groundwater levels and the potential to impact up-gradient phreatophytes as the groundwater level drops. Groundwater modeling conducted by CDM Smith determined that by providing the 100 gpm of mitigation water as a design feature, the Project's proposed pumping and reinjection program would not adversely affect surface water levels in the San Simeon Creek Lagoon and that this action would have no impact upon tidewater goby, steelhead trout, or California red-legged frog. The mitigation water is intended to replenish lagoon water that is lost by seepage to the lowered groundwater table. During times when the Project is operating, there is not significant flow, since the beach berm generally isolates the system from a direct surface connection to the ocean. Due to the complexity of the San Simeon Creek system and to verify that no impact to habitat would occur, one of the mitigation measures recommended for this Project is the development and implementation of an Adaptive Management Plan (AMP) to monitor in-stream and riparian habitat associated with San Simeon Creek, San Simeon Creek Lagoon, and Van Gordon Creek. This AMP was developed to verify that the Project would not significantly adversely impact the in-stream habitat or the surrounding riparian habitat and the species that depend upon them.

This AMP has been prepared as a contingency to define available management actions by the CCSD to address unforeseeable significant adverse impacts, as well as to contribute to the long-term sustainability of the in-stream and riparian habitats in lower San Simeon Creek, San Simeon Creek Lagoon, and Van Gordon Creek. Annual reports will be prepared and will include recommendations for ongoing monitoring and any adaptive management actions required to mitigate any measured loss or prospective loss of riparian habitat that may be attributable to the Project's implementation. Using the baselines and thresholds as described in this AMP, significant adverse impacts to riparian habitat that are attributable to the Cambria Emergency Water Supply Project will be identified early and mitigated before significant adverse impacts occur.

All monitoring duties will be conducted by a biological monitor (BM) or a team of monitors. The BM(s) will be expected to participate in each of the following monitoring and reporting

[1] Concerns were expressed at an interagency meeting held on August 27, 2014 at the Santa Cruz, CA office of the California Coastal Commission. Participants included representatives from CCSD, RBF, CDM Smith, CDFW, USFWS, CA Department of Parks and Recreation, the Regional Water Quality Control Board, U.S. Army Corps of Engineers, and the California Coastal Commission.

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activities, as described below. The BM(s) must be capable of correlating quantitative hydrologic modeling with stream conditions, taking stream measurements with standard electronic meters, and comparing habitat requirements of sensitive species against the on-site conditions to identify changes and determine if the noted changes have the potential to result in significant future adverse impacts. To evaluate riparian health, the BM(s) or other biological contractor(s) must be familiar with and possess demonstrable experience conducting evaluations using the California Rapid Assessment Method (CRAM). To conduct capture surveys for listed species, at least one of the BM(s) or other biological contractor(s) conducting the survey must possess current and valid Endangered Species Act Section 10(a)(1)(A) recovery permits for tidewater goby, steelhead trout, and California red-legged frog as applicable, as well as a California Department of Fish and Wildlife Scientific Collecting Permit allowing take of any or all of these species.

Confirm Baseline Assumptions

During the first year of monitoring, the focus will be to gather sufficient data at the monitoring stations to define the interaction between groundwater and surface water and how it has maintained the in-stream habitat as well as the surrounding riparian habitat. Data collection (and analysis) will include groundwater and surface water data, habitat data, and species distribution data. This information will be combined with historical data recorded by CCSD as part of its regular operations and by biological monitoring and surveys. An analysis of the combined set of data will be used to set the threshold for adverse impacts.

Collect Baseline Data

Baseline data for groundwater and surface water gathered during the first year will be collected on a monthly basis. Surface water and groundwater data will include collecting available data from existing surface water monitoring stations, as well as measuring all indications of ponding or surface discharge within a 50-foot radius of the designated groundwater wells. Depth and duration of ponding will be recorded. The water budget for CCSD operations in the San Simeon aquifer will be compiled for correlation with the monitoring program. These data will include monthly averages for:

- Pumping from wells SS1, SS2, SS3 and 9P7
- Inflow to the AWTP
- Injection into RIW-1
- Discharge of treated effluent from the Cambria POTW to the percolation ponds
- Filter backwash discharge from the AWTP to the percolation ponds
- Discharge of RO concentrate to the evaporation pond

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Data loggers will be used to record diurnal variations in water levels from wells that are adjacent to riparian areas. This data will be recorded each month and correlated with the groundwater data and surface water data. As noted, it is believed, based on the existing information, that the soil moisture is maintained by a combination of groundwater and surface water. However, data collection (current and historic) and analysis will be needed to confirm this assumption.

Establishment of Thresholds

At the end of the first year, baseline conditions will be established and the interaction of groundwater levels, lagoon levels and surface flows will be better understood. This information will be used to determine specific thresholds that "trigger" additional investigation and adaptive management measures.

2.1 MONITORING GROUNDWATER LEVELS

A groundwater monitoring and management program was recommended for San Simeon Creek by the National Marine Fisheries Service in the 2013 South-Central California Coast Steelhead Recovery Plan (NMFS 2013). Monitoring stations will be established within the adjacent riparian corridor that will allow for monitoring of groundwater levels. Wherever possible, the use of existing monitoring well data, including data routinely collected by the District, will be incorporated. During the initial monitoring year, groundwater data gathered from the CDM Smith 2014 hydro-geological modeling efforts coupled with current data from a monitoring well or system of wells, will be used to establish baseline conditions against which future conditions can be compared. This information will be combined with historical groundwater data as recorded by CCSD. CCSD currently has 20 wells monitoring water levels for San Simeon Creek, 15 of which are within one mile of the proposed water extraction point (Well 9P7) vicinity. If not already present, it is recommended that each of the monitoring wells that will be used as part of the AMP be fitted with pressure transducers that record water levels once every 15 minutes. Although CCSD will continue to take regular groundwater level measurements twice per month to include on comparison charts, having groundwater data available in 15-minute increments will allow retrieval of up-to-date information as needed. Groundwater level data will be supplied to the BM on a monthly basis for evaluation and recommendations as necessary.

The average groundwater levels in San Simeon Creek production wells between 1988 and 2014, as measured bimonthly, indicate that groundwater has been at approximately 20 feet above sea level from February to May, gradually dropping each year in the late spring and summer to reach an average of only eight (8) feet above sea level by October before gradually rising again (CCSD 2014). For purposes of this AMP and during operation of the Project facilities, fluctuations in groundwater levels will be monitored monthly at all

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available monitoring wells. A drop in groundwater levels outside of historical ranges will be analyzed with the District's hydrologist to determine if the drop in level is within the expected range or if further investigation is required.

2.2 MONITORING SURFACE WATER FLOW

Surface water flow is an integral component of providing suitable habitat for aquatic species. While tidewater goby and California red-legged frog require still water or minimal water flow to survive, steelhead trout requires water flow during most of its life stages, including adult migration, spawning, juvenile growth, overwintering, and juvenile migration (Smith undated). Surface water flow can be seriously depleted by water withdrawals, and as such it will be necessary to simultaneously monitor surface water levels in San Simeon Creek. It is recommended for ease, efficiency, and accuracy that stream flow be measured electronically with a flow meter, such as the Marsh McBirney Flo-Mate 2000. However, the facility may only be operated when the adjacent reaches of San Simeon and Van Gordon Creeks are already dry, as these reaches only flow seasonally and are not perennial streams. Therefore, such monitoring may be more closely related to monitoring the San Simeon Creek Lagoon area during the dry season. It is noted, little if any flow will be observed during the dry portion of the year, if the beach berm is not open. Monitoring of stage in the lagoon and the stage relative to groundwater will be assessed.

In the absence of an electronic flow meter, an alternative but less accurate method of calculating stream flow is to calculate the amount of time that it takes for a floatable object (e.g. pine cone, orange) to float down a fixed stream segment. With this method, flow can be calculated by solving the following equation:

$$\text{Flow} = ALC / T$$

Where:

- A = The average cross-sectional area of the stream (stream width multiplied by average water depth);
- L = The length of the stream reach that is being measured (typically this is 20 feet);
- C = A coefficient or correction factor (0.8 for rocky-bottom streams or 0.9 for muddy-bottom streams); and
- T = The time in seconds for the float to travel the length L.

Surface water flow should be measured at least twice each month at two-week intervals for the first year at the same time and in the same general location that the surface water level is measured (Section 2.3). It is noted, there will be tidal influences on the flow in the system, if

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the beach berm is open. Measurement periods would be required to specify the point in the tidal cycle when spot measurements are taken. Measurements will be taken in Van Gordon Creek, San Simeon Creek, and San Simeon Creek Lagoon, as applicable. The information obtained during this measurement will be used to help determine habitat suitability for fish species, as described in Section 2.5. Typical flow rates will be determined over the course of the first year of monitoring in order to determine baseline flow rates for future benchmarking. Following the first year, measurements shall be taken on a quarterly basis.

2.3 MONITORING SURFACE WATER LEVELS

San Simeon Creek originates in the Santa Lucia Range and runs for approximately 8.5 miles before draining into San Simeon Creek Lagoon. Upstream of the confluence with Steiner Creek it is perennial.[2] As such, it receives significant surface flow each year, much of which dries up in the late spring and summer. Historical biological survey reports for lower San Simeon Creek and San Simeon Creek Lagoon will be used to help characterize the annual water cycles (temporally) and inundation patterns (geographically) in these water bodies. In addition, CCSD will coordinate with applicable agencies and organizations to identify key surface water monitoring stations for collection of historical data and active monitoring data.

CCSD staff gages are present in San Simeon Creek. However the San Luis Obispo County Flood Control District maintains a former USGS gaging station, which is located between the San Simeon well field and the proposed AWTP. The County data for this station is also available online via their website. Manual staff gages are used for quick visual recording of the height of surface water in water bodies. Where appropriate and as part of this AMP, and in consultation with the BM and a hydrologist, the CCSD will install additional staff gages in Van Gordon Creek, San Simeon Creek, and San Simeon Creek Lagoon for the future measurement of surface water levels. Gages will be placed at easily accessible locations to facilitate efficient and cost-effective gage checks. It is recommended that they be placed in areas where it is convenient to simultaneously measure water levels and stream flow. Surface water levels will be measured twice per month at two-week intervals for the first year of AMP implementation. Historical data will be used to establish baseline surface water levels for future monitoring. Following the first year, measurements shall be taken on a quarterly basis.

[2] Based on the USGS report of monitoring of the Palmer Flats gage, which is near the confluence, the stream is dry for about half the year.

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2.4 MONITORING IN-STREAM AND RIPARIAN HABITAT EXTENT AND HEALTH

A crucial element of the long-term monitoring process will be to monitor the extent and health of the in-stream and riparian habitat associated with Van Gordon Creek, San Simeon Creek, and San Simeon Creek Lagoon. This includes the measurement of wetted width, wetted depth, water flow, and soil moisture levels in the riparian habitat. These measurements will in turn evaluate the suitability of the habitat to support listed species known to occur in the Project vicinity.

The riparian forest within the immediate vicinity of groundwater and surface water monitoring stations will be directly monitored to detect changes in soil moisture levels as well as vegetative composition. For areas that exhibit groundwater at or near the surface, groundwater is the primary source of water for the riparian vegetation at that location. Similarly, for areas with consistent surface discharge, but with lower groundwater elevations, vegetation depends mostly on surface water. Undoubtedly, some areas obtain water from both sources, and this is likely to vary within a single year and also from year to year depending on a variety of factors, making the determination of definitive baseline conditions difficult. Based on RBF's current understanding of the interaction of groundwater levels and surface flows, a combination of severe and rapid groundwater drawdown in excess of several feet, coupled with a corresponding loss of surface flows, would be required before soil moisture within the rooting zone of the riparian habitat would decrease enough to cause adverse impacts to the riparian plants and ultimately a reduction in riparian forest.

The proposal to collect groundwater, surface water, and soil moisture data will provide important information on vegetative response to changing conditions. In addition to collecting these data, it is recommended that three separate CRAM surveys be conducted of Van Gordon Creek, lower San Simeon Creek, and San Simeon Creek Lagoon. CRAM is a rapid assessment method used to monitor California's wetlands by assessing the ambient conditions within watersheds and assigning numerical scores based on physical and biotic features. CRAM surveys have previously been conducted in upper San Simeon Creek Lagoon (upstream of Van Gordon Creek Road) in 2005 and 2007. By conducting new or updated CRAM surveys of Van Gordon Creek, lower San Simeon Creek, and San Simeon Creek Lagoon, baseline physical conditions can be obtained to compare against in the future. CRAM surveys shall be conducted annually to provide long-term pictures of the potentially changing conditions within this watershed.

2.5 MONITORING AVAILABLE IN-STREAM AND FISH HABITAT

A major component of monitoring the available fish habitat in San Simeon Creek and San Simeon Creek Lagoon is establishing the connection between stream flow and habitat. The

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Physical Habitat Simulation System (PHABSIM) software is used to simulate the relationship between stream flow and physical in-stream habitat for different life stages of designated fish species (Milhous and Waddle 2012). PHABSIM relies upon hydraulic simulation using defined hydraulic parameters and habitat simulation using defined habitat suitability criteria. Hydraulic simulation looks at particular stream segments that may have different combinations of depth, velocity, and channel index (e.g. substrate, cover). This information is subsequently used to calculate a habitat measure called Weighted Usable Area (WUA) for the subject stream segment from species suitability information.

By inputting tidewater goby and steelhead trout habitat requirement parameters into the PHABSIM model, it is possible to calculate the WUA for each of these species. This information will be calculated at least twice a month at two-week intervals following each period of measurements in order to determine if the simulated suitable habitat for these species has increased, decreased, or is remaining constant during Project implementation.

Available fish habitat can also be determined on a relative scale using quantitative measurements such as temperature and available dissolved oxygen. These water characteristics can be measured with oxygen and salinity meters. According to annual studies commissioned by the CCSD between 1991 and 2005, tidewater goby has been observed to be generally more tolerant of adverse ambient conditions. Tidewater goby can spawn at salinities ranging from 5 to 10 parts per thousand (ppt) and can survive in temperatures ranging from 18 up to 27° Celsius (C) and only 1 part per million (ppm) of dissolved oxygen (DO).

However, steelhead trout require more restrictive aquatic conditions in order to survive. Based on years of annual steelhead surveys funded by CCSD on San Simeon Creek, optimal conditions for steelhead trout in San Simeon Creek are believed to be salinity of less than 10 ppt, water temperatures below 22°C, and dissolved oxygen of greater than 5 ppm. While steelhead can survive at DO concentrations as low as 1-2 ppm, this is generally only for a very short period of time and typically only in the morning when temperature is low and DO is at its lowest due to overnight algal respiration. Algae conduct photosynthesis during the day when the sun is out, consuming carbon dioxide and producing high amounts of oxygen. At night the opposite trend occurs with photorespiration: algae consume and can nearly deplete oxygen while simultaneously producing high levels of carbon dioxide, thus leading to substantially lower DO levels overnight and into early morning. Steelhead ecology is such that these temporary nightly drops in DO are tolerable because the temperature is generally cooler and metabolic rate is reduced; as water temperature increases over the course of the day, fish metabolic rates increase (generally doubling with each 10°C increase in water temperature) and they require more oxygen. It is estimated that steelhead would be able to survive for only 15-30 minutes with 1-2 ppm DO and at a water

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temperature of 18-20°C. Thus, steelhead cannot persist for extended periods of time with low DO and high temperatures.

Available habitat for California red-legged frog and other aquatic herpetofauna can also be determined the same way. California red-legged frog lays eggs in water that is usually less than 16°C, with a maximum salinity tolerance of 9 ppt for adults and 6 ppt for embryos (Cook 1997). Western pond turtle occurs in brackish estuaries or freshwater (Lovich undated), preferring temperatures between 15°C and 39-40°C and generally not occurring in water that is outside of this range (Jennings and Hayes 1994). By measuring the appropriate aquatic data, as described above, general suitability for monitored species can be determined.

The above habitat measurements will be measured and evaluated twice a month for the first year at two-week intervals along with all other measurements. Following the first year, habitat will be evaluated on an annual basis.

2.6 MONITORING PRESENCE OF LISTED SPECIES

Tidewater goby, steelhead trout, and California red-legged frog have been known to occur in lower San Simeon Creek and/or San Simeon Creek Lagoon since at least the early 1990s, and much earlier for steelhead due to artificial fish stocking. From 1992 to 2006, the CCSD commissioned in-house surveys for tidewater goby and steelhead in lower San Simeon Creek and San Simeon Creek Lagoon. Tidewater goby was surveyed semiannually, while steelhead was surveyed annually. CCSD has not regularly commissioned California red-legged frog surveys, but this species has instead been surveyed for on an as-needed basis for research and management requirements, particularly by biologists representing and funded by the USGS Piedras Blancas Research Station.

Historically, tidewater goby surveys have been conducted in San Simeon Creek Lagoon in early summer and early fall to measure the species' status immediately after sandbar closure and immediately before the sandbar opens again. Steelhead has been surveyed for in lower San Simeon Creek in the summer after young steelhead had hatched. To monitor the presence or absence of listed species, it is necessary to continue conducting surveys for them following Project implementation. Surveys for these two species shall continue to be conducted during these same time periods in order to capture consistent data with what has historically been evaluated and to continue building a database of fish presence in these water bodies.

As part of this AMP, visual surveys for California red-legged frog shall be conducted on a regular basis in February/March and again in August/September. It is recommended that the first surveys be conducted in early February; if breeding (e.g. observation of amplexus,

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aural detection of mating calls, presence of egg masses, or presence of tadpoles) is not documented during these surveys, a second round of surveys shall be conducted three (3) weeks later.

Historically, tidewater goby surveys have been conducted in San Simeon Creek Lagoon in early summer and early fall to measure the species' status immediately after sandbar closure and immediately before the sandbar opens again. Steelhead trout have been surveyed for in lower San Simeon Creek in the summer after young steelhead had hatched. Surveys for these two species shall continue to be conducted during these same time periods, in order to capture consistent data with what has historically been evaluated and to continue building a database of fish presence in these water bodies. Two (2) rounds of visual surveys for tidewater goby and a single visual survey for steelhead trout shall be conducted.

2.7 MONITORING WATER QUALITY

CCSD's wastewater department currently monitors and analyzes water quality semiannually at Wells SS3, SS4, 9P7, 16D1, and a separate USGS well. Measurements are taken of depth to groundwater and groundwater elevation, nitrate/nitrogen, total dissolved solids, sodium, chloride, sulfate, boron, and water pH. The recent enrollment of the Project's mitigation water into the RWQCB's General NPDES permit for low threat discharges will also have additional monitoring and water quality requirements. This information will be provided to the BM for analysis and comparison with previous measurements. In addition, water quality will be evaluated based on its ability to provide suitable habitat for fish and other aquatic species.

2.8 GROUNDWATER MODEL DEVELOPMENT

Data obtained during the aforementioned monitoring actions, particularly those described in Sections 2.1 – 2.4, will be used to develop and calibrate the groundwater model that will assist in tracking condition changes in San Simeon Creek, San Simeon Creek Lagoon, and Van Gordon Creek. Baseline data obtained during the first monitoring year will be combined with historical data to determine regular and expected habitat measurements at all times of the year. These data will be used to determine thresholds at which management changes will be required while the facility is in operation.

In order to determine the point at which creek outflow may be adjusted or other management actions may be implemented to avoid impacts to listed species, it is necessary to determine the thresholds at which the potential for an adverse impact would need to be evaluated. Unless otherwise attributable to natural causes, or anthropogenic activities by riparian users upstream and apart from the CCSD-controlled property within the watershed

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(e.g., an agricultural accident leading to a chemical spill), should any of the following conditions be documented during regular surveys or otherwise during creek monitoring, management actions shall be required:

- Unexplained deaths or die-offs of tidewater goby, steelhead trout, and/or California red-legged frog;
- Early closure of the San Simeon Creek Lagoon sandbar due to dropping water levels;
- Failure of California red-legged frog egg masses due to desiccation;
- Unexplained changes in population levels of these species;
- Project-related drop in groundwater levels below previous historic minimum levels causing impacts to riparian habitat;[3]
- Decrease in lagoon surface water levels below historic minimums.[4]

As part of the Project, 100 gpm of treated groundwater would be released via pipeline into San Simeon Creek Lagoon as mitigation to avoid potential adverse impacts. Using the monitoring methods provided within this AMP, if it is found that riparian vegetation, creek or lagoon water levels, and/or species population numbers surpass the thresholds established in this document or those established based on the first year of monitoring, the CCSD may increase the treated water mitigation being provided, adjust facility operations, or suspend facility operations until conditions are once again deemed acceptable.

[3] Water levels are anticipated to drop every year regardless of Project operations. Therefore, should the lowering of groundwater levels result in riparian habitat impacts, management actions may include, but not be limited to: artificially increasing the soil moisture content around riparian plants; periodically alternating which percolation basin is in operation; reducing extractions; increasing the mitigation water flow; or, some combination of these approaches (also see Section 5).

[4] It is noted, surface water flows will need to be correlated to rainfall. No flow is anticipated during the dry season.

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Section 3 Reporting

This adaptive management plan is a surface water, groundwater, and biological monitoring program designed to provide adaptive management to the Cambria Emergency Water Supply Project to ensure that it will not result in significant adverse impacts to the riparian habitat in San Simeon Creek, San Simeon Creek Lagoon, and Van Gordon Creek. Integral to the effectiveness of an adaptive management program is the preparation of monthly, quarterly, and annual reports to monitor in-stream and riparian conditions within the subject area.

For the first year of monitoring, the BM will prepare and submit to the CCSD a monthly report that will discuss any notable changes in conditions. If any conditions show adverse changes, the report will suggest remedial actions to take. If the site conditions are all shown to be within an acceptable range of variation, the report will note this as such. The report will be equivalent to a memo report or a short letter report for quick analysis of monthly conditions. Following the first year, the report will be compiled on a quarterly basis.

For the first year and all subsequent years, the BM will prepare an annual report for submittal to CCSD, the CDFW, and the U.S. Fish and Wildlife Service (USFWS). The annual report will identify:

- Periods of operation of the new facility;
- Specific parameters that were monitored during the year;
- Any noted changes in the quality or extent of riparian habitat in Van Gordon Creek, San Simeon Creek, or San Simeon Creek Lagoon;
- Additional factors that could affect the long-term sustainability of surrounding riparian habitat and that should be included in the monitoring program; and
- Specific management measures that should be considered to minimize potential effects of the Cambria Emergency Water Supply Project.

Monitoring each year will occur from October 1 through September 31 of the following year. The collected monitoring data will be analyzed during the month of November and presented to an oversight committee each December for review, including preliminary interpretation of data, recommendations for hydrologic and biological monitoring in the coming year and, if necessary, adaptive management measures to correct potential adverse conditions. The annual report shall provide results of the data collection, an interpretation of results, and recommendations for changes to the monitoring program. Recommended changes to monitoring procedures and/or other adaptive management actions will be approved or denied by January 15. Table 1 provides an outline for the required elements of the annual report.

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Table 1:
Annual Report Outline for the Cambria Emergency Water Supply Project
Adaptive Management Plan

Annual Report Format
Introduction Briefly mention the monitoring programs conducted that year, the type of data, and the intended use of these data. **Methods** Describe the methodology for each monitoring program conducted that year in sufficient detail to ensure repeatability. Describe the analyses used to generate the results from each set of data. **Results** The results section presents the collected data in consistent format (tabular and/or graphic). Note changes in surface flows and groundwater levels and any changes in riparian habitat at each of the monitoring sites. **Discussion** Provide an analysis of the collected data and discuss whether any observed changes and/or trends are within natural variation or indicative of unexpected and adverse effects from the loss of surface water or changes in groundwater levels. If changes in surface water and/or groundwater are determined to be outside natural variation, assess whether they are related to changes in the riparian forest in surrounding riparian habitat. **Conclusions** The conclusion should be a succinct summary of the results, interpretation of the data analysis including noted changes or identified trends, recommendations for modifications to the monitoring program, and recommendations for adaptive management actions. **References** Appendix A Groundwater Monitoring Data Appendix B Surface Water Flow Monitoring Data Appendix C Surface Water Level Monitoring Data Appendix D Riparian Vegetation Monitoring Data Appendix E In-stream and Fish Habitat Monitoring Data Appendix F Species Survey Data

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Section 4 Process to Revise the AMP

The unique challenge associated with monitoring arises from the need to identify potential adverse effects in a timely manner, so that remedial measures can be implemented before significant adverse impacts (e.g., die off of areas of riparian habitat or of listed species) occur. As described in Section 2, the goal of this Plan is to determine, through monitoring of appropriate early indicators (groundwater levels, surface water flows, riparian habitat condition), that actions related to the Cambria Emergency Water Supply Project are not on a trajectory to cause harm to in-stream and riparian resources in lower San Simeon Creek, San Simeon Creek Lagoon, or Van Gordon Creek.

The annual collection of data will provide a picture of the seasonal trends and, after a number of years, longer-term trends in groundwater and surface water levels in these water bodies, as well as the associated health of the in-stream and riparian habitats based on visual observations of the extent and overall health of the in-stream habitat and riparian vegetation using aerial photographs and photo documentation. Section 2 above describes each indicator to be monitored, the expected range of measurements during the course of a single annual monitoring period, and levels of deviation from the previous monitoring period that would be considered outside natural variation, thus triggering the need for a more detailed assessment of in-stream habitat and riparian vegetation (in-stream measurements, CRAM surveys, detailed examination of aerial photographs, and ground level photo documentation).

All of the above data will be included in the annual report, including any noted change in monitoring levels. This report will also assess whether the noted change can be attributed to other causes independent of the Project, or if the change is thought to represent an adverse response to the Project's ongoing groundwater extraction activities. If a change is determined to be an adverse response to the ongoing groundwater pumping, recommendations for correcting the deviation will be included in the annual report and submitted to CCSD for their review and evaluation as part of the monitoring and annual reporting process under this AMP.

Recommendations for revisions to the monitoring and the adaptive management program, including groundwater, surface water, and biological monitoring, as well as suggested corrective measures to Project-related activities, will be evaluated and considered by CCSD during their reviews of the annual report. Linking recommendations for budgeting to the reporting process will facilitate funding of any needed changes to the monitoring program and adaptive management process.

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All monitoring results, suggested revisions to the monitoring program, recommendations for corrective actions related to the groundwater extraction (adaptive management measures), and comments will be presented to the District in the annual report for future monitoring and management decisions. Following District review, suggested revisions or corrective measures will be made and noted in the AMP, including changes to the monitoring program. A final annual report will be prepared and made available to CDFW and USFWS.

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Section 5 Potential Mitigation Measures

The development and implementation of this AMP will ensure that the Cambria Emergency Water Supply Project operations do not significantly adversely impact the riparian habitat of the lagoon and adjacent reaches of San Simeon Creek and Van Gordon Creek . The following potential mitigation measures are suggested for evaluation in the event that significant and adverse deviations and/or trends are noted in San Simeon Creek, San Simeon Creek Lagoon, and/or Van Gordon Creek as part of the annual monitoring program:

- **Limit operations to dry season periods when there is no surface water flow in San Simeon Creek and Van Gordon Creek.** As proposed, the facility is intended to augment water supplies during the dry season. The adjacent lower creek reaches are not perennial and typically dry up by mid-summer of each year. Under such dry conditions, steelhead and related species of concern would likely be limited to the San Simeon Creek lagoon area. The Project's mitigation water design feature is intended to protect the lagoon area during such dry season operations.

- **Adjustments to New Facility Operations.** The amount of groundwater being removed by the new facility may need to be temporarily reduced or suspended should monitoring determine potentially adverse riparian impacts were projected to occur. This measure should be considered if groundwater and/or surface water levels substantially drop to levels outside of historical ranges and significantly impact habitat. If conditions begin to improve and once again fall within the acceptable range, the amount of groundwater being pumped by the new facility at that time should be considered for subsequent pumping regime levels to avoid repetitive occurrences.

- **Changes in the quantity of treated water that is returned to San Simeon Creek Lagoon.** As proposed, CCSD will return 100 gpm of treated water to San Simeon Creek Lagoon. It may be necessary to increase the amount of water that is returned into the lagoon by increasing the mitigation water flow or adjusting operation of the new facility to pump less. This measure should be considered if surface water levels or riparian health decrease below what is considered acceptable due to operation of the new facilities. If conditions begin to improve and once again fall within the acceptable range given annual site conditions, the amount of treated water being returned to San Simeon Creek Lagoon at that time should be adjusted to avoid repetitive occurrences.

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- **Increase soil moisture content for riparian plants**. Should plants along the riparian corridor exhibit stress due to a lowering of groundwater levels, irrigation to increase soil moisture content may be deployed. This adaptive measure may include the use of a water truck or above ground irrigation piping to increase soil moisture content. Additionally, the CCSD may periodically alternate which percolation basin they are using in order to place percolated water closest to plant areas showing signs of stress. The CCSD has historically needed to operate only one of its four existing percolation basins at any given time. Therefore, it has some operating flexibility on which percolation basin it places into operation.

- **Design and implementation of additional biological monitoring measures.** In the event that negative trends are not reversible with the above measures, additional monitoring measures may be required to reverse such negative trends. Such measures would be identified and described in the annual monitoring report.

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Appendix D

Section 18 – Proposed Monitoring and Reporting Program of the Operations, Maintenance, and Monitoring Program for the Cambria Emergency Water Supply Program

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Appendix E – Adaptive Management Plan

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APPENDIX F
USGS REPORT 98-4061

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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

U.S. GEOLOGICAL SURVEY
Water-Resources Investigations
Report 98-4061

Prepared in cooperation with the
SAN LUIS OBISPO COUNTY FLOOD
CONTROL AND WATER CONSERVATION DISTRICT

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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

By Eugene B. Yates and Kathryn M. Van Konyenburg

U.S. GEOLOGICAL SURVEY

Water-Resources Investigations Report 98–4061

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SAN LUIS OBISPO COUNTY FLOOD CONTROL AND
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CONVERSION FACTORS, VERTICAL DATUM, ABBREVIATIONS, AND WELL- AND SPRING-NUMBERING SYSTEM

Multiply	By	To obtain
acre	0.4047	hectare
acre-foot (acre-ft)	1,223	cubic meter
acre-foot per month (acre-ft/mo)	1,223	cubic meter per month
acre-foot per year (acre-ft/yr)	1,223	cubic meter per year
cubic foot per second (ft^3/s)	0.02832	cubic meter per second
foot (ft)	0.3048	meter
foot per day (ft/d)	0.3048	meter per day
foot per foot (ft/ft)	1.000	meter per meter
foot per month (ft/mo)	0.3048	meter per month
foot per year (ft/yr)	0.3048	meter per year
foot squared per day (ft^2/d)	0.0929	meter squared per day
gallon per day (gal/d)	0.06308	liter per day
gallon per minute (gal/min)	0.06308	liter per minute
inch (in.)	25.4	millimeter
inch per year (in/yr)	25.4	millimeters per year
kilowatt-hour per acre-foot (kWh/acre-ft)	0.002919	joule per cubic meter
mile (mi)	1.609	kilometer
square mile (mi^2)	2.590	square kilometer
pound per square inch (lb/in^2)	703.1	kilogram per square meter

Temperature is given in degrees Celsius (°C), which can be converted to degrees Fahrenheit (°F) by the following equation:

$$°F=1.8(°C)+32.$$

Vertical Datum

Sea level: In this report "sea Level" refers to the National Geodetic Vertical Datum of 1929—a geodetic datum derived from a general adjustment of the first-order level nets of the United States and Canada, formerly called Sea Level Datum of 1929.

Abbreviations

mg/L	milligram per liter
µS/cm	microsiemen per centimeter at 25 degrees Celsius
AET	actual evapotranspiration
ET_0	reference evapotranspiration
CCSD	Cambria Community Services District
CIMIS	California Irrigation Management Information System

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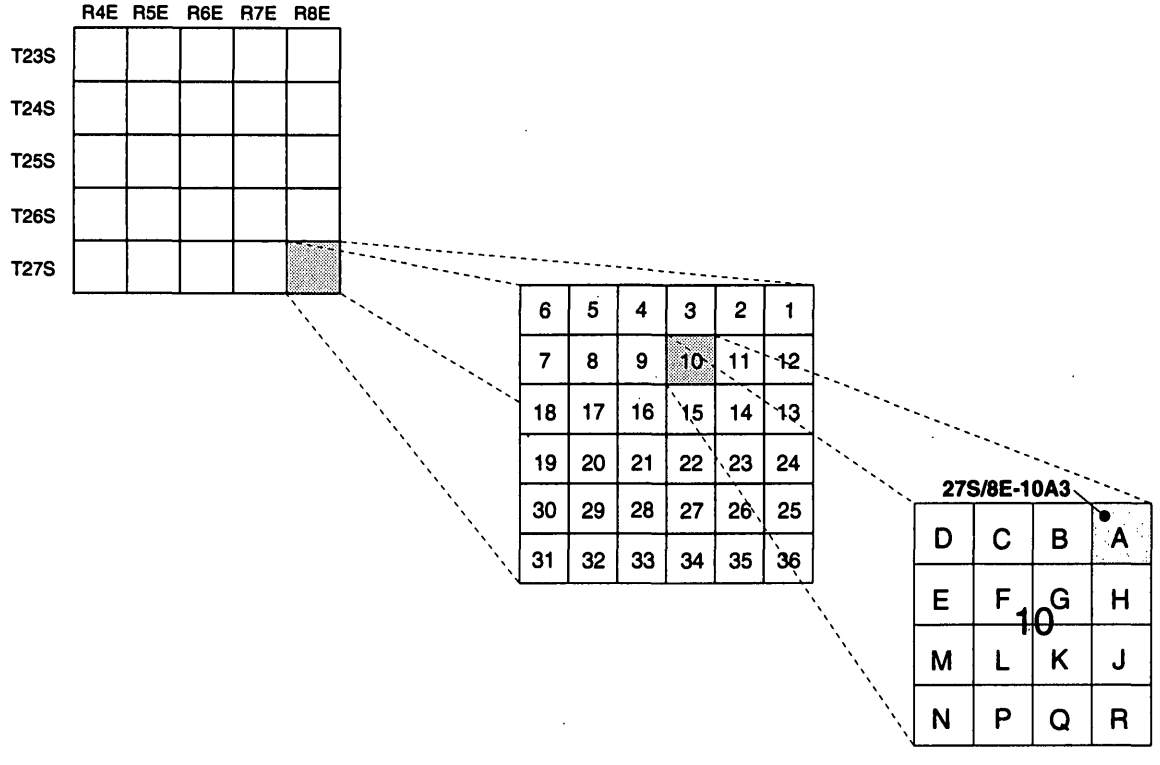
Water year: A water year is a 12-month period, October through September, designated by the calendar year in which it ends. In this report, years are water years unless otherwise noted.

Well- and Spring-Numbering System

Wells and springs are identified and numbered according to their location in the rectangular system for the subdivision of public lands. Identification consists of the township number, north or south; the range number, east or west; and the section number. Each section is divided into sixteen 40-acre tracts lettered consecutively (except I and O), beginning with "A" in the northeast corner of the section and progressing in a sinusoidal manner to "R" in the southeast corner. Within the 40-acre tract, wells are sequentially numbered in the order they are inventoried. The letter "S" inserted before the sequence number indicates a spring. The final letter refers to the base line and meridian. In California, there are three base lines and meridians; Humbolt (H), Mount Diablo (M), and San Bernardino (S). All wells and springs in the study area are referenced to the Mount Diablo base line and meridian (M). Numbers consist of 15 characters and follow the format 027S008E10A003M. In this report, well numbers are abbreviated and written 27S/8E-10A3. Wells in the same township and range are referred to only by their section designation, 10A3. The following diagram shows how the number for well 27S/8E-10A3 is derived.



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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

By Eugene B. Yates *and* Kathryn M. Van Konynenburg

ABSTRACT

Santa Rosa and San Simeon Creeks are underlain by thin, narrow ground-water basins that supply nearly all water used for local agricultural and municipal purposes. The creeks discharge to the Pacific Ocean near the northwestern corner of San Luis Obispo County, California. The basins contain heterogeneous, unconsolidated alluvial deposits and are underlain by relatively impermeable bedrock. Both creeks usually stop flowing during the summer dry season, and most of the pumpage during that time is derived from ground-water storage. Annual pumpage increased substantially during 1956–88 and is now a large fraction of basin storage capacity. Consequently, dry-season water levels are lower and the water supply is more vulnerable to drought.

The creeks are the largest source of ground-water recharge, and complete basin recharge can occur within the first few weeks of winter streamflow. Agricultural and municipal pumpages are the largest outflows and cause dry-season water-level declines throughout the San Simeon Basin. Pumping effects are more localized in the Santa Rosa Basin because of subsurface flow obstructions. Even without pumpage, a large quantity of water naturally drains out of storage at the upper ends of the basins during the dry season.

Ground water is more saline in areas close to the coast than in inland areas. Although seawater intrusion has occurred in the past, it probably was not the cause of high salinity in 1988–89. Ground water is very hard, and concentrations of dissolved solids, chloride, iron, and manganese exceed drinking-water standards in some locations.

Probability distributions of streamflow were estimated indirectly from a 120-year rainfall record because the periods of record for local stream-gaging stations were wetter than average. Dry-season durations with recurrence intervals between 5 and 43 years are likely to dry up some wells but not cause seawater intrusion. A winter with no streamflow is likely to occur about every 32 years and to result in numerous dry wells, seawater intrusion, and subsidence.

Digital ground-water-flow models were used to estimate several items in the ground-water budgets and to investigate the effects of pumpage and drought. The models also were used to investigate the hydrologic effects of selected water-resources management alternatives. Selection of alternatives was not constrained by issues related to water rights, which were under dispute during the study. Increases in the area and intensity of irrigation could increase agricultural water demand by 26 to 35 percent, an increase that would lower water levels by as much as 10 feet and possibly cause subsidence in the lower Santa Rosa Basin. An additional municipal well in the lower Santa Rosa Basin could withdraw 100 acre-feet per year without causing seawater intrusion, but subsidence might occur. Transferring 270 acre-feet per year of treated wastewater from a percolation area near the coast to an area about 0.5 mile upstream of the

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municipal well field in the San Simeon Basin could raise upstream water levels by as much as 12 feet without causing significant water-table mounding or seawater intrusion. Decreases in agricultural pumping after a winter without streamflow could prevent seawater intrusion while allowing municipal pumping to continue at normal rates.

INTRODUCTION

Agricultural and municipal water users along Santa Rosa and San Simeon Creeks rely almost entirely on a limited ground-water resource. Ground water occurs in the alluvial deposits beneath the creeks, which drain the western flanks of the Santa Lucia Range in San Luis Obispo County and empty into the Pacific Ocean (fig. 1). The alluvial deposits form flat valley floors, which are used for irrigated agriculture. The town of Cambria is in the Santa Rosa Creek valley about 1 mi from the coast. Municipal water is supplied by the Cambria Community Services District (CCSD), which operates wells in the Santa Rosa and the San Simeon Creek valleys.

The quantity of fresh ground water stored in the thin alluvial deposits is small relative to the overall water demand. During an average winter rainy season, ground-water recharge from streamflow is more than sufficient to meet demand and maintain high ground-water levels. The creeks usually stop flowing during the dry summer season, and users rely on the quantity of ground water in storage until the following winter.

Rapid population growth in Cambria resulted in a fourfold increase in municipal pumpage between 1960 and 1988. In the early 1980's, agricultural pumping increased abruptly as many farmers switched to vegetable crops. These increases in pumping resulted in larger seasonal water-level declines during summer. Rural landowners in the valleys became concerned about the effects of the declines and the potentially devastating consequences of droughts. On several occasions in the mid-1980's, they protested Cambria Community Services District's appropriative water-rights permits before the California State Water Resources Control Board. The quantity of ground water pumped by the District is limited by detailed terms and conditions in their permits.

Purpose and Scope

The purpose of this report is to document the results of a 3-year study of ground-water resources in the Santa Rosa and the San Simeon Creek ground-water basins. During the study, the hydrogeology and water quality of the basins were investigated, quantitative water budgets were developed, and selected water-resources management alternatives

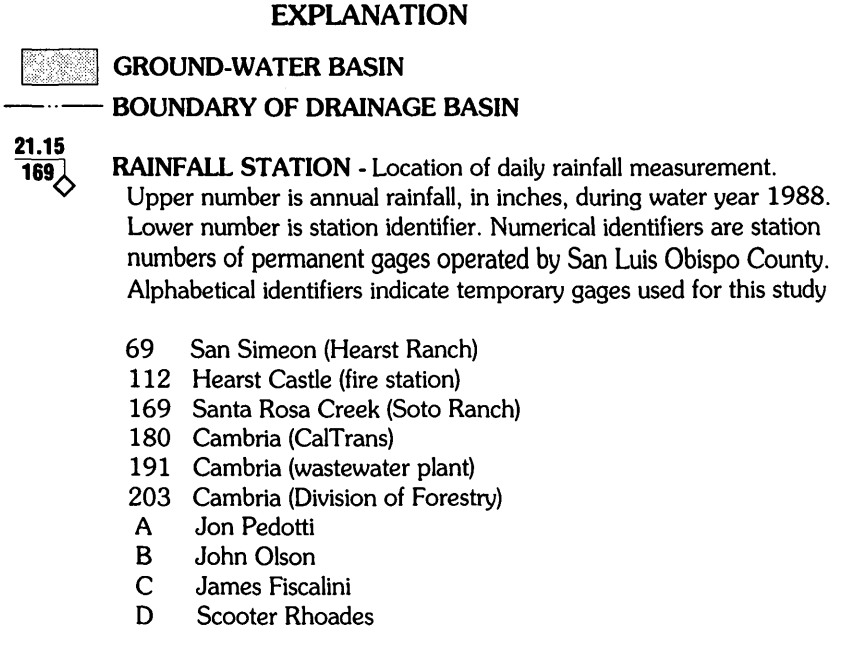

Figure 1. Locations of creeks, drainage-area boundaries, ground-water basins, and rainfall stations in the Cambria area, San Luis Obispo County, California.

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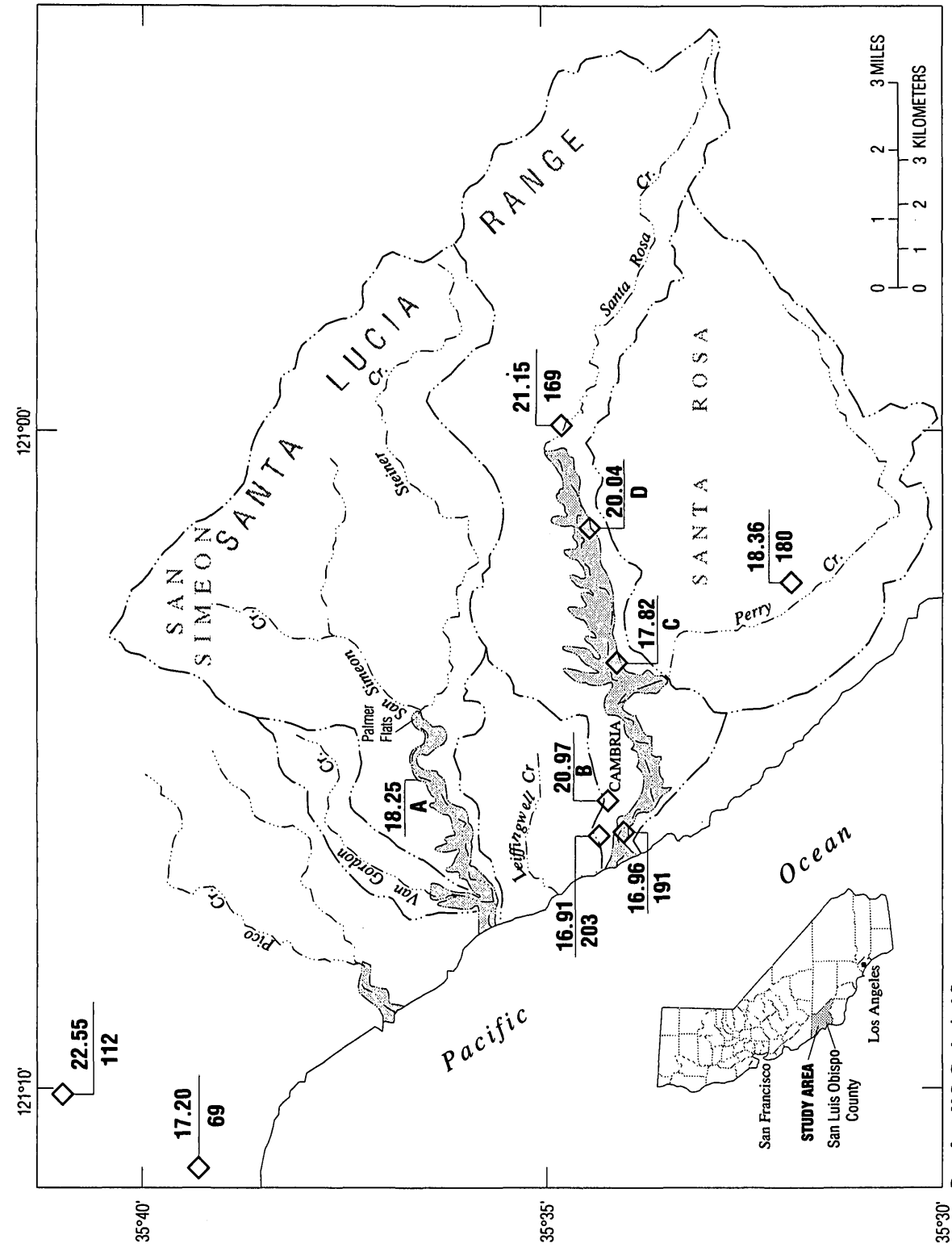

Base from U.S. Geological Survey
Adelaide 1:62,500, 1961, and San Simeon 1:62,500, 1959

Figure 1. Locations of creeks, drainage-area boundaries, ground-water basins, and rainfall stations in the Cambria area, San Luis Obispo County, California—Continued.

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were evaluated. The study was a cooperative effort between the U.S. Geological Survey and the San Luis Obispo County Flood Control and Water Conservation District.

Field activities undertaken for the study included measurement of rainfall, streamflow, temperature, reference evapotranspiration, land use, well efficiency, electricity use at wells, ground-water levels, aquifer characteristics, and surface- and ground-water quality. Observation wells were installed at several locations. Data analysis included preparation of maps, sections, and graphs showing geology, rainfall, water levels, and water quality. Analytical and numerical models were used to simulate ground-water flow, and patterns of rainfall and streamflow were statistically analyzed. The study focused on Santa Rosa and San Simeon Creeks, although some consideration also was given to ground-water conditions along Pico Creek.

Description of Study Area

The study area includes the drainage areas of Santa Rosa and San Simeon Creeks, including major tributaries such as Perry, Steiner, and Van Gordon Creeks (fig. 1). Pico Creek, about 2 mi north of San Simeon Creek, was included in the analysis of water quality. Near the headwaters, the creek valleys form steep, narrow canyons. Along the final 3 to 5 mi before reaching the ocean, the valleys widen and have relatively flat bottoms a few thousand feet wide. These flat-bottomed areas are underlain by ground-water basins and are flanked by steep hillslopes that rise 200 to 800 ft above the valley floor.

Figure 2 shows cultural features, wells, springs, and streamflow and climate measurement stations used in this study. The town of Cambria is adjacent to the lower end of Santa Rosa Creek and had a population of about 5,300 people in 1990. The commercial district of Cambria is along Main Street between the Main Street bridge and the coast. Residential areas are on the hillsides above the commercial district and on the slopes facing the ocean south of the outlet of Santa Rosa Creek.

The water supply for Cambria is obtained from three wells in the CCSD well field on San Simeon Creek about 1 mi from the coast and from two wells near the Burton Avenue bridge over Santa Rosa Creek. Municipal wastewater receives a secondary level of treatment and is discharged to a sprayfield in the San Simeon Creek valley about 0.5 mi downstream of the CCSD well field.

The remaining parts of the valley floors are occupied by agricultural fields and a few rural residences. Native vegetation consists of trees, grass, and shrubs that grow along the creeks and field borders. Grassy hillslopes along the sides of the valleys are used for grazing. Other land uses include a State park campground at the mouth of San Simeon Creek and an in-stream gravel mining operation and processing plant along San Simeon Creek near well 27S/8E-10G2.

EXPLANATION

—··— **BOUNDARY OF GROUND-WATER BASIN**

WELL OR TEST HOLE

- • Private domestic
- ⊙ Irrigation
- o Municipal
- o Unused
- ◍ Test hole
- Spring used for domestic water supply
- Spring used for stock water supply

\ Indicates observation well

R2 Last letter and digit of well number

▲ **STREAM-GAGING STATION**

Continuous-record gaging station and identifier

- A Santa Rosa Creek near Cambria (11142200)
- B Santa Rosa Creek at State Highway 1
- D Perry Creek at Cambria (11142240)
- E San Simeon Creek at Palmer Flats
- F San Simeon Creek near Cambria (11142300)

△ Site of occasional discharge measurement

CLIMATE MEASUREMENT STATION

◆ Evapotranspiration measurement station

Temperature measurement station and identifer

- A Cambria Community Services District plant
- B James Fiscalini
- C Scooter Rhoades

Figure 2. Locations of cultural features, wells, springs, and streamflow and climate measurement stations in (*A*) the Santa Rosa and (*B*) the San Simeon ground-water basins, San Luis Obispo County, California.

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Acknowledgments

The Cambria Community Services District provided logistical support for well drilling, measured water levels at numerous wells, and freely offered access to their library and historical water-level and water-quality records. Dennis Kunkel of Pacific Gas and Electric Company did more than 20 well-efficiency tests and provided records of monthly agricultural electricity consumption. Numerous farmers and residents voluntarily contributed to the study by recording temperature and rainfall, providing crop and land-use information, allowing access to electric meters, wells, and fields, adjusting irrigation schedules to accommodate well-efficiency and aquifer tests, and providing information and insight. They include the following:

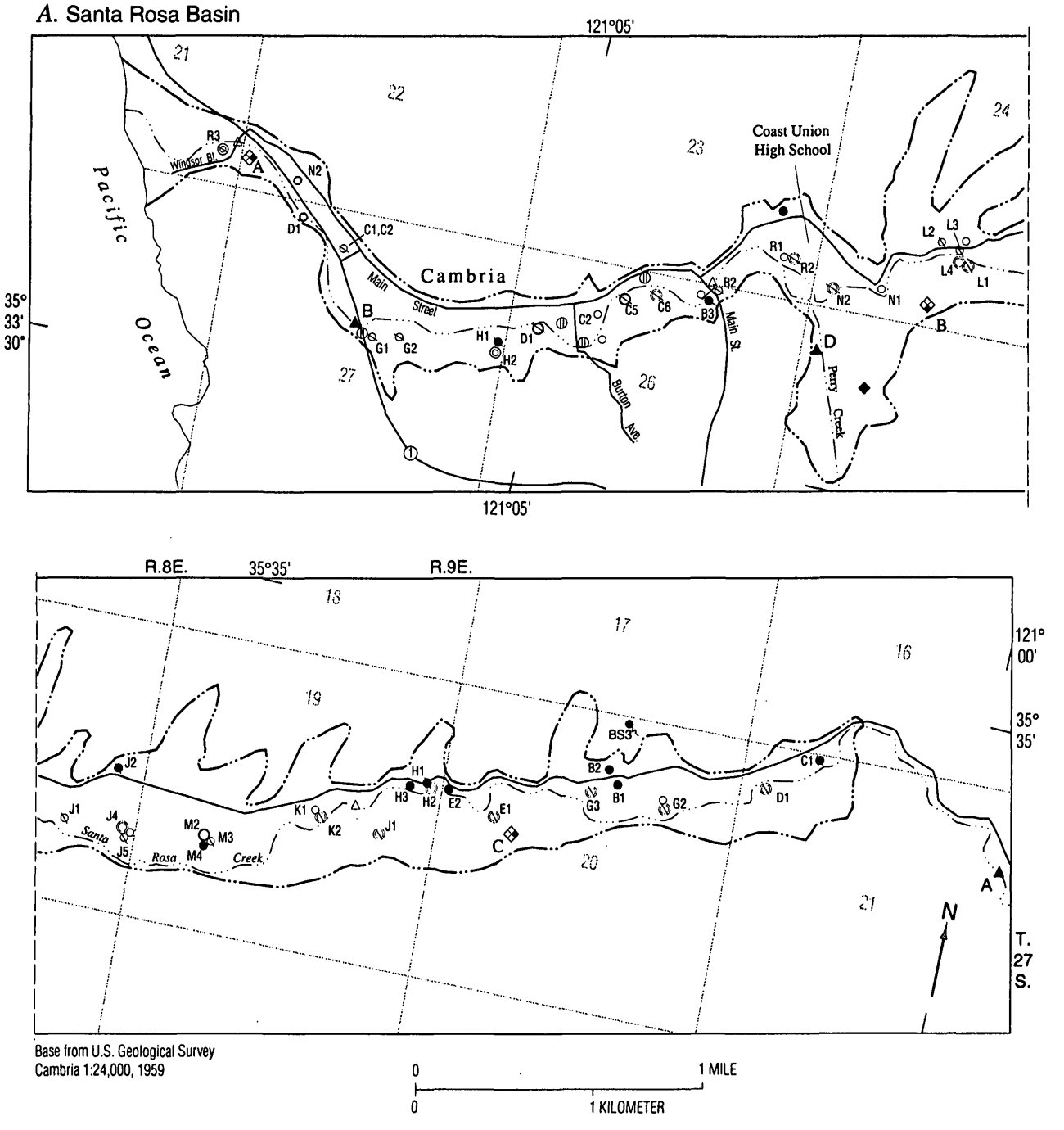

Figure 2. Locations of cultural features, wells, springs, and streamflow and climate measurement stations in (*A*) the Santa Rosa and (*B*) the San Simeon ground-water basins, San Luis Obispo County, California—Continued.

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William Bianchi, Alfred Fiscalini, James Fiscalini, Larry Fiscalini, Louis Fiscalini, Olympio Fiscalini, William Hanna, Lloyd Junge, Edward Kalin, Peter Manuele, Lawrence Molinari, John Olson, Alvaro Pantoja, Jon Pedotti, Rosalie and Sterling Rhoades, Scooter Rhoades, Gary Silveira, Leslie Taylor, Jerry Veith, Clyde Warren, and Walter Warren.

HYDROGEOLOGY

Regional Geology and Geologic History

The Santa Rosa and the San Simeon Creek ground-water basins lie just to the west of the southern end of the Santa Lucia Range (fig. 1). The geology of the area is similar to that of other parts of the California Coast Ranges in that Cenozoic and uppermost

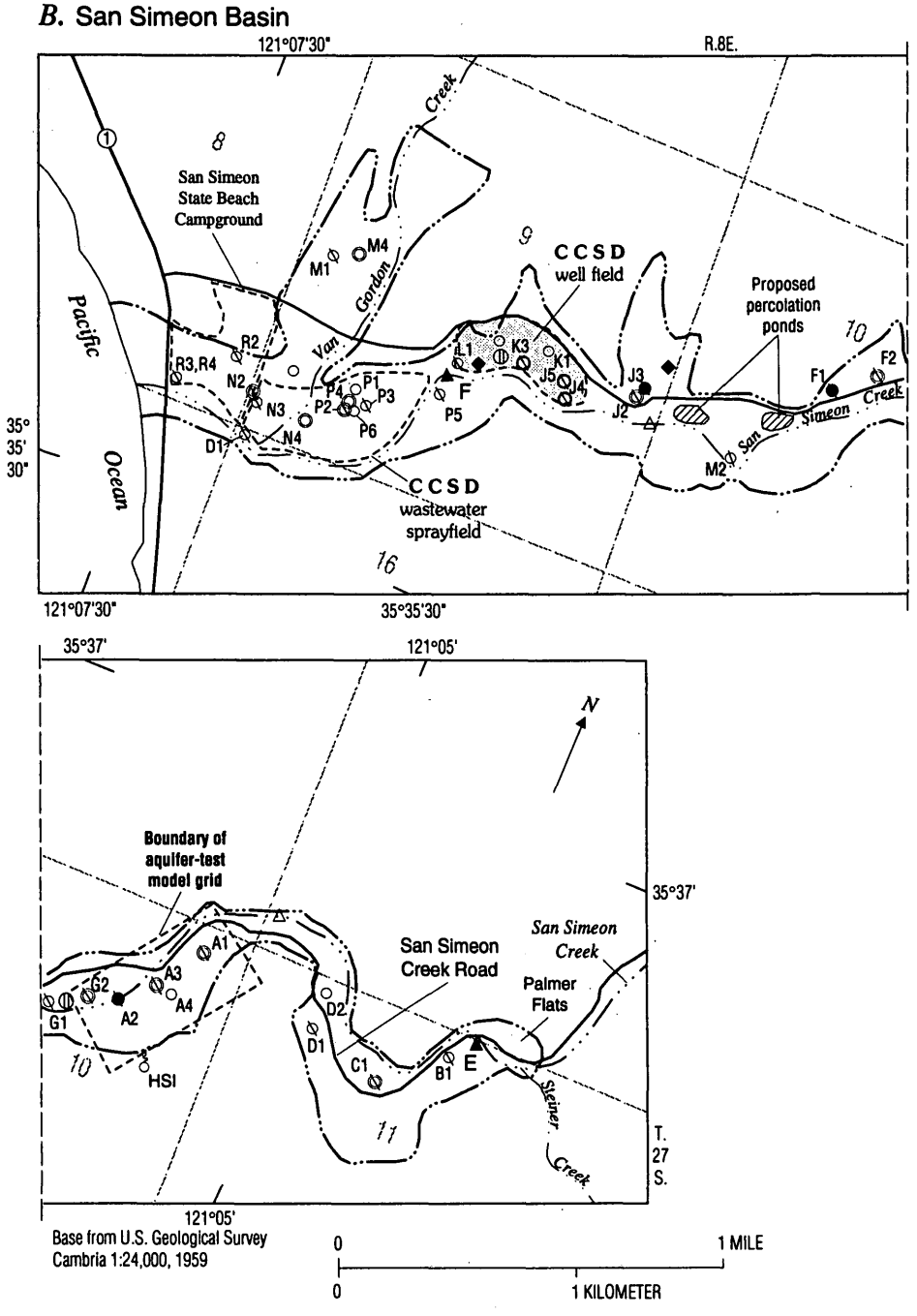

Figure 2. Locations of cultural features, wells, springs, and streamflow and climate measurement stations in (*A*) the Santa Rosa and (*B*) the San Simeon ground-water basins, San Luis Obispo County, California—Continued.

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Mesozoic marine sedimentary rocks unconformably overlie the Mesozoic eugeosynclinal rocks of the Franciscan Complex. In this area, the marine sediments were thrust over the Franciscan Complex.

Surficial geology along Santa Rosa and San Simeon Creeks near Cambria is shown in figure 3. Geologic sections along the axes of the two creek valleys are shown in figure 4. Most of the area is underlain at depth by bedrock of the Franciscan Complex, an aggregation of rocks that were tectonically fragmented and mixed during the Late Cretaceous period. The Franciscan Complex is exposed on hillsides near Cambria and throughout the mountainous terrain to the east.

Numerous northwest-trending normal faults (Hall and others, 1979) cross the basins. These old faults resulted in widespread shearing and fracturing of the Franciscan rocks but do not appear to affect Quaternary deposits in the creek valleys. The Hosgri fault zone parallels the coastline about 2 mi west of the ground-water basins. The Hosgri fault zone is seismically active and could generate an earthquake of magnitude 7.0 along the segment closest to Cambria (Pacific Gas and Electric Company, 1988). An earthquake of this magnitude could cause a slight decrease in basin storage or an increase in stream base flow. Such changes were observed following the 1989 Loma Prieta earthquake about 110 mi northwest of Cambria; the terrain in these areas is similar (Wendell Ayers and Scott Hamlin, U.S. Geological Survey, oral commun., 1991).

Although the marine sedimentary rocks near the coast are nearly the same age as the rocks of the Franciscan Complex, the unnamed sandstones and shales have not undergone the tectonic disruption evident in the Franciscan Complex (Hsü, 1969).

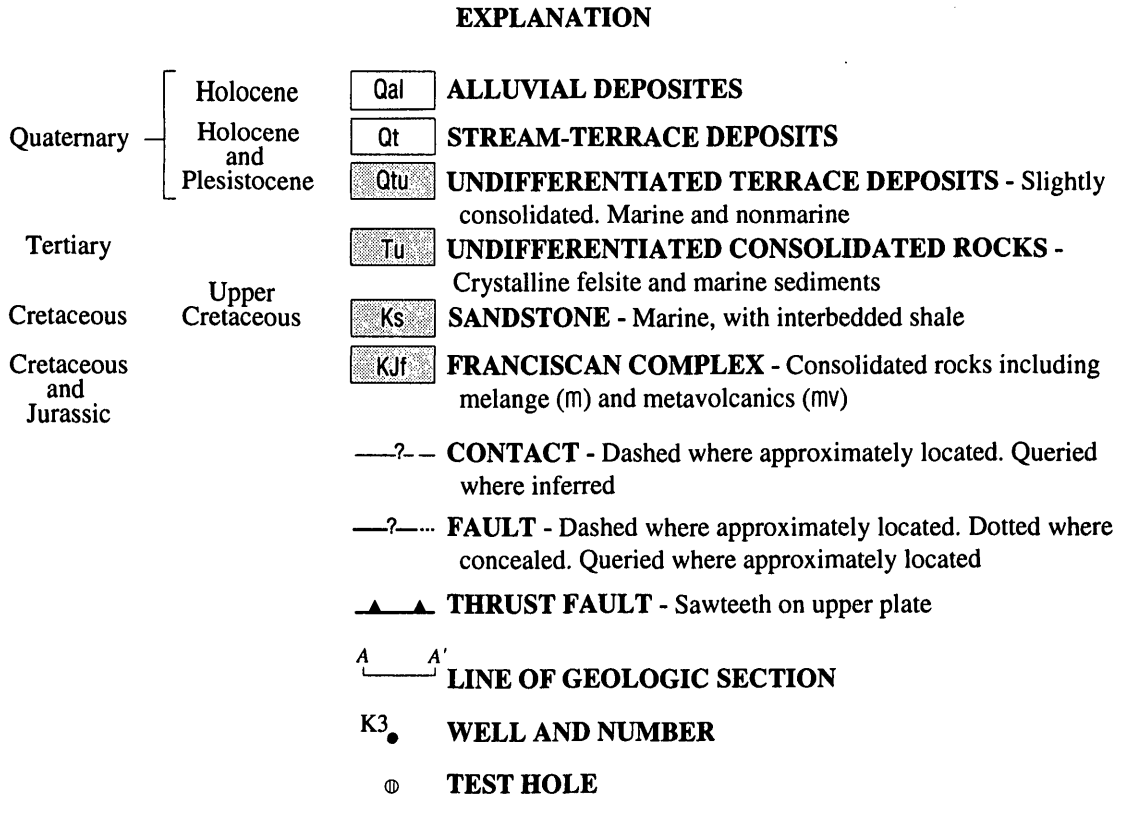

Figure 3. Surficial geology of (*A*) the Santa Rosa and (*B*) the San Simeon ground-water basins, San Luis Obispo County, California. (See figure 4 for location of sections.)

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Howell and others (1977) refer to the marine sedimentary rocks as the Cambria slab. The slab is relatively intact because it moved *en bloc* during a later episode of deformation in the Late Cretaceous period, after the episode of overthrusting and gravity sliding that deformed the Franciscan Complex.

Stream-terrace deposits, primarily of marine origin, accumulated during a high stand of sea level in the middle to late Pleistocene. These slightly consolidated deposits (unit Qtu in fig. 3) now cover much of the unnamed marine sedimentary rocks in the study area near the coast. More recent unconsolidated

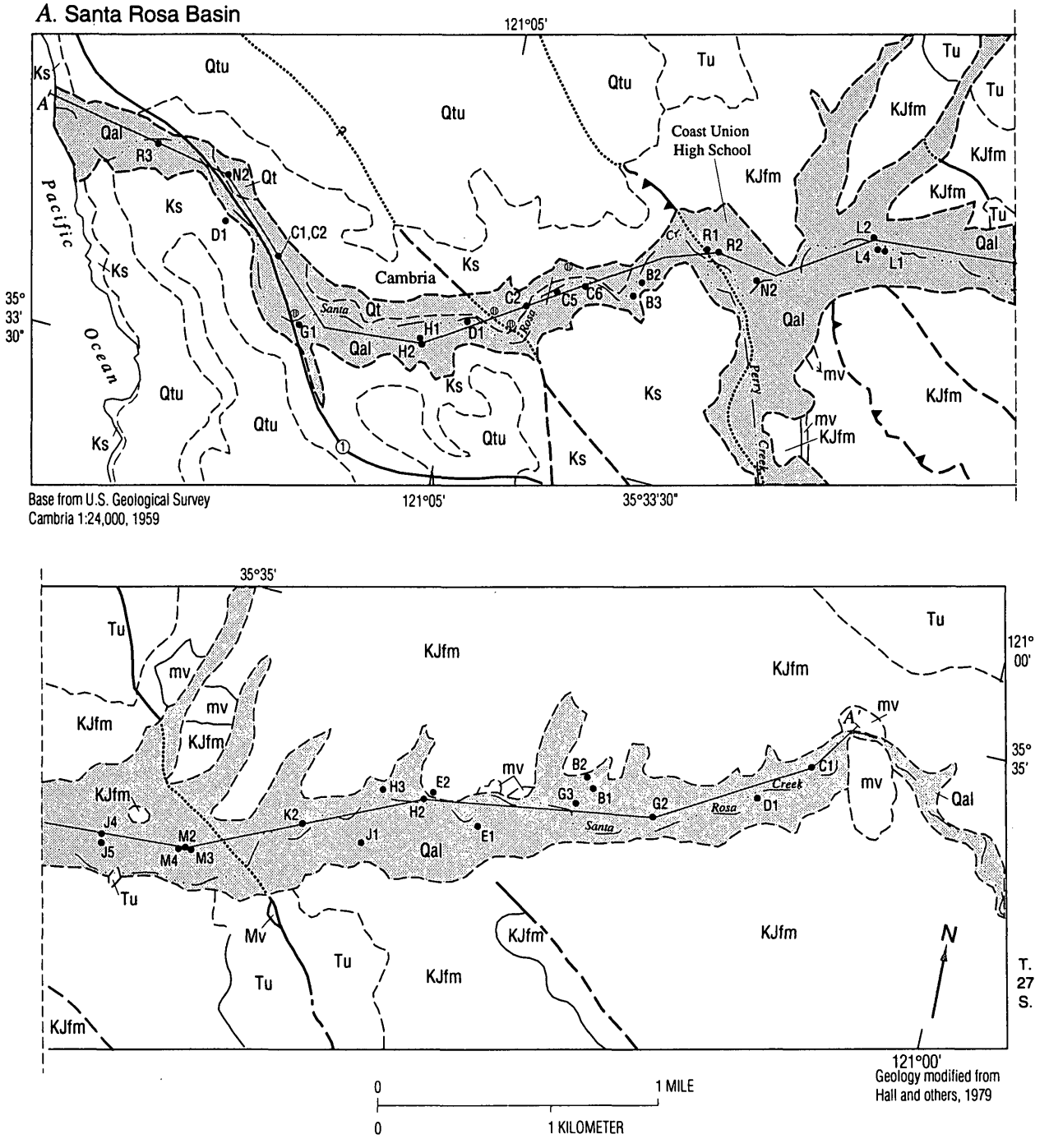

Figure 3. Surficial geology of (*A*) the Santa Rosa and (*B*) the San Simeon ground-water basins, San Luis Obispo County, California. (See figure 4 for location of sections.)—Continued.

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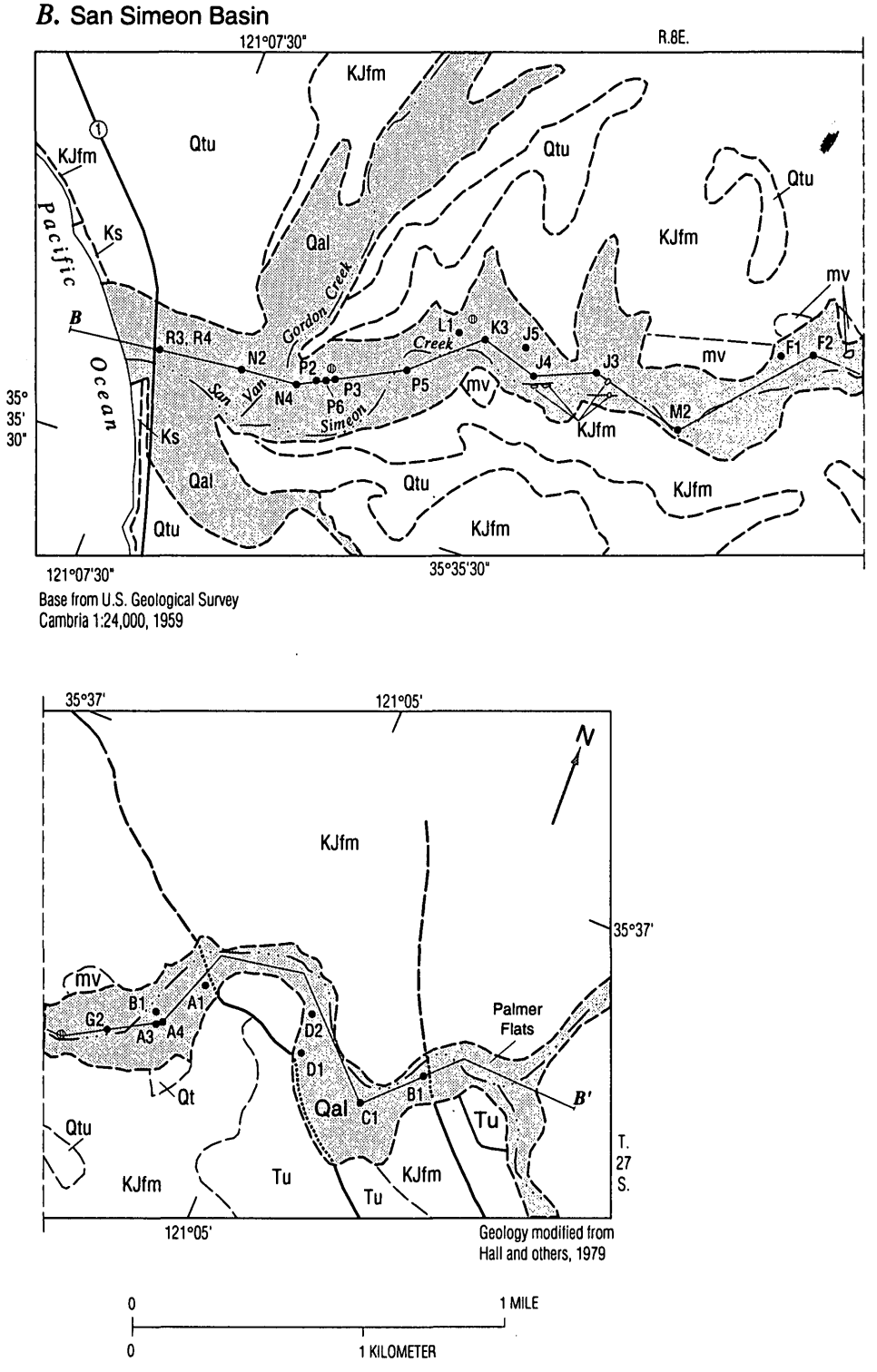

Figure 3. Surficial geology of (*A*) the Santa Rosa and (*B*) the San Simeon ground-water basins, San Luis Obispo County, California. (See figure 4 for location of sections.)—Continued.

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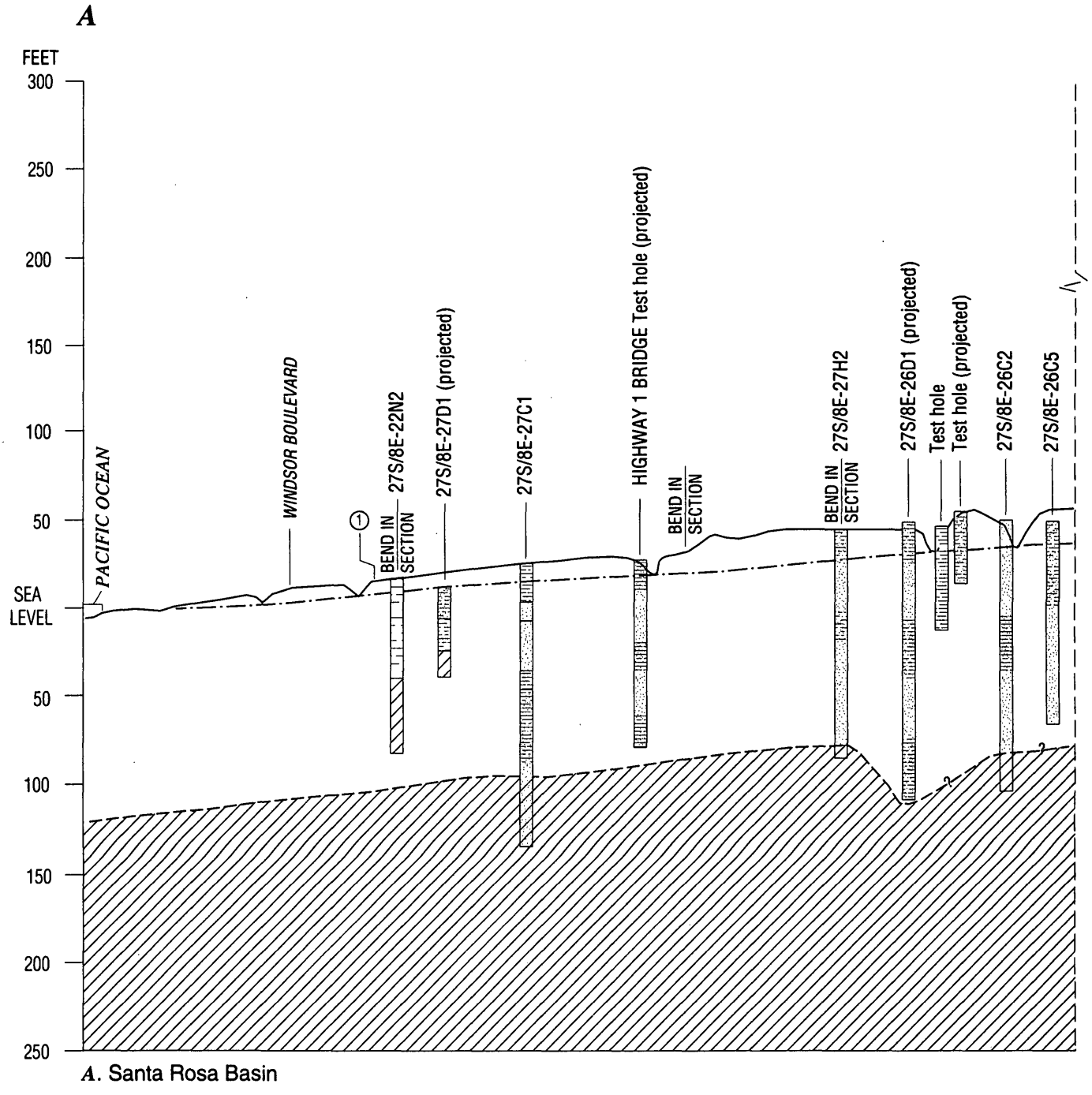

Figure 4. Geologic sections *A–A'* and *B–B'* along (*A*) the Santa Rosa and (*B*) the San Simeon Creek valleys, San Luis Obispo, California. (Location of sections are shown in figure 3.)

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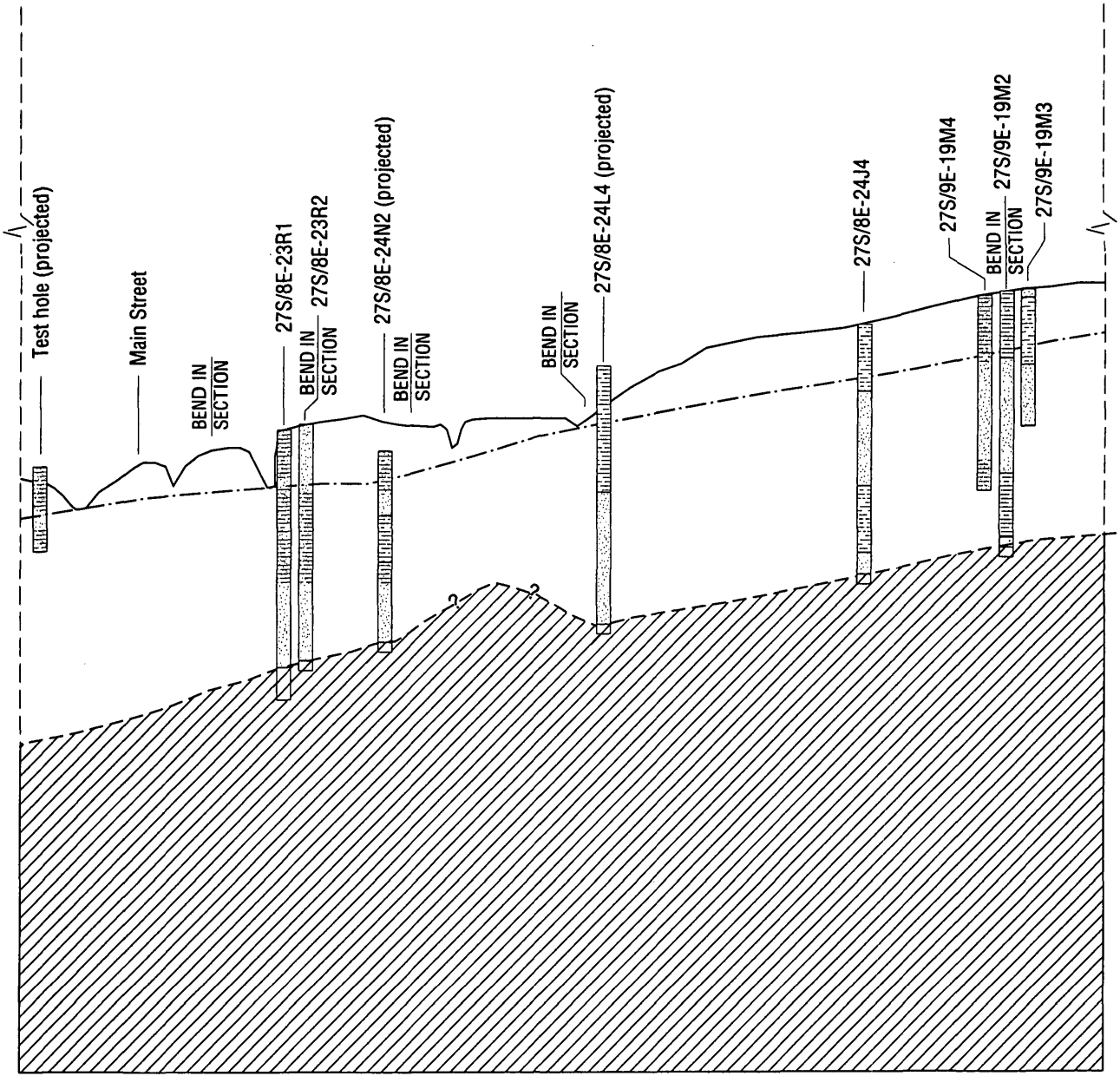

Figure 4. Geologic sections *A–A'* and *B–B'* along (*A*) the Santa Rosa and (*B*) the San Simeon Creek valleys, San Luis Obispo, California. (Location of sections are shown in figure 3.)—Continued.

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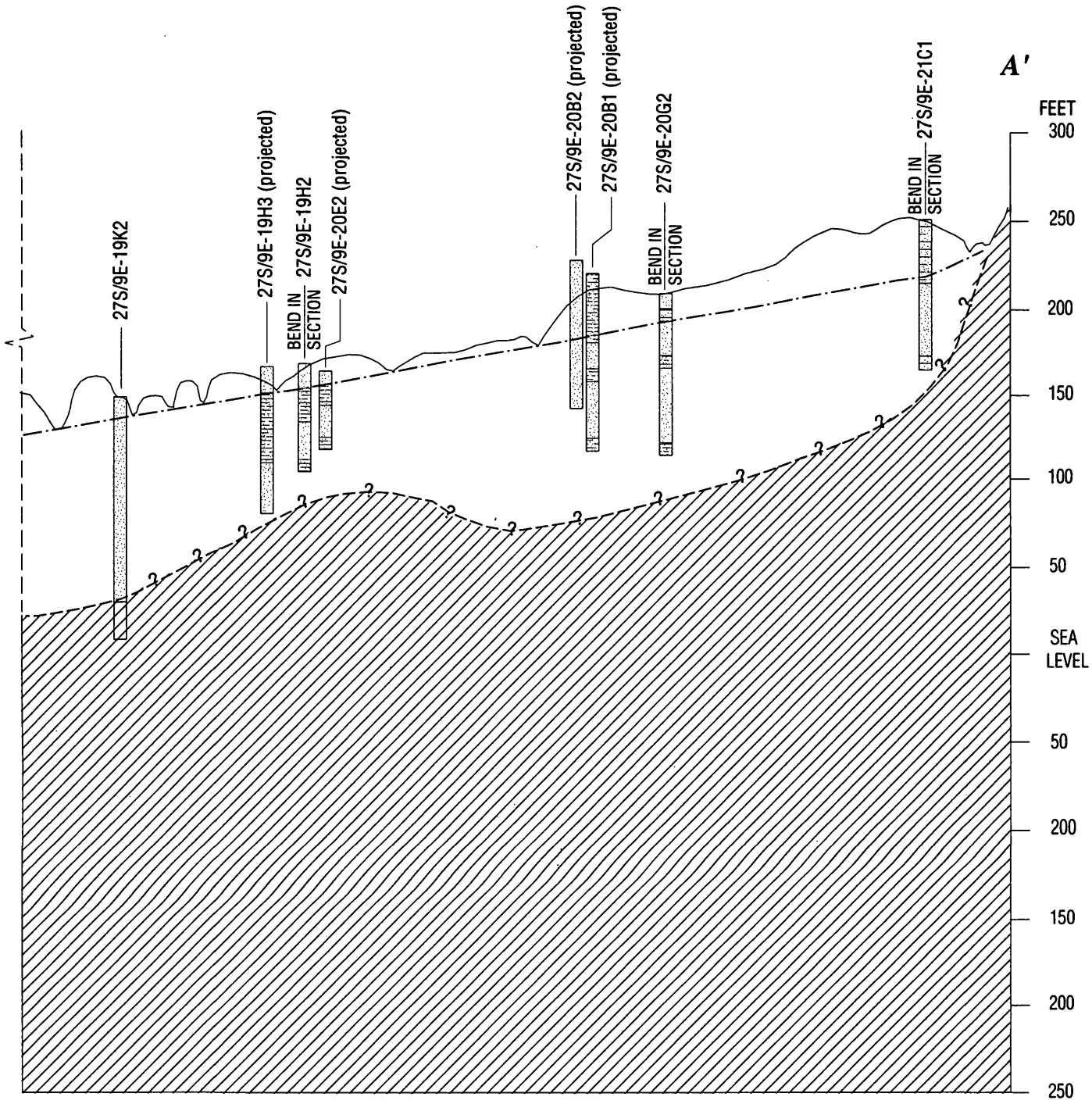

Figure 4. Geologic sections *A–A'* and *B–B'* along (*A*) the Santa Rosa and (*B*) the San Simeon Creek valleys, San Luis Obispo, California. (Location of sections are shown in figure 3.)—Continued.

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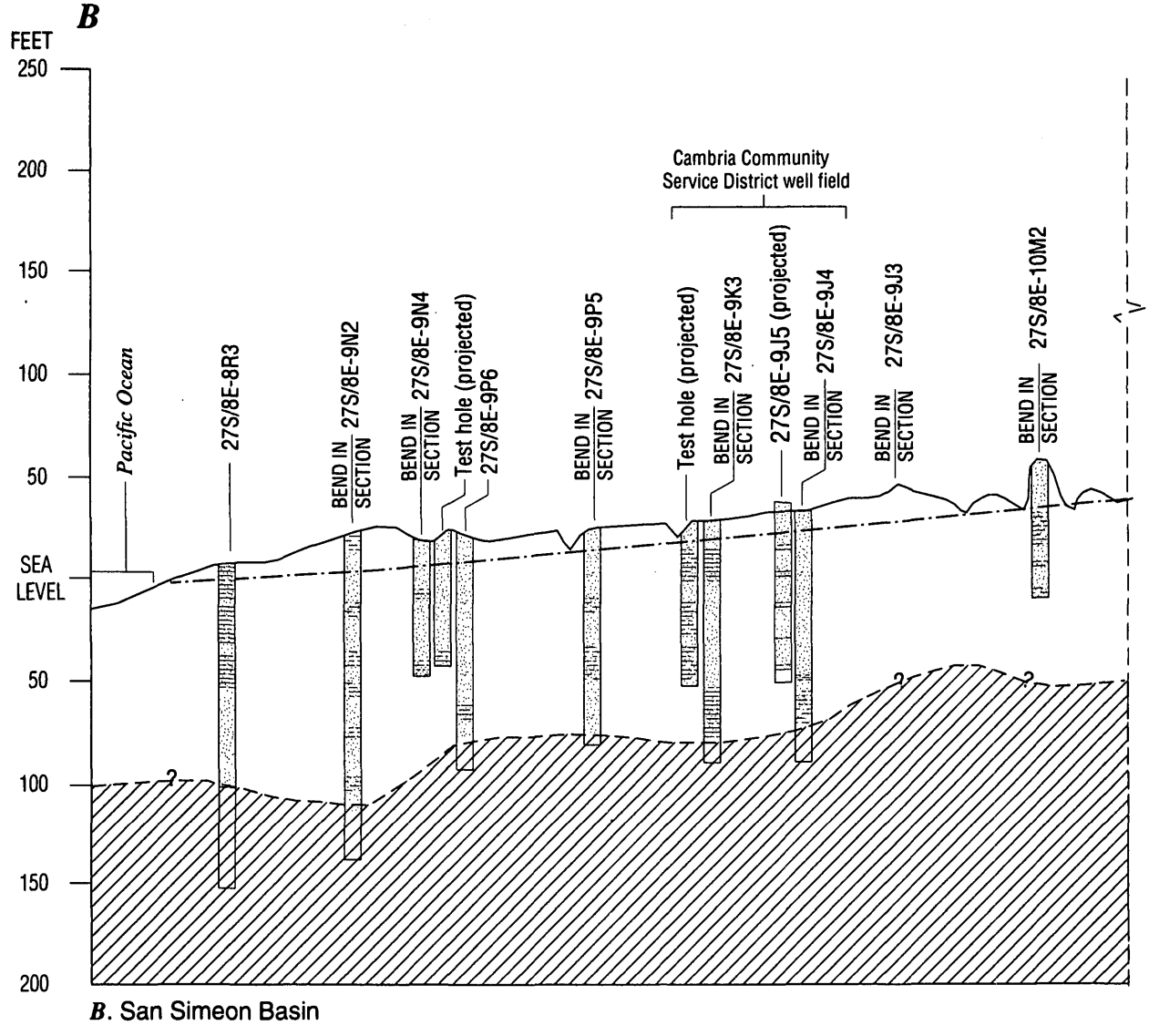

Figure 4. Geologic sections *A–A'* and *B–B'* along (*A*) the Santa Rosa and (*B*) the San Simeon Creek valleys, San Luis Obispo, California. (Location of sections are shown in figure 3.)—Continued.

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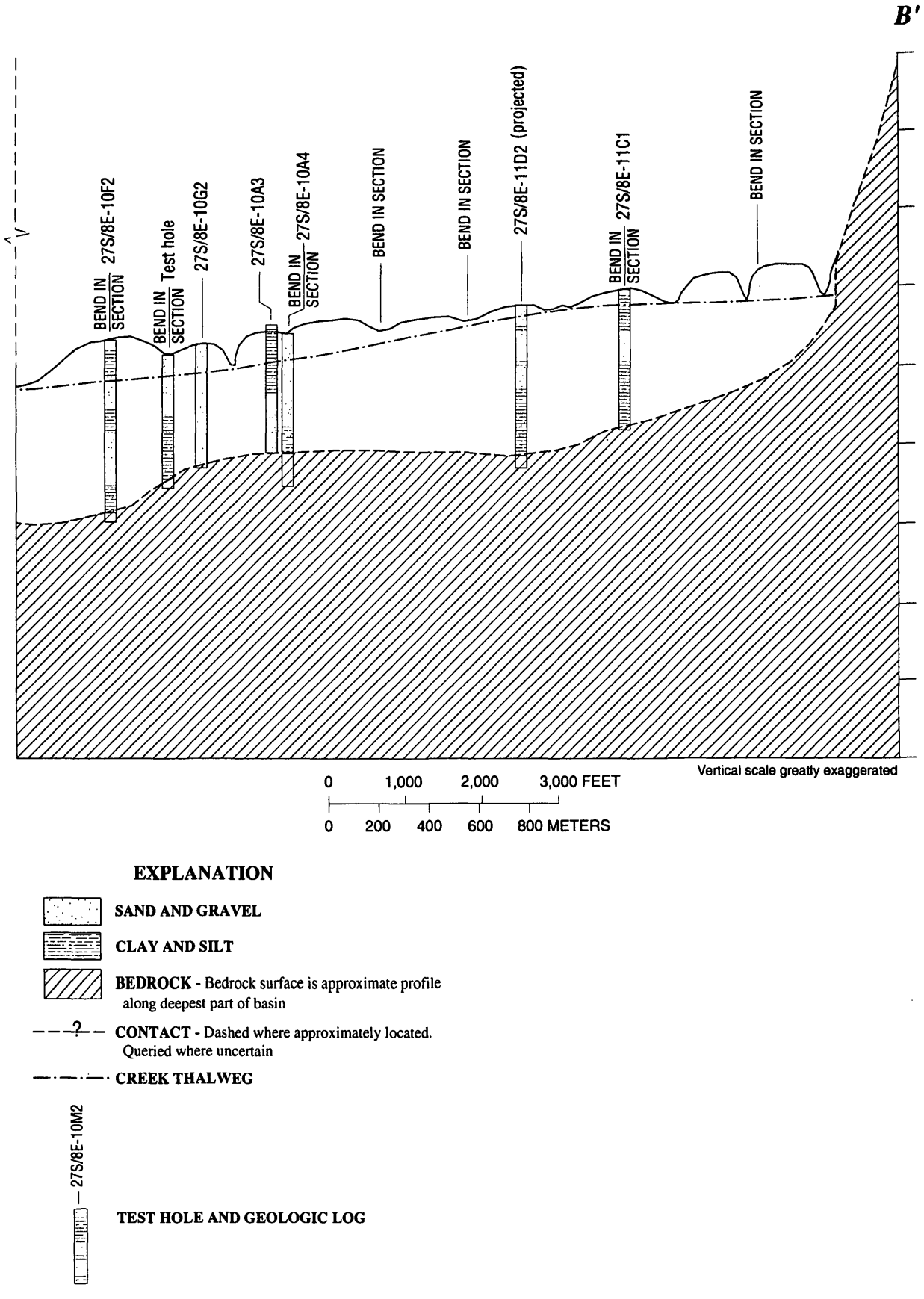

Figure 4. Geologic sections *A–A'* and *B–B'* along (*A*) the Santa Rosa and (*B*) the San Simeon Creek valleys, San Luis Obispo, California. (Location of sections are shown in figure 3.)—Continued.

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alluvial and stream-terrace deposits (units Qal and Qt in fig. 3) are along the valley floors.

Ground-Water Basins

The unconsolidated alluvial and stream-terrace deposits in the Santa Rosa and the San Simeon Creek valleys form ground-water basins extending 3 to 5 mi inland from the coast. Pores between the grains of these deposits can store water. Because the pores are interconnected, this water can flow slowly from one location to another. The bottom and sides of the basins are bounded by relatively impermeable bedrock. Two principal ground-water basins underlie the Cambria area, one underlying Santa Rosa Creek downstream of well 27S/9E-21C1 and one underlying San Simeon Creek downstream of the confluence with Steiner Creek (fig. 2). A similar but much smaller basin exists beneath the final mile of Pico Creek (fig. 1) before it enters the ocean. All the basins extend an unknown distance offshore. In this report, Santa Rosa Creek, San Simeon Creek, and Pico Creek ground-water basins will be referred to as Santa Rosa Basin, San Simeon Basin, and Pico Basin, respectively.

The onshore boundaries of the basins as defined for this study are shown in figure 2. They generally follow the contact between basin fill and bedrock (fig. 3). The upper parts of several small side valleys are excluded because the basin fill is thin and does not significantly affect ground-water storage or flow in the main valleys. The basin boundaries occasionally deviate slightly into the bedrock areas in order to include most agricultural fields entirely within the basin. Contours of the bedrock surface that form the base of the ground-water basins are shown in figure 5. The total volume of unconsolidated sediments in the onshore part of the Santa Rosa Creek Basin is 66,000 acre-ft, of which 55,000 acre-ft is above sea level. The total volume of unconsolidated sediments in the onshore part of the San Simeon Creek Basin is 30,000 acre-ft, of which 16,700 acre-ft is above sea level.

Geologic Units

The geologic units of the Santa Rosa and the San Simeon Basins can be divided into two broad categories: relatively impermeable, consolidated bedrock and poorly consolidated to unconsolidated alluvial deposits. Bedrock is considered relatively impermeable because it stores and transmits much smaller quantities of water than do the more porous and permeable basin-fill deposits.

Bedrock

Bedrock in the study area consists primarily of Jurassic and Cretaceous sedimentary and low-grade metamorphic rocks of the Franciscan Complex. West of Coast Union High School in the Santa Rosa Basin, bedrock consists of an unnamed sequence of Upper Cretaceous marine sandstones and shales (fig. 3*A*). Some sedimentary and partly metamorphosed volcanic rocks of Tertiary age also are exposed but are less often in contact with the basin-fill deposits. The slightly consolidated undifferentiated terrace deposits form a relatively thin surficial layer over the Franciscan Complex and marine sediments adjacent to the basins. For this study, these also were grouped as bedrock.

The Franciscan Complex in the Cambria area generally consists of a melange of torn and sheared lenticular masses composed of graywacke, greenstone, diabase, gabbro, serpentine, chert, shale, tuff, blue schist, and other metamorphic rocks. This melange varies spatially, allowing tectono-stratigraphic units, known as the melange units, to be established (Hsü, 1969).

The predominant melange unit in the study area is composed of various size blocks and slabs of chert, greenstone, and graywacke, with the smaller blocks surrounded by a ductily deformed matrix. Larger slabs, as much as 5,000 ft in their maximum dimension, usually exhibit brittle deformation (Hsü, 1969).

In addition to the melange units, the Franciscan Complex contains large outcrops of metavolcanic rocks. These rocks commonly are associated with red chert, locally are dark red, and often are extensively sheared. Outcrops of these metavolcanic rocks form prominent hills at the eastern end of the Santa Rosa Basin and east of the confluence of Santa Rosa and Perry Creeks. Along the San Simeon Basin, metavolcanic rocks are exposed east of Palmer Flats and on the northern side between wells 27S/8E-10G2 and 9P5 (fig. 3*B*). These rocks usually are brittle and highly fractured and therefore are able to transmit some ground water. Evidence of this is confirmed by the numerous springs in the Franciscan Complex; some

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springs discharge enough water to meet the domestic needs of a single household.

The unnamed Upper Cretaceous sandstone is not highly deformed, and the original strata usually are preserved. Occasionally, graded bedding and laminations are disrupted by extensional shears as observed along the beach at the mouth of Leffingwell Creek (fig. 1) (Hsü, 1969). The interbedded shales in this sequence are partly fractured and show less ductile deformation than the matrix of the Franciscan melange units. These shale interbeds and their associated fractures probably are the conduits for the springs in this sequence. Overall, spring discharge in the unnamed sandstone probably is less than spring discharge in the Franciscan Complex because the unnamed sandstone is less fractured and deformed.

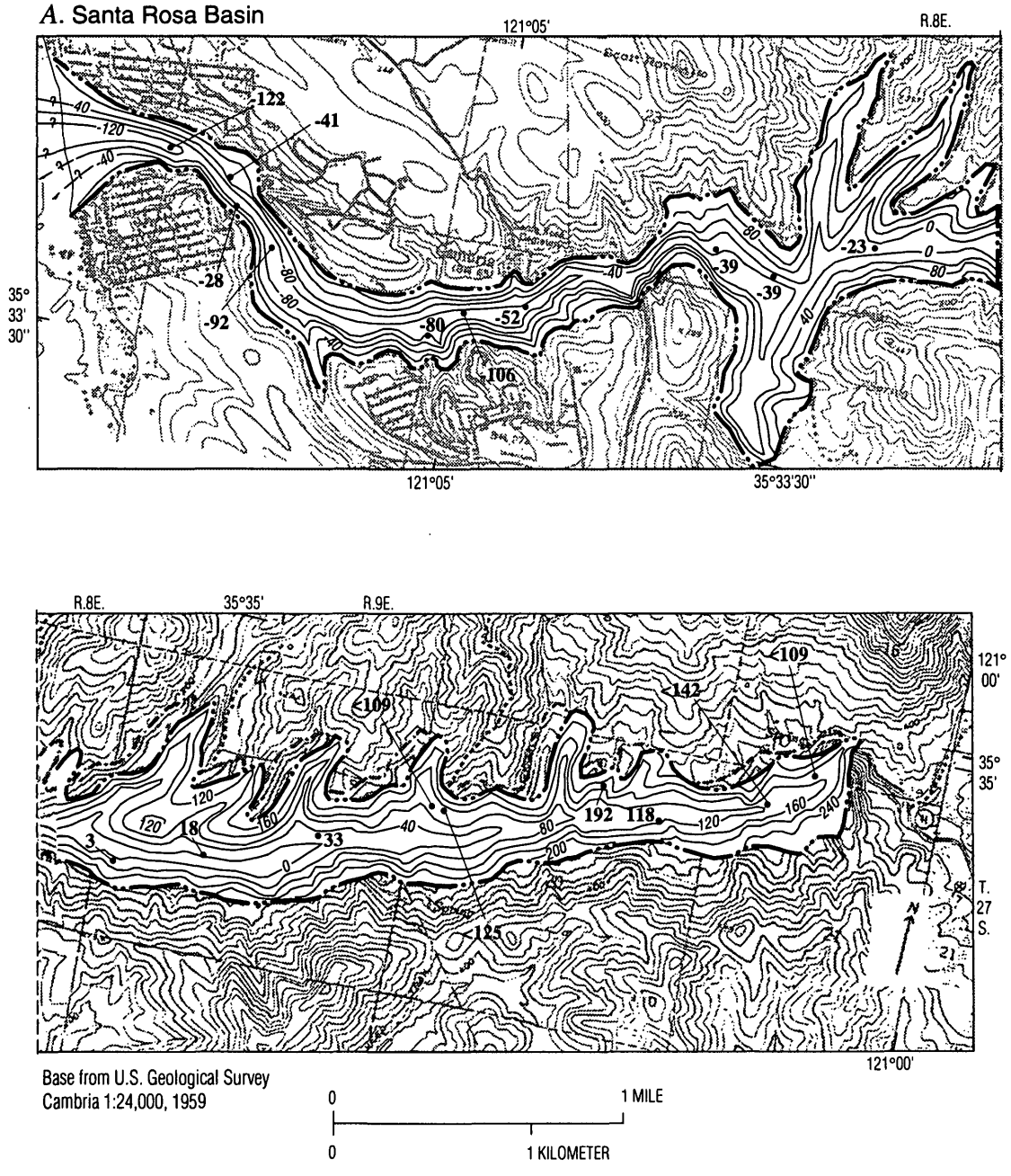

Figure 5. Altitude of the bedrock surface beneath (*A*) the Santa Rosa and (*B*) the San Simeon ground-water basins, San Luis Obispo County, California.

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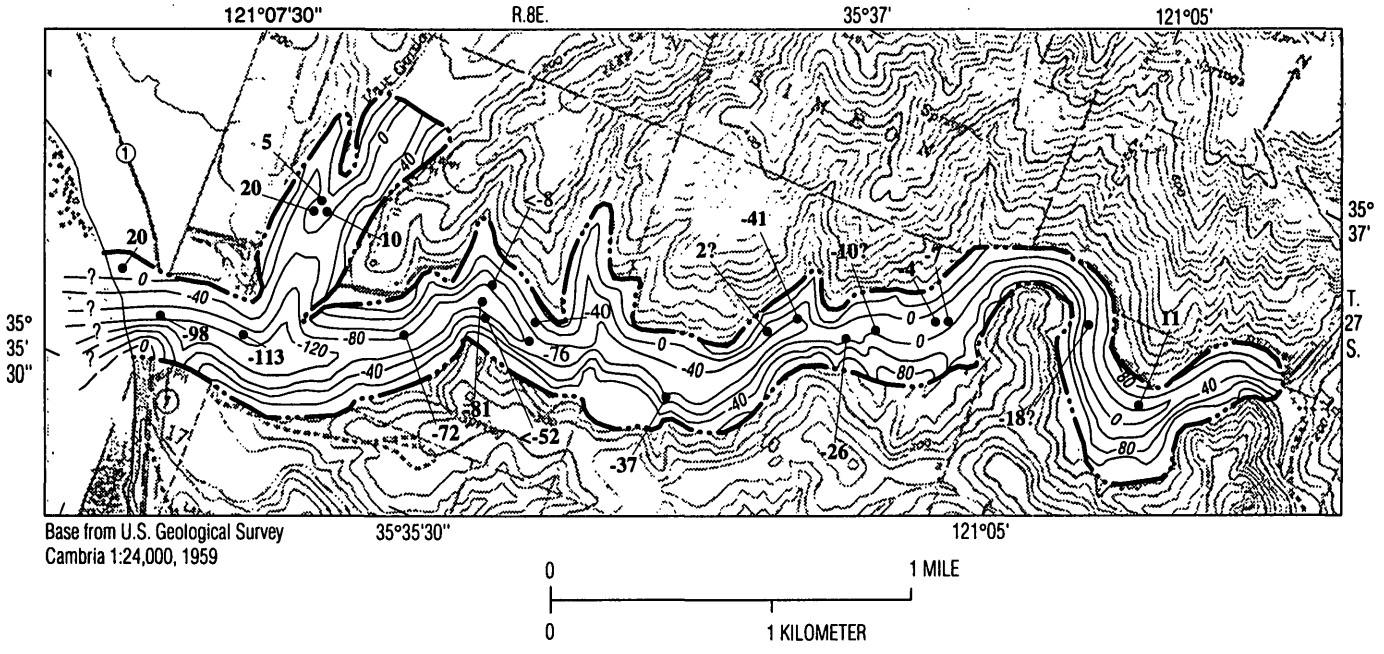
Basin Fill

Basin fill in the Santa Rosa and the San Simeon Basins consists of unconsolidated alluvial and stream-terrace deposits. Additional Quaternary sediments, primarily of marine origin, come in contact with the basin boundaries near the coast.

The alluvial and stream-terrace deposits are similar in that each consists of cobble- and pebble-size gravel, sand, silt, and clay. The stream-terrace deposits, however, are slightly older than the alluvial deposits and generally are less than 10 ft thick. The only extensive stream-terrace deposit in the study area is on the northern side of Santa Rosa Creek between wells 27S/8E-23R2 and 27C1 (fig. 3*A*). The more common alluvial deposits are often about 100 ft thick near the center of the valleys and more than 120 ft thick at the coast.

Geologic logs of wells drilled in the alluvial deposits show alternating layers of coarse- and fine-grained sediments, indicative of cyclic fluvial deposition. Layering of the basin fill is evident in the geologic sections shown in figure 4. Typically, fine-grained sediments are deposited on the flood-plain

B. San Simeon Basin



EXPLANATION

—·80·— **BEDROCK CONTOUR**-Shows estimated altitude of bedrock surface beneath the ground-water basin. Queried where uncertain. Contour interval 40 feet. Datum is sea level

—·—·— **BOUNDARY OF GROUND-WATER BASIN**

-72 **WELL OR TEST HOLE**-Number indicates altitude of bedrock, in feet above or below (-) sea level estimated from well log. <, indicates well did not reach bedrock. Queried where uncertain

Topographic contour not shown inside ground-water basin boundaries

Figure 5. Altitude of the bedrock surface beneath (*A*) the Santa Rosa and (*B*) the San Simeon ground-water basins, San Luis Obispo County, California—Continued.

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surfaces adjacent to the creek channel and coarse-grained sediments are deposited within the channel. Over geologic time, the channel meanders across the flood plain and produces interfingered coarse- and fine-grained deposits of varying thicknesses.

Continuity of individual layers in the basin fill greatly affects ground-water movement. Continuous coarse-grained channel deposits can allow rapid downvalley ground-water flow, and continuous fine-grained deposits can greatly impede lateral and vertical ground-water flow. Geologic logs of wells and test holes generally indicate that individual layers are variable and discontinuous. For example, logs of well 27S/8E-27H2 and two test holes in the Santa Rosa Creek valley drilled about 100 ft upstream and downstream of the well indicate that only one, upper gravel layer can be correlated among the three holes with any certainty. At depths greater than 40 to 50 ft, the layers differ remarkably (Robert Miller, driller, oral commun., Nov. 6, 1987).

Similarly, a cluster of three wells farther up the Santa Rosa Creek valley (27S/9E-19M2, 19M3, and 19M4) has a large degree of spatial variability (fig. 4*A*). The wells are within 25 ft of each other, but well logs indicate that the top 30 to 40 ft in each well varies from clay to an interbedded mixture of clays, sand, and gravel. The logs indicate there is a continuous gravel layer at greater depths, but it changes in thickness from 60 to 40 ft over a distance of less than 20 ft. In the San Simeon Basin, a similar pattern is observed. Wells 27S/8E-10A3 and 10A4 are separated by a distance of only 95 ft along a line perpendicular to the valley axis, yet only about one-half of the geologic strata seem to be correlated. For example, well 27S/8E-10A3 penetrates 27 ft of clay and gravel between the depths of 10 and 40 ft, whereas well 27S/8E-10A4 encountered no clay at this depth.

Continuity of individual layers is evident in some locations and seems to be greater in the direction parallel to the valley axis. This is the result of deposition by the creeks, which generally flow in this direction. For example, wells 27S/9E-19H3, 19H2, and 20E2 in the Santa Rosa Basin are within 450 ft of each other (fig. 4*A*), and all but one clay layer can be correlated among their respective driller's logs. In the San Simeon Basin, wells 27S/8E-9K3 and 9J4 are 630 ft apart along a line parallel to the valley axis. Their logs are much more similar than the logs for wells 27S/8E-9J4 and 9J5; these wells are only 250 ft apart, but along a line nearly perpendicular to the valley axis.

An exception to this pattern can be seen in drillers' logs of wells near Coast Union High School in the Santa Rosa Basin. Two wells at the high school (27S/8E-23R1 and 23R2) are about 150 ft apart along a line nearly parallel to the valley axis, yet only a 35-foot basal gravel layer can be correlated between them. The upper 90 ft of sediments in well 27S/8E -23R1 consists almost entirely of clays with only small amounts of sand. In contrast, the upper 90 ft of sediments in well 27S/8E-23R2 consists of alternating layers of sand and gravel, sandy clay, and sand with only 35 ft of sandy clay. Perhaps the sediments deposited by Perry Creek disrupt the normal patterns of continuity in this area.

An extensive, continuous clay layer might be present near the high school. Previous investigations by Envicom Corporation (1981) indicated an apparent correlation of geologic logs for wells 27S/8E-23R1 and 24J1. However, logs for newer wells in the same area (27S/8E-23R2 and 24N2) contain significantly higher percentages of coarse-grained deposits. When the additional logs are incorporated into the geologic section (fig. 4*A*), the clay layer is not as continuous or extensive as previously thought. However, the 30- to 35-foot-thick basal gravel seems to be continuous between the wells and downstream as far as well 27S/8E-27H2.

In the San Simeon Basin, drillers' logs do not show any obviously continuous clay layers. At the upper end of the basin, alluvial deposits at depths greater than about 50 ft are finer grained than shallow deposits. The pattern is similar near the CCSD well field, where several well logs show fine-grained deposits near the bottom of the basin. Fine-grained deposits appear at various depths between the well field and the coast and cannot be correlated with certainty between wells.

Water Levels

Seasonal water-level fluctuations can be used to infer the location and relative magnitude of inflows and outflows to and from the ground-water basins. Seasonal fluctuations are evident in monthly water-level data collected since 1978 by the Cambria Community Services District at about 36 wells, most of which are in the San Simeon Basin. For this study, water levels were measured monthly between March 1988 and April 1989 at an additional 26 wells, most of which are in the Santa Rosa Basin. Water levels at 31 wells were

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measured as often as daily during and shortly after a major storm on December 23–26, 1988. Measuring-point altitudes were surveyed from local bench marks.

Water-level hydrographs for eight wells in the Santa Rosa Basin and eight wells in the San Simeon Basin for January 1988 through March 1989 are shown in figure 6. Most of the hydrographs show a large seasonal drawdown beginning in spring and increasing steadily until early November. Hydrogeologic sections of ground-water levels along the length of the valleys are shown in figure 7. These sections follow the same lines as the geologic sections presented earlier (fig. 4). Seasonal water levels were highest in March 1988 and lowest at different times between mid-October and mid-December 1988, depending on location. Water levels from the latter dates are combined to form a single profile representing the minimum seasonal water level.

Seasonal water-level declines are caused by a combination of increased pumping and decreased streamflow during the summer dry season. At the upper ends of the basins, natural downvalley drainage of ground water causes large dry-season declines. Rapid water-level declines begin when the total basinwide pumping rate becomes larger than the rate of streamflow entering the basin. This occurred between March and April 1988 in the Santa Rosa Basin and between April and May 1988 in the San Simeon Basin when streamflow entering the basin was about 1.3 ft^3/s. During February through April, water levels declined less than about 1 ft/mo in both basins. During June through August, the rate of water-level decline increased to between 3 and 7 ft/mo in most areas.

During November and early December 1988, the rate of water-level decline slowed or even reversed slightly at most wells. The creeks were still dry during that period, and water levels reflected the balance between decreased pumping rates and the small but relatively steady inflow of ground water from bedrock along the sides of the valleys.

After a few days of small sporadic flows, streamflow began with a large flow peak on December 24, 1988. Water-level response to the onset of streamflow was immediate, and water levels recovered as much as 19 ft in 4 days. In most wells, more than 90 percent of the winter water-level recovery was during the first 2 weeks of streamflow.

Dry-season drawdown during 1988 was small at several locations. Seasonal drawdown within about 2,000 ft of the coast was less than 5 ft in both basins because of the absence of nearby pumping and because the creek and ocean limit the range of natural water-level fluctuations (see, for example, well 27S/8E-16D1, fig. 6*A*). Drawdown was less than about 2 ft at two inland locations along Santa Rosa Creek near wells 27S/9E-19H2 and 27S/8E-24L2. The lack of drawdown at these locations probably is caused by subsurface obstructions to ground-water flow downstream of the wells. The relatively impermeable obstructions act like dams, causing a stairstep in the downvalley water-level profile (fig. 7) and forcing ground water to emerge as surface flow in the creek. Water levels in the uppermost part of the valley, upstream of well 27S/9E-19H2, rise nearly to the level of the thalweg when the creek flows in winter, then gradually recede in summer to a nearly flat profile level with the obstruction (fig. 7*A*). The obstruction near well 27S/8E-24L2 prevents the dry-season pumping depression near municipal wells 27S/8E-26C5 and 26D1 from significantly affecting wells upstream of the obstruction. The creek probably serves as the principal means by which ground water moves past the obstructions.

The obstructions conceivably could be caused by thick, localized clay deposits, faults, or buried bedrock ridges that decrease the cross-sectional area of the basin. The valley probably always has been too steep and narrow to favor deposition of clay materials by Santa Rosa Creek; however, a landslide from an adjacent hillslope could have created a thick, localized deposit of fine-grained sediments. Previous geologic investigations did not identify any faults young enough to have affected the basin-fill deposits (Hall and others, 1979; Pacific Gas and Electric Company, 1988). The shape of the hillsides near the obstructions indicates that shallow, buried bedrock ridges are a possible cause of the obstructions. These ridges could be more pronounced than indicated in the bedrock contour map (fig. 5) and geologic sections (fig. 4).

Bedrock constrictions in two locations along San Simeon Creek steepen the downvalley water-level profile but do not force ground water to emerge as surface flow in the creek. The first location is along the narrow canyon between wells 27S/8E-10A1 and 11D1. The water-level profile upstream of the canyon shows a pattern of seasonal filling and recession similar to, but less pronounced than, the one at the upper end of the Santa Rosa Basin (fig. 7*A*). The second location, locally known as "Holland Gap," is between wells 27S/8E-9J3 and 9J4 at the upstream end of the CCSD

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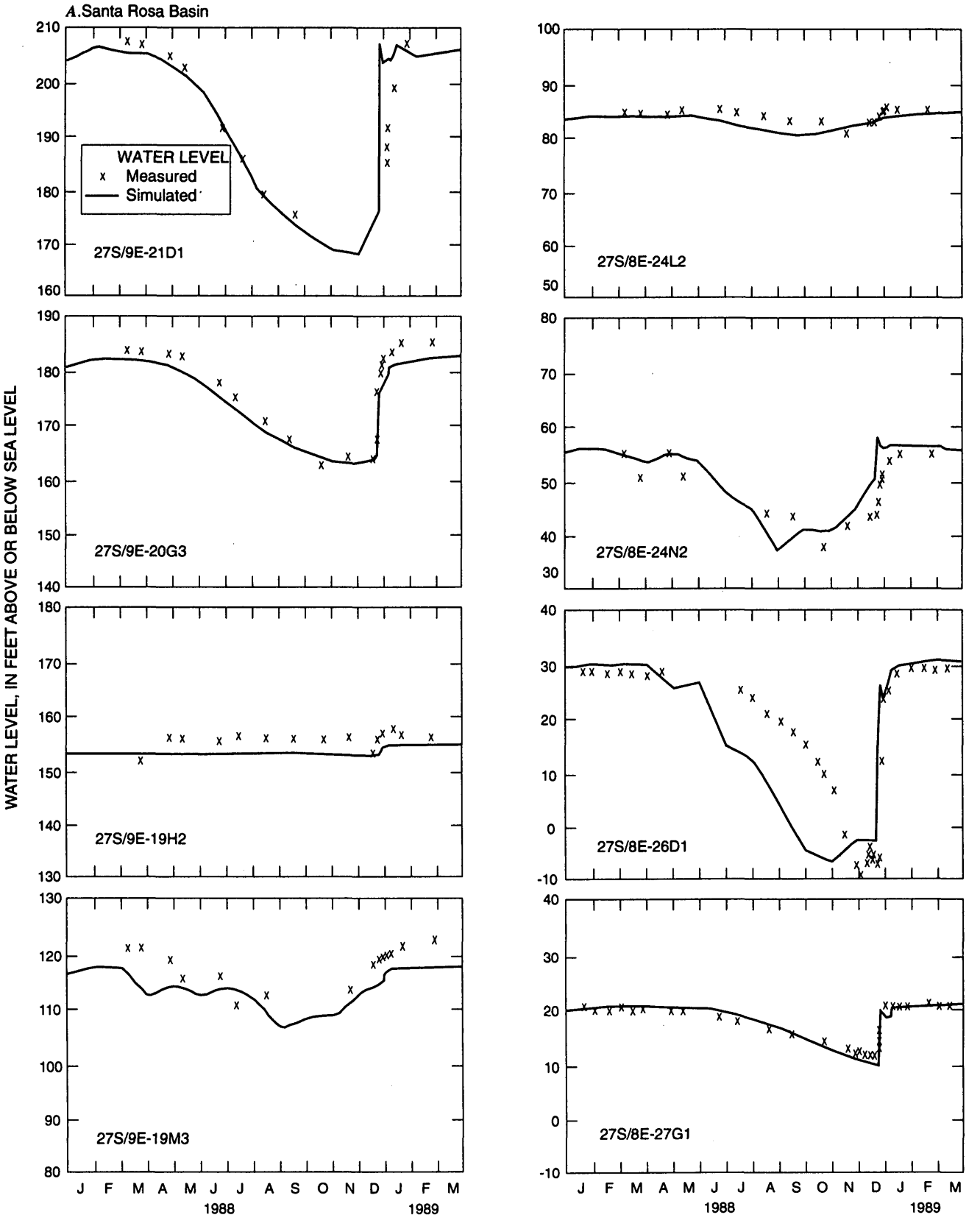

Figure 6. Measured and simulated water levels for selected wells in (*A*) the Santa Rosa and (*B*) the San Simeon ground-water basins, San Luis Obispo, California, January 1988 through March 1989.

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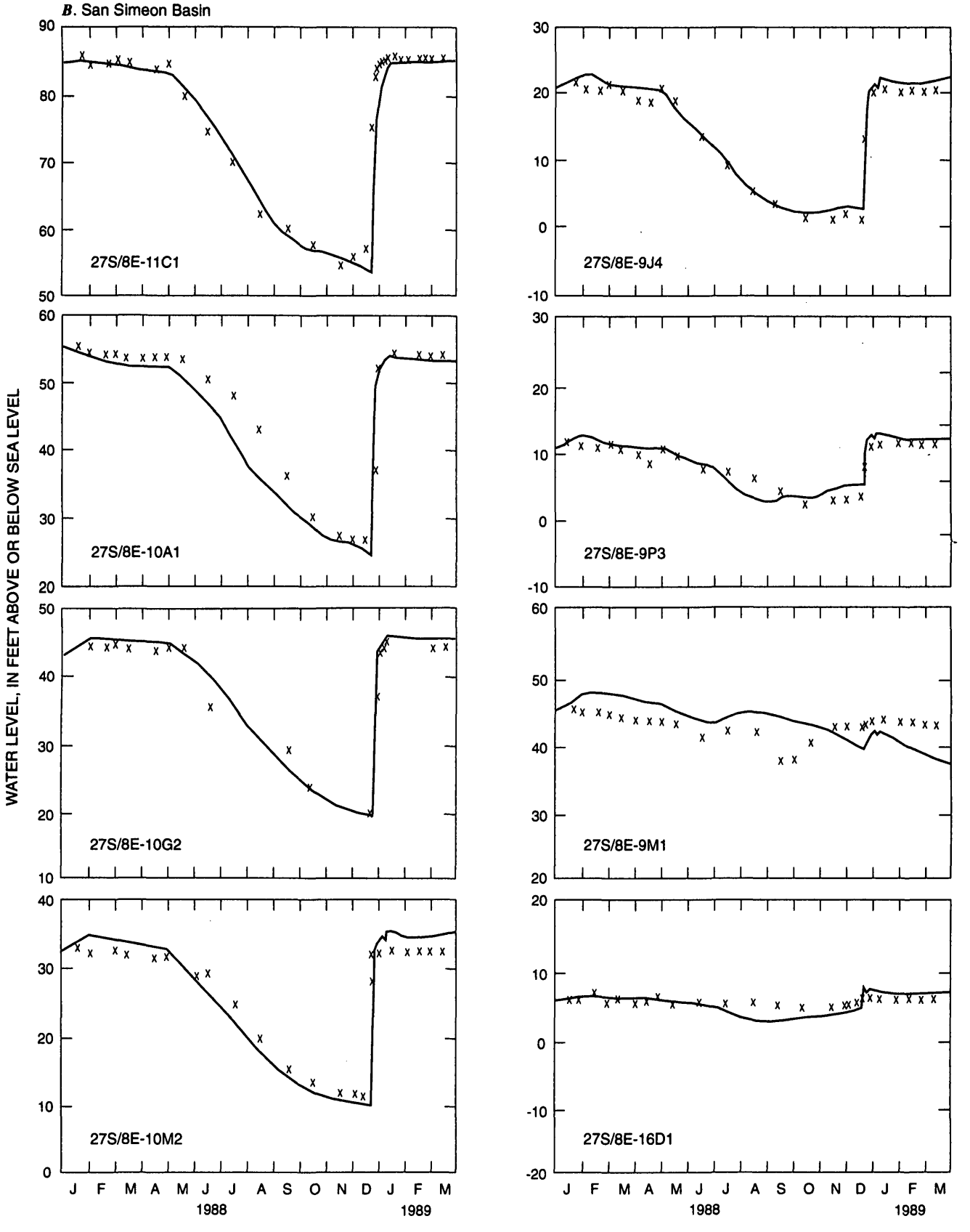

Figure 6. Measured and simulated water levels for selected wells in (*A*) the Santa Rosa and (*B*) the San Simeon ground-water basins, San Luis Obispo, California, January 1988 through March 1989—Continued.

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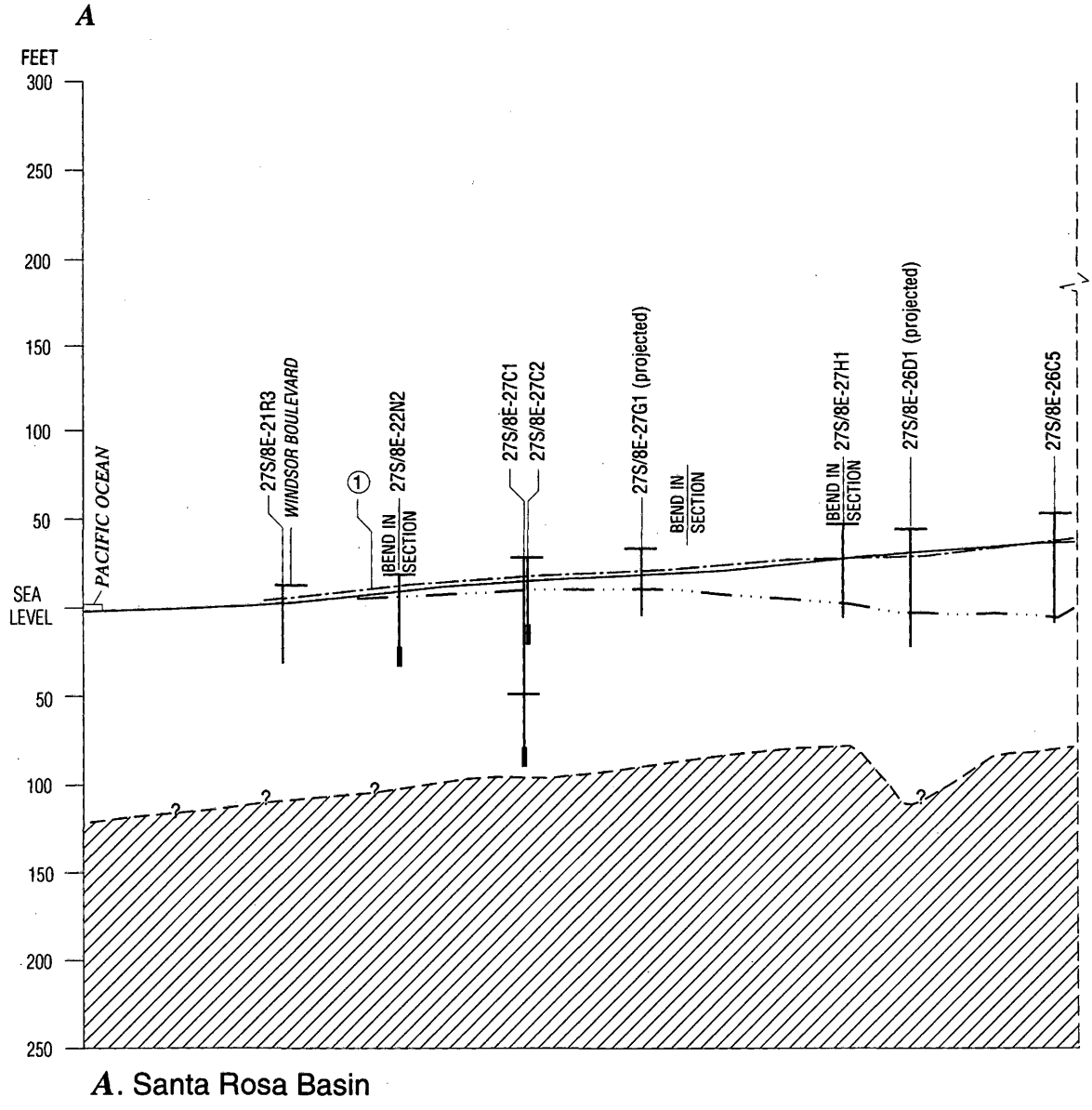

Figure 7. Ground-water levels for wells along the length of (*A*) the Santa Rosa and (*B*) the San Simeon ground-water basins, San Luis Obispo, California. (Location of sections are shown in figure 3.)

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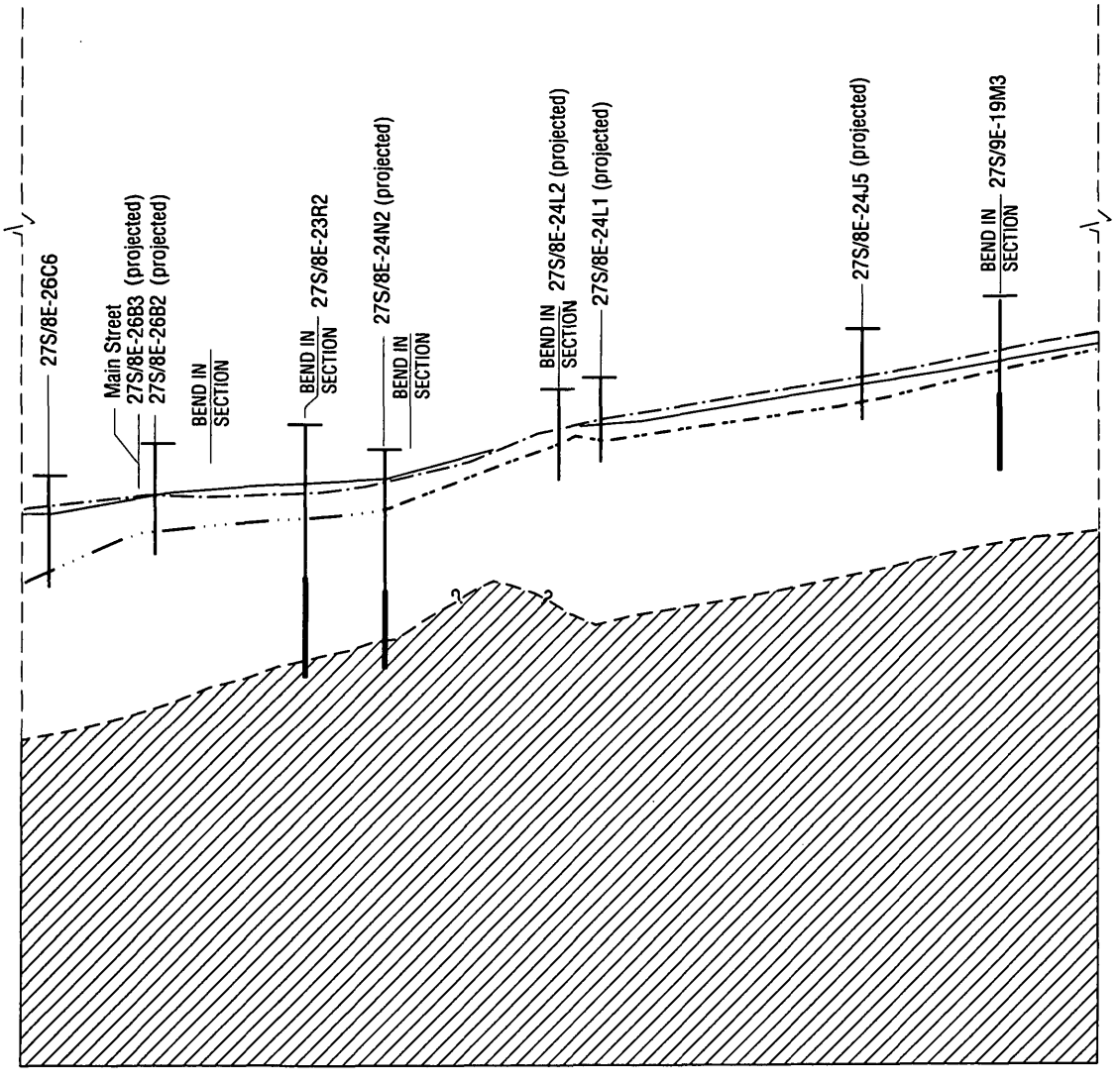

Figure 7. Ground-water levels for wells along the length of (*A*) the Santa Rosa and (*B*) the San Simeon ground-water basins, San Luis Obispo, California. (Location of sections are shown in figure 3.)—Continued.

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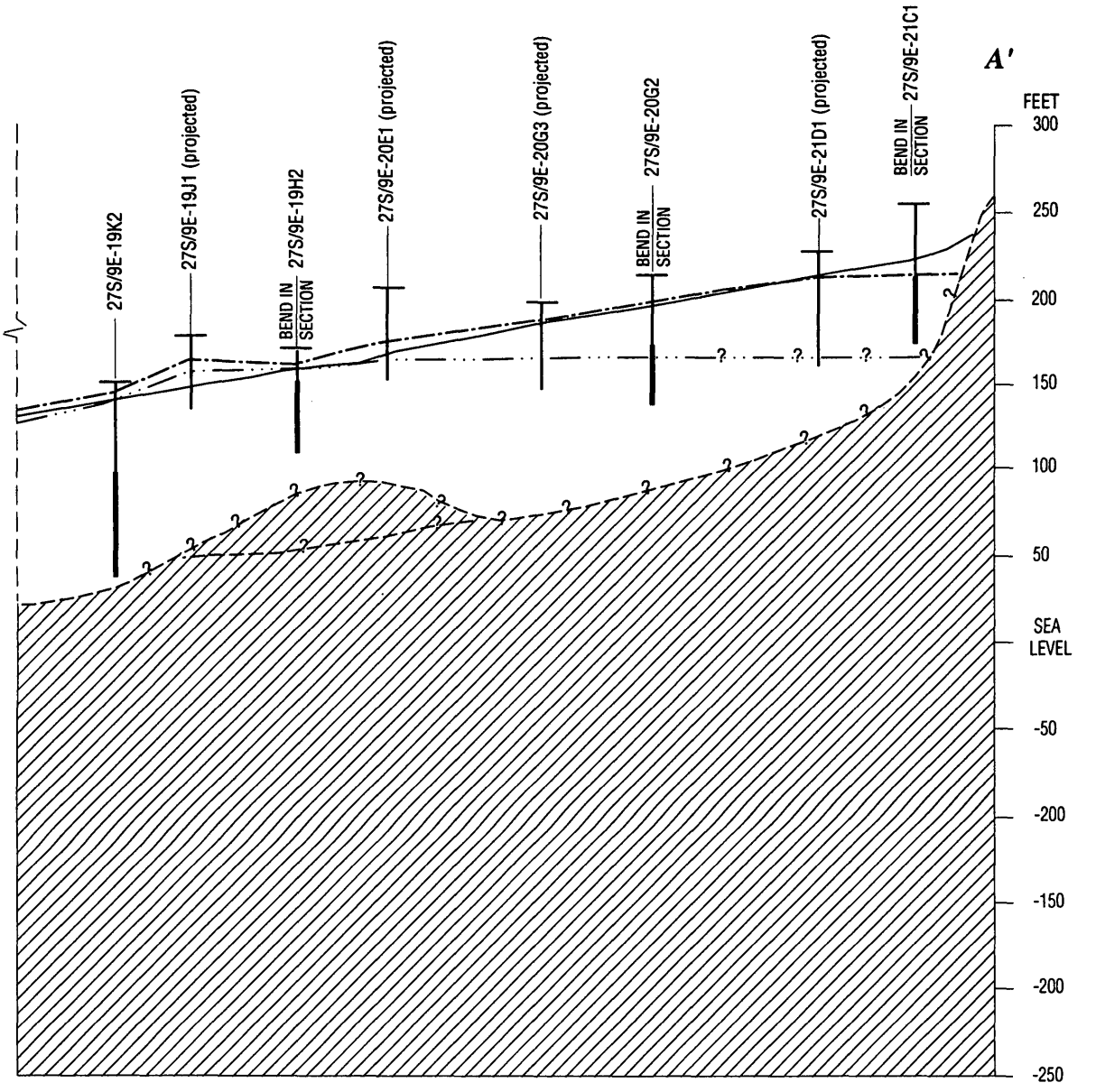

Figure 7. Ground-water levels for wells along the length of (*A*) the Santa Rosa and (*B*) the San Simeon ground-water basins, San Luis Obispo, California. (Location of sections are shown in figure 3.)—Continued.

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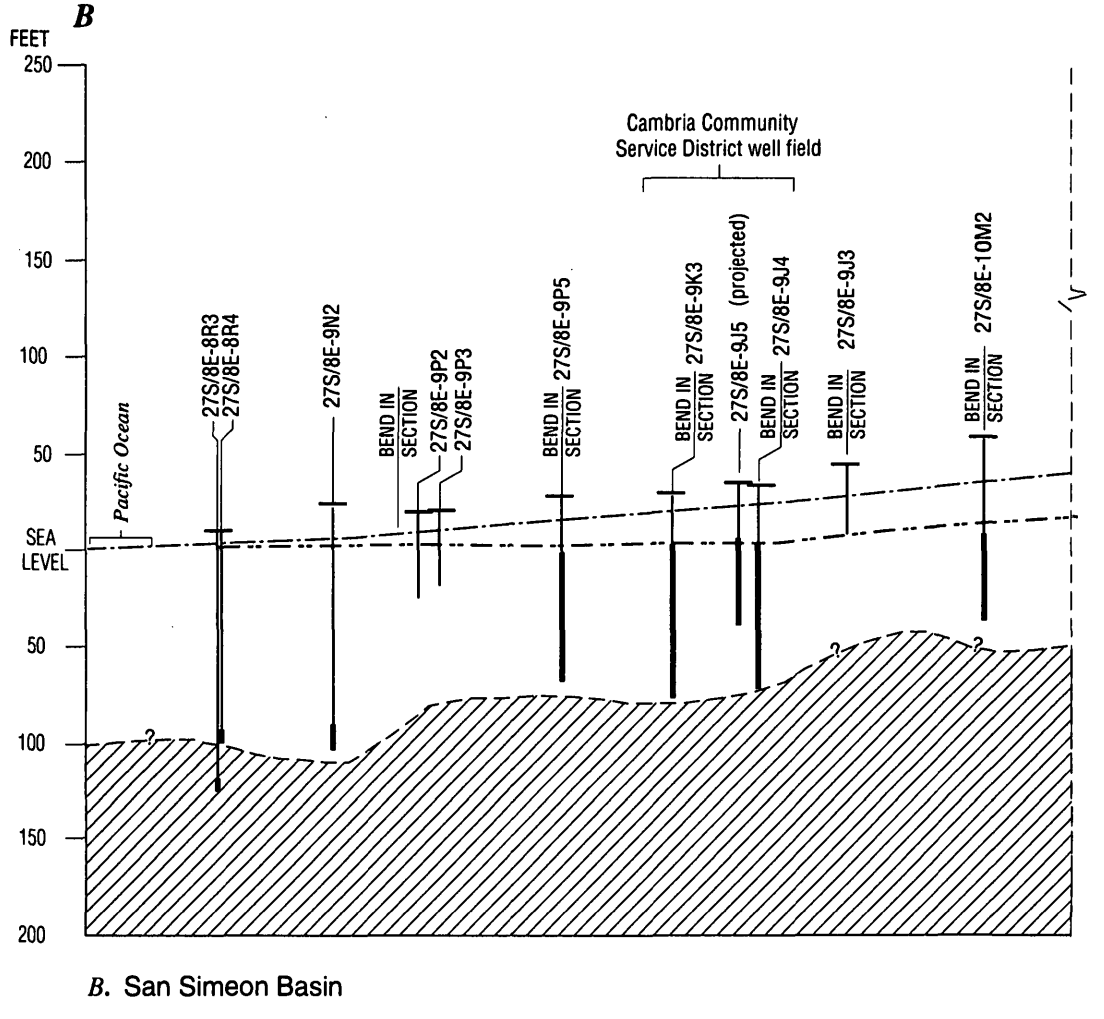

B. San Simeon Basin

Figure 7. Ground-water levels for wells along the length of (*A*) the Santa Rosa and (*B*) the San Simeon ground-water basins, San Luis Obispo, California. (Location of sections are shown in figure 3.)—Continued.

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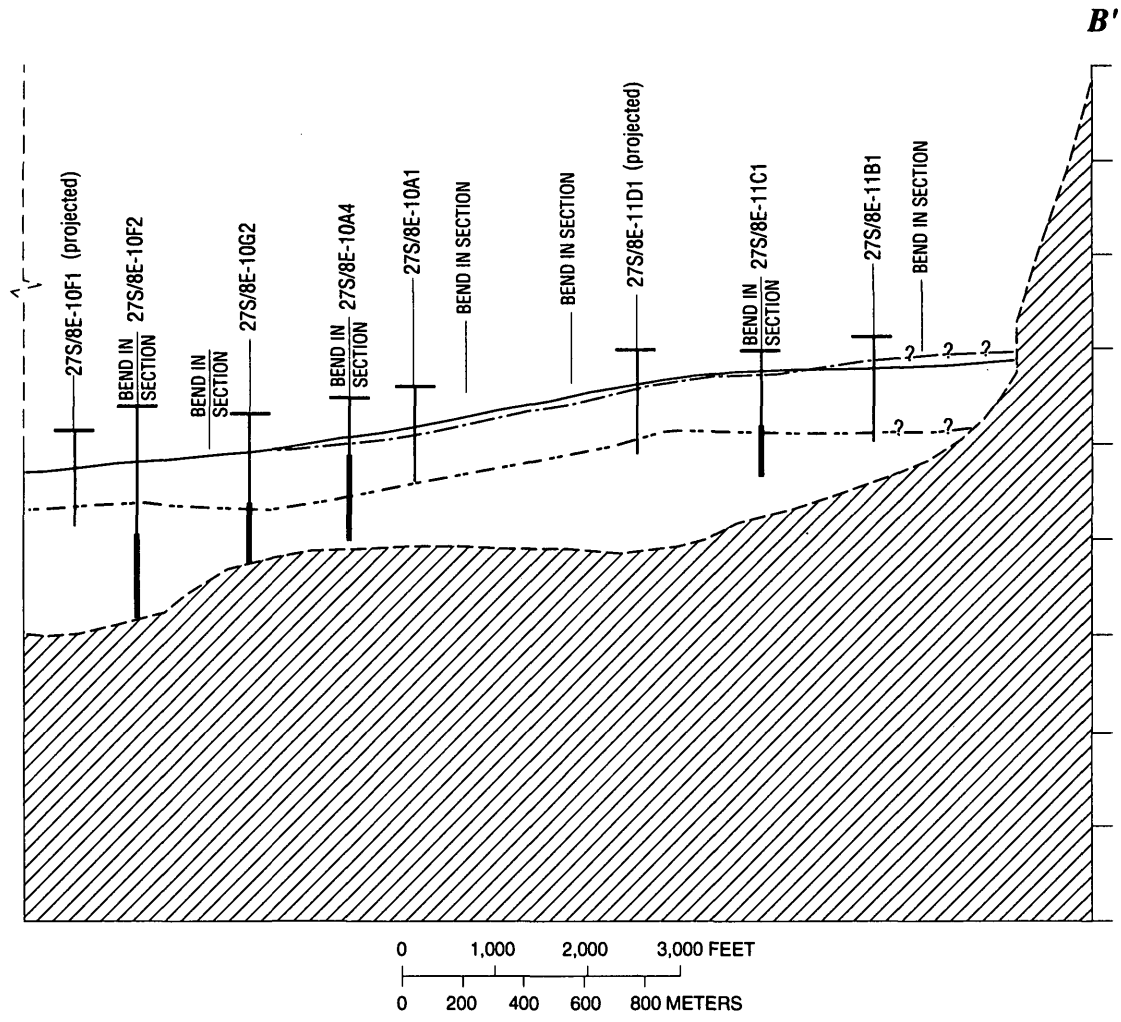

EXPLANATION

BEDROCK - Bedrock surface is approximate profile along deepest part of basin

CONTACT - Dashed where approximately located. Queried where uncertain

CREEK THALWEG

MINIMUM WATER LEVEL DURING 1988

March 14,1988 (San Simeon Basin) and March 22-23, 1988 (Santa Rosa Basin). Queried where uncertain

November 15,1988 (San Simeon Basin) and October 18-21, 1988 (Santa Rosa Basin). Queried where uncertain

December 13-16, 1988 (Santa Rosa Basin). Queried where uncertain

27S/8E-10A1

WELL AND PERFORATED INTERVAL-Horizontal line is land surface. Heavy line is perforated interval

Figure 7. Ground-water levels for wells along the length of (*A*) the Santa Rosa and (*B*) the San Simeon ground-water basins, San Luis Obispo, California. (Location of sections are shown in figure 3.)—Continued.

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well field (fig. 7*B*). Small bedrock outcrops in the creekbed and near the road indicate that ground water must flow through a relatively narrow notch in the buried bedrock surface.

A large seasonal pumping depression occurred in 1988 near municipal wells 27S/8E-26C5 and 26D1 in the Santa Rosa Basin. The combined discharge from these wells was fairly constant from June through December 22, 1988, and was equivalent to a continuous pumping rate of 235 gal/min. Effects of the pumping were evident as far upstream as well 27S/8E -24N2 and as far downstream as well 27S/8E-21R3 (fig. 7*A*). Although static water levels at the pumping wells declined as much as 11.6 ft below sea level in late autumn, water levels between those wells and the coast remained higher. The lowest water level in well 27S/8E-27G1 was about 10 ft above sea level (fig. 6*A*).

A pumping depression was similar but smaller at the CCSD well field in the San Simeon Basin. Water levels in the well field declined to a minimum of about 1.5 ft above sea level. Water levels between the well field and the coast are elevated by recharge from the CCSD wastewater sprayfield. However, regulatory constraints limit the buildup of the recharge mound to no more than about 1 ft above water levels in the well field.

Water-level gradients across the valleys generally are steeper than those along the valleys. There are few wells along the sides of the valleys, but cross-valley gradients can be estimated by comparing water levels in wells with the water surface in the creek. During the winter flow season, the creek surface and the adjacent water table are at about the same altitude. By this method, cross-valley water-level gradients in March 1988 ranged from almost 0 to 0.958 and averaged about 0.027. Downvalley water-level gradients were smaller, ranging from about 0.002 to 0.008 and averaging less than 0.006. When the creeks are flowing, downvalley gradients are controlled by the slope of the creek channels.

Vertical water-level gradients within the basin-fill deposits are small in most locations because most municipal and irrigation wells penetrate virtually the entire basin thickness. The wells draw water from all depths and, consequently, do not tend to create vertical water-level gradients. Vertical gradients could be measured accurately only at three locations where multiple-depth monitoring wells were installed for this study. Wells 27S/8E-8R3 and 8R4 in the San Simeon State Beach campground (fig. 2*B*) are perforated at depths of 130 to 140 ft and 85 to 95 ft, respectively. Water levels in both wells show pronounced tidal fluctuations with a maximum amplitude of about 1 ft. The fluctuations at the two depth intervals are slightly out of phase, so that the vertical gradient alternates from upward to downward. The wells are 500 ft from the ocean and only 25 ft from a ponded area where San Simeon Creek reaches the beach. Water levels in both wells are consistently higher than the water level in the pond, with upward gradients ranging from about 0.001 to 0.010 ft/ft. The upward gradient probably results from fresh ground water flowing upward over the wedge of relatively dense seawater that is at the base of the aquifer near the coast.

Slightly farther upstream, a large downward vertical gradient is created by the CCSD wastewater sprayfield operation. In 1988, the water level in a 20-foot-deep piezometer well (27S/8E-9N3) was within 2 ft of the land surface and was 13 to 16 ft higher than the water level in nearby well 27S/8E-9N2, which is perforated at a depth of 117 to 127 ft below land surface. The downward gradient resulted from a combination of high recharge rates at the land surface and deep pumping from wells several hundred feet upstream.

A small upward vertical gradient also is evident at wells 27S/8E-27C1 and 27C2 in the Santa Rosa Basin. The wells are perforated at depths of 105 to 115 and 40 to 50 ft below land surface, respectively. The wells are 4,500 ft from the coast, but water levels are not noticeably influenced by tides. The vertical gradient was consistently upward with a magnitude of about 0.009 ft/ft. The gradient reversed for a few days following a flood peak on December 24, 1988. At this location, the upward gradient might not result from discharge of fresh ground water over a saltwater wedge. Digital simulation of the ground-water-flow system indicated that ground water is forced upward and into the creek by a constriction in the aquifer downstream of the wells. Between the constriction and the coast, the gradient reverses and water tends to seep from the creek back into the aquifer.

Long-term water-level hydrographs for four locations are shown in figure 8. Winter water levels are about the same every year because even a small quantity of streamflow is sufficient to recharge the ground-water basins fully. After the rapid recovery of ground-water levels during the first few weeks of the

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streamflow season, additional recharge from the creek is rejected. Water levels near the creek stabilize at about the level of the creek surface, which remains fairly constant except during storms. Water year 1977 was an exception; total annual creek discharge was only about 5 percent of normal. Semiannual water-level measurements in spring 1977 indicated that water levels at many wells did not fully recover during the winter.

The Santa Rosa and the San Simeon Basins differ from larger or less developed basins in that annual inflows and outflows are a large part of the total quantity of ground water in storage. Thus, the basins could not sustain a significant excess of outflow over inflow without going completely dry in a few years.

Two long-term water-level trends have occurred in recent years, but neither is necessarily indicative of a long-term imbalance between inflow and outflow. The first is a small, gradual decline in winter water levels in the middle part of the San Simeon Basin between wells 27S/8E-10A1 and 9L1 (see, for example, well 27S/8E -10G1, fig. 8). During 1978–87, the average rate of long-term decline in winter water levels at five wells was 0.35 ft/yr. The most likely cause of the decline was increased winter pumping rates at the CCSD well field. Total pumpage for January through March increased an average of 8.4 acre-ft/yr during 1979–88. The trend was greater than zero at the 0.05 level of significance. Increased pumping in winter induces increased seepage from the creek, but water levels are lowered slightly in the process. This relation was confirmed by model simulations described later in the report.

The second trend is a steady increase in the dry-season water-level decline near the CCSD well field on San Simeon Creek (27S/8E-9L1, fig. 8). This trend is caused largely by the steady increase in dry-season pumpage at the well field since the late 1970's. Agricultural pumpage also increased rapidly in the

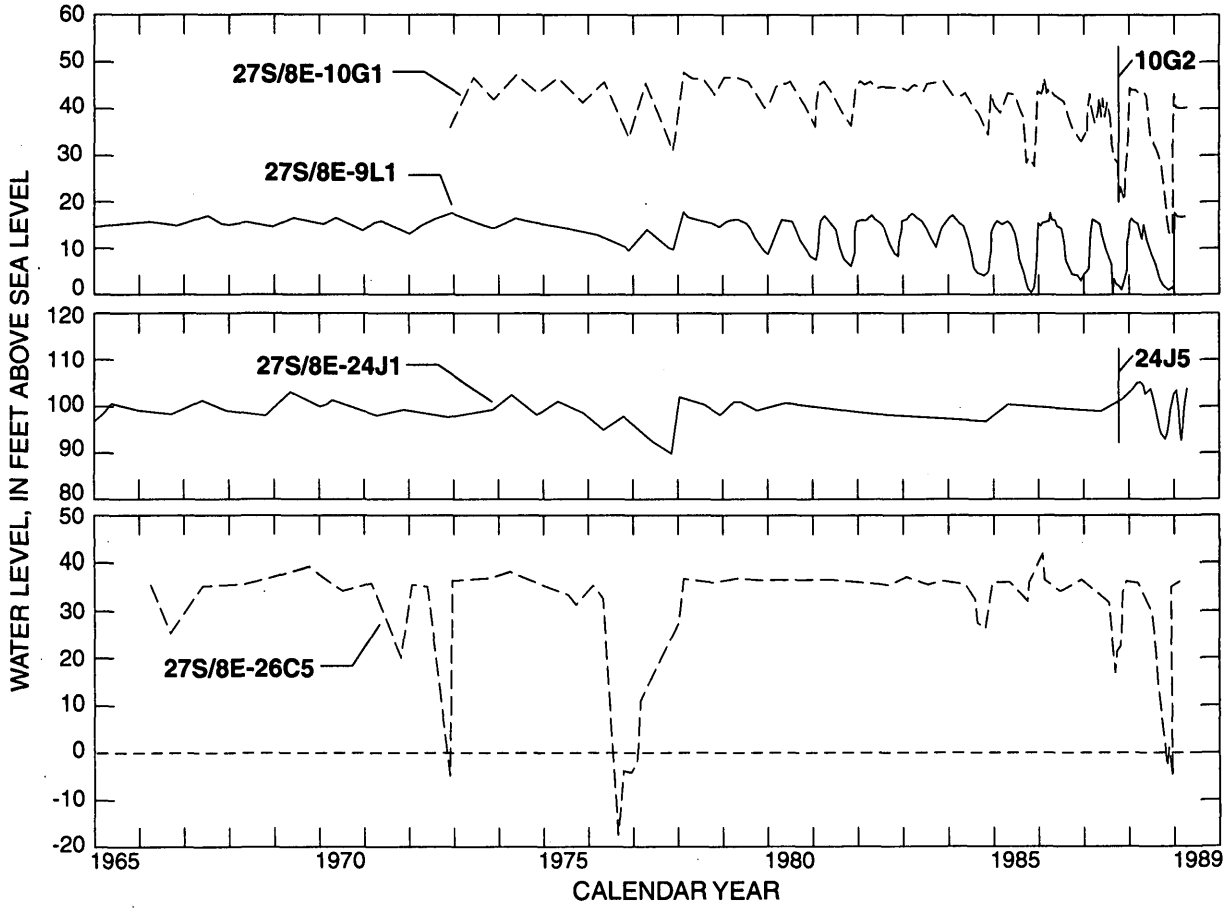

Figure 8. Water levels in four wells in the Santa Rosa and the San Simeon ground-water basins, San Luis Obispo County, California, 1965–89.

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early 1980's because of a shift from dry-farmed to irrigated crops. This contributed to the increase in dry-season water-level declines since that time (27S/8E -10G1, fig. 8).

Transmissivity and Storage Coefficient

Transmissivity (T) describes the ease with which ground water flows through an aquifer and equals the product of aquifer thickness and hydraulic conductivity. Hydraulic conductivity (K) in units of feet per day is the quantity of water that will flow through 1 ft^2 of cross-sectional area of an aquifer under a water-level gradient of 1 ft/ft. The storage coefficient (S) of an aquifer is a dimensionless ratio equal to the quantity of water that would be released from an aquifer, per square foot of aquifer area, following a 1-foot decline in water level. In unconfined aquifers, water is released by drainage of pore spaces at the water table. The corresponding storage coefficients (specific yields) are much larger than in confined aquifers where water is released by elastic expansion of the water and geologic materials.

Estimates of T and S were obtained by several methods. Single-well drawdown tests analyzed using the straight-line method (Lohman, 1972) were done at eight wells and yielded estimates of T. Multiple-well drawdown tests analyzed using the Theis curve for confined aquifers yielded estimates of T and S at seven wells. Results of the tests are shown in table 1. Estimates of T were highly variable and ranged from 718 to 44,200 ft^2/d with a median value of 10,000 ft^2/d. Estimates of S ranged from 0.0022 to 0.0400 with a median value of 0.0097. The response of water levels in wells to the onset of winter streamflow were evaluated to estimate aquifer diffusivity, which is the ratio T/S.

These values of S are between the ranges commonly associated with confined and unconfined aquifers (Lohman, 1972; Freeze and Cherry, 1979). These measurements of S represent relatively short-term storage responses to stresses lasting from minutes to hours. As described in a later section of this report, larger estimates of S (0.045 to 0.10) resulted from digital simulation of longer term storage responses (days to years) using a ground-water-flow model. These larger values are in the low end of the range commonly associated with unconfined aquifers. Thus, most parts of the basins are slightly confined, probably as a result of discontinuous fine-grained layers.

Results of the multiple-well drawdown test at well 27S/8E-10A3 did not conform to theoretical patterns for homogeneous, isotropic aquifers. Drawdown at the more distant observation wells (27S/8E-10A1 and 10A2) was large relative to the drawdown at a closer well (27S/8E-10A4). Possible causes of the anomalous drawdowns include horizontally anisotropic hydraulic conductivity and the influence of nearby bedrock boundaries. Because these causes are difficult to evaluate using analytical methods, they were investigated using a digital, finite-difference ground-water-flow model (McDonald and Harbaugh, 1988). The model grid included a 59-acre rectangular area (fig. 2). The long sides of the area approximately coincided with the contact between bedrock and the basin fill and were designated as no-flow boundaries. The upstream end of the area was across a narrow part of the valley where underflow in summer is small. The downstream end of the area was arbitrarily drawn across the valley but was located far enough from the observation wells so that storage effects from aquifer materials downstream of the boundary would be negligible for a drawdown test lasting only 12 hours. The one-layer model contained 2,120 cells ranging in size from 4×4 to 50×150 ft.

The aquifer-test model was unable to duplicate the measured drawdowns exactly, but anomalies similar to those in the measured data could be achieved by adjusting the locations of the model boundaries or by assuming an anisotropic distribution of K. Drawdowns at the distant observation wells were insensitive to boundary location except when the buried bedrock sides of the basin were assumed to be within about 100 ft of the wells, which is unlikely. Anisotropy was introduced into the model by assuming that K is greater along the axis of the valley than perpendicular to it. T was even more anisotropic than K because basin thickness decreases toward the sides of the valley but is relatively constant along the valley axis. Anisotropy resulted in increased drawdown at the distant observation wells, which are aligned with the pumping well along the valley axis, and decreased drawdown at the closest observation well, which is aligned in a perpendicular direction. The best match between simulated and measured drawdowns was with K=720 ft/d in the axial direction, K=300 ft/d in the transverse direction, and S=0.05.

Anisotropy also was evident in the response of water levels in 19 wells to the onset of winter streamflow in December 1988. Equations describing

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Table 1. Hydraulic characteristics determined from drawdown tests and streamflow-response tests for selected wells in the Santa Rosa and the San Simeon ground-water basins, San Luis Obispo County, California

[Location: See well-numbering system in text. Wells listed in downstream order. Analysis method: 1, straight line; 2, Theis curve. Streamflow-response test: Response to a period of streamflow beginning December 22, 1988, at 1500 hours and peaking on December 24, 1988. Effective thalweg: Effective thalweg indicates level to which water levels recovered, in feet above (+) or below (–) the altitude of the thalweg at the point where the creek is closest to the well. h, hour; ft^2/d, foot squared per day; ft, foot; —, no data]

Location	Drawdown test						Streamflow-response test		
	Duration (h)	Analysis method	Transmissivity (*T*) (ft^2/d)	Hydraulic conductivity (*K*) (ft^2/d)	Storage coefficient (*S*)	Diffusivity (*T/S*) (ft^2/d)	Distance from creek (ft)	Effective thalweg (ft)	Diffusivity (*T/S*) (ft^2/d)
Santa Rosa Basin									
27S/9E-20G3	—	—	—	—	—	—	151	+1.64	1.3×10^4
20E1	3	1	18,000	301	—	—	225	+6.82	2.0×10^4
19K2	—	—	—	—	—	—	128	+.32	1.7×10^3
19M3	.8	2	2,940	48	0.0113	2.60×10^5	742	+6.79	1.3×10^4
27S/8E-24J4	.6	1	1,000	17	—	—	—	—	—
24L4	8	2	718	14	.0022	3.26×10^5	—	—	—
24L2	—	—	—	—	—	—	150	+2.30	3.6×10^3
24N2	—	—	—	—	—	—	80	–.85	1.7×10^3
23R2	—	—	—	—	—	—	80	+2.00	2.7×10^3
26C6	12	2	44,200	631	.0097	4.56×10^6	50	+1.26	1.8×10^3
26C5	12	1	10,000	143	—	—	37	+1.50	1.0×10^3
27H1	—	—	—	—	—	—	—	–.68	1.3×10^4
27H2	[1]12	[1]1	[1]5,750	[1]77	—	—	330	+.68	2.0×10^3
27G1	—	—	—	—	—	—	79	+.12	3.3×10^3
27C1	—	—	—	—	—	—	341	–2.62	3.3×10^4
21R3	8	1	19,100	383	—	—	—	—	—
San Simeon Basin									
27S/8E-11C1	—	—	—	—	—	—	150	–2.20	1.0×10^5
10A1	9	2	7,070	177	0.0050	3.54×10^4	—	—	—
10A3	9	1	16,500	413	—	—	165	–1.22	4.0×10^4
10A4	9	2	13,500	338	.0400	3.38×10^5	265	–.72	6.8×10^4
10A2	9	2	7,500	188	.0120	6.25×10^5	—	—	—
10G2	—	—	—	—	—	—	30	–1.00	2.7×10^3
10F2	—	—	—	—	—	—	200	+2.20	1.0×10^5
10M2	12	1	5,620	99	—	—	—	—	—
9J3	—	—	—	—	—	—	275	–2.90	1.5×10^5
9P3[2]	24	2	16,702	185	.0072	2.32×10^6	—	—	—
9P2[2]	24	1	26,474	294	—	—	—	—	—

[1]Test by Robert Miller Drilling Company in 1984, reported in McClelland Engineers (1986).

[2]Test done in 1978. Raw data from Cambria Community Services District (John Stratford, written commun., 1988). Hydraulic conductivity calculated from transmissivity assuming saturated thickness of 90 ft.

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the theoretical response of ground-water levels to sudden changes in stream stage were presented by Cooper and Rorabaugh (1963) and Hall and Moench (1972). The equations assume that the initial water table is flat, the aquifer is homogeneous, the creek fully penetrates the aquifer, and the change in stream stage is instantaneous. If these assumptions are met, measured water-level responses can be compared with theoretical responses to estimate aquifer diffusivity (T/S). When compared with results of drawdown tests, streamflow-response tests can reveal aquifer anisotropy because drawdown tests measure T in all directions. Streamflow-response tests are affected only by T in the direction perpendicular to the creek, which generally follows the valley axis.

The creek channels at the test sites do not fully penetrate the aquifer and therefore do not fit one of the assumptions used to develop the theoretical equations. If the error caused by this discrepancy is large, it would result in a delay between the instantaneous change in streamflow and the onset of the water-level response. None of the tests indicated an obvious measured delay, so the error was assumed to be negligible.

For this study, measured stream-stage hydrographs were discretized into 2-hour increments to approximate instantaneous changes. The theoretical responses to these incremental changes were superimposed using the convolution method. Results of the streamflow-response tests (table 1) indicate diffusivities ranging from 1.0×10^3 to 1.5×10^5 ft^2/d, with a median value of 1.3×10^4 ft^2/d. These values generally are smaller than those calculated using T and S values from drawdown tests, which ranged from 3.54×10^4 to 4.56×10^6 ft^2/d, with a median value of 3.38×10^5 ft^2/d. Assuming that S is the same for both types of tests, the differences can be attributed to relatively low T perpendicular to the valley axis. However, S might be larger for the streamflow-response tests because of their longer durations, and this could be the cause of the relatively small diffusivities.

WATER QUALITY

Surface-Water Quality

Surface-water samples were collected at the six sites shown in figure 9. Samples were collected on March 8–9, 1988, and February 23–24, 1989, and analyzed for concentrations of major ions, nitrate, and selected trace elements. Results of these analyses are shown in table 2. Flow was less than 6 ft^3/s in both creeks for all sampling dates.

Surface water generally is of better quality in San Simeon Creek than in Santa Rosa or Perry Creeks. For instance, the concentration of dissolved solids ranged from 280 to 292 mg/L (milligram per liter) along San Simeon Creek, whereas it ranged from 469 to 530 mg/L along Santa Rosa and Perry Creeks (table 2). Likewise, the concentrations of hardness, calcium, magnesium, sodium, potassium, sulfate, chloride, and manganese in San Simeon Creek were equal to or less than the concentrations of these ions in either Santa Rosa or Perry Creeks. Of the constituents tested, none had significantly lower concentrations in Santa Rosa or Perry Creeks than in San Simeon Creek.

Ion concentrations at the two sites on San Simeon Creek differed by less than 10 percent. In contrast, concentrations of several ions increased by 12 to 64 percent along Santa Rosa Creek. Some of these increases resulted from flow from Perry Creek into Santa Rosa Creek. Perry Creek seems to be the source of increased concentrations of sodium, potassium, chloride, bromide, and manganese. The high concentrations of these ions in Perry Creek probably result from weathering and from release of connate seawater trapped in the Tertiary marine deposits along Perry Creek. The effect of mixing water from Santa Rosa and Perry Creeks can be seen in the trilinear diagram in figure 10*A*. The diagram indicates that the composition of Perry Creek water is intermediate between Santa Rosa Creek water and seawater, and the composition of Santa Rosa Creek water below the confluence with Perry Creek results from mixing of upstream Santa Rosa Creek water with Perry Creek water.

Increased sulfate concentrations measured in the water from Santa Rosa Creek below the confluence with Perry Creek cannot be attributed to mixing of upstream Santa Rosa Creek water with Perry Creek water. The source of the sulfate might be the Upper Cretaceous marine sandstone that borders Santa Rosa Creek valley below the confluence with Perry Creek or the sediments in the part of the ground-water basin below the confluence.

Surface-water quality in Santa Rosa, San Simeon, and Perry Creeks is affected by the rate of streamflow. Specific conductance measured during different months of the year varies by as much as 36

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Table 2. Surface- and ground-water quality near Cambria, San Luis Obispo County, California, 1988–89

[Location: See well-numbering system in text. Wells are in downstream order. Constituents are given in milligrams per liter unless otherwise noted. ft^3/s,

Location (fig. 9)	Date	Flow, instantaneous (ft^3/s)	Specific conductance (µS/cm)	pH (standard units)	Water temperature (°C)	Hardness, total (as $CaCO_3$)	Calcium, dissolved	Magnesium, dissolved	Sodium, dissolved	Percent sodium	Sodium adsorption ratio
Drinking-water standard		*na*	*na*	*[1]6.5-8.5*	*na*	*na*	*na*	*na*	*na*	*na*	*na*
Surface water											
Santa Rosa Creek	3-09-88	3.0	722	8.2	15.5	--	66	48	20	--	--
near Cambria	2-24-89	--	737	8.1	13.0	--	72	51	22	--	--
Santa Rosa Creek at	3-09-88	5.0	848	8.2	13.0	--	71	57	30	--	--
State Highway 1	2-24-89	--	822	8.3	13.0	--	71	57	31	--	--
Santa Rosa Creek at	3-08-88	5.0	865	8.2	16.5	--	69	56	33	--	--
Windsor Boulevard	2-24-89	--	838	7.9	--	--	70	57	32	--	--
Perry Creek at Cambria	3-09-88	.40	931	8.1	15.0	--	56	58	58	--	--
	2-24-89	.37	867	8.1	13.0	--	51	55	58	--	--
San Simeon Creek at	3-08-88	5.1	493	8.2	15.5	--	42	30	16	--	--
Palmer Flats	2-23-89	--	468	8.0	14.5	--	41	29	15	--	--
San Simeon Creek	3-08-88	3.3	518	8.2	12.0	--	45	32	16	--	--
near Cambria	2-23-89	3.6	495	8.2	17.0	--	44	31	16	--	--
Ground water											
Santa Rosa basin											
27S/9E-20G2	12-13-88	na	712	7.7	15.5	380	70	49	25	13	0.6
	2-23-89	na	709	7.2	15.5	370	69	48	24	12	.5
20BS3	2-23-89	na	618	7.9	14.5	290	54	38	33	20	.8
19H3	12-12-88	na	833	7.6	15.0	430	77	57	37	16	.8
	2-22-89	na	821	7.8	17.5	390	72	52	33	15	.7
27S/8E-24L1	12-13-88	na	1,050	8.0	15.0	610	110	82	38	12	.7
	2-24-89	na	1,080	7.9	16.0	610	110	82	37	12	.7
27C1	12-13-88	na	2,270	7.5	16.0	880	120	140	230	36	3
	2-22-89	na	2,430	7.1	17.5	940	130	150	230	35	3
27C2	12-13-88	na	1,580	7.9	16.0	810	110	130	73	16	1
	2-22-89	na	1,620	7.2	17.5	840	120	130	68	15	1
San Simeon basin											
27S/8E-11C1	12-14-88	na	734	7.5	15.5	360	63	48	33	17	.8
	2-22-89	na	571	7.5	16.0	280	51	38	20	13	.5
10A3	12-14-88	na	608	7.8	15.5	290	54	38	20	13	.5
	2-22-89	na	535	7.5	17.0	270	50	35	18	13	.5
10HS1	2-22-89	na	1,230	7.0	12.0	450	89	55	110	34	2
9M4	12-14-88	na	960	7.6	15.0	400	83	48	73	28	2
	2-23-89	na	978	7.6	18.0	400	84	47	72	28	2
9N2	12-14-88	na	1,390	7.8	15.5	680	120	92	64	17	1
	2-22-89	na	1,420	7.4	17.0	680	120	93	68	18	1
8R3	12-13-88	na	2,320	8.3	17.0	460	74	66	340	61	7
	2-21-89	na	2,010	7.8	18.0	570	95	80	250	49	5
8R4	12-13-88	na	816	7.8	16.5	230	39	33	99	48	3
	2-21-89	na	426	7.5	18.0	96	17	13	54	54	2

[1]Secondary maximum contaminant level (Title 22, California Code of Regulations, 1986, sections 64401-64473).
[2]Primary maximum contaminant level (Title 22, California Code of Regulations, 1986, sections 64401-64473).

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cubic foot per second; µS/cm, microsiemen per centimerer at 25°C; °C, degrees Celsius; na, not applicable; --, no data; <, actual value is less than value shown]

Potassium, dissolved	Alkalinity, total (as $CaCO_3$)	Sulfate, dissolved	Chloride, dissolved	Fluoride, dissolved	Bromide, dissolved	Silica, dissolved	Dissolved solids, residue at 180°C	Dissolved solids, sum of constituents	Nitrite plus nitrate, dissolved (as N)	Boron, dissolved	Iron, dissolved	Manganese, dissolved
na	*na*	[1]*250*	[1]*250*	[1]*2.0*	*na*	*na*	[1]*500*	[1]*500*	[2]*10*	*na*	[1]*0.3*	[1]*0.05*
Surface water--*Continued*												
1.7	347	110	25	0.3	--	18	--	--	--	0.160	0.011	--
1.6	328	100	24	.2	0.022	12	520	--	<0.010	.150	.009	0.008
1.4	306	95	14	.3	--	20	--	--	--	.130	.009	--
1.4	304	110	14	.2	<.010	19	469	--	<.010	.130	.007	.003
1.8	343	110	7.5	.3	--	18	--	--	--	.160	.009	--
1.7	326	120	30	.3	.037	12	530	--	<.010	.150	.006	.009
3.1	376	52	65	.4	--	7.4	--	--	--	.150	.009	--
2.5	328	58	72	.4	.079	5.6	502	--	<.010	.130	.008	.043
1.1	216	41	13	.2	--	15	--	--	--	.200	.009	--
1.0	202	42	12	.2	<.010	14	280	--	<.010	.200	.006	.001
1.1	229	42	14	.2	--	15	--	--	--	.180	.003	--
1.1	216	44	13	.1	<.010	14	292	--	<.010	.180	.005	.003
Ground water--*Continued*												
Santa Rosa basin--*Continued*												
1.3	308	95	15	0.3	--	21	473	470	2.00	0.150	0.012	0.002
1.2	287	97	15	.3	--	21	445	454	1.40	.130	.006	.003
.5	264	63	17	.2	--	23	373	393	1.30	.050	.005	.002
1.0	376	78	15	.3	--	27	547	518	<.010	.180	.014	.350
.8	348	85	24	.3	--	27	496	503	.013	.170	.046	.330
1.2	536	97	27	.3	--	30	730	708	<.010	.240	.022	.470
1.1	563	100	27	.2	--	31	711	727	<.010	.230	.030	.490
3.4	516	66	550	.5	--	34	1,520	1,460	.020	.220	.110	1.60
2.4	517	59	650	.5	--	36	1,470	1,570	<.010	.190	.070	1.70
1.4	618	96	210	.3	--	32	1,080	1,020	<.010	.180	.021	.910
.8	635	88	210	.4	--	33	1,030	1,030	<.010	.170	.200	1.00
San Simeon basin--*Continued*												
1.2	264	76	40	.1	--	20	461	453	2.90	.200	.033	.020
.9	258	50	16	.2	--	19	342	354	.939	.170	.008	.003
1.0	250	51	15	.1	--	21	357	353	.531	.170	.004	.002
.8	243	45	15	.2	--	20	320	333	.697	.170	.009	.002
5.0	211	290	150	.6	--	54	892	881	.036	.150	.016	.190
1.6	446	18	81	.5	--	32	594	606	<.010	.310	.018	.910
1.4	448	19	82	.5	--	32	596	608	<.010	.310	.030	.920
1.0	500	77	180	.4	--	32	889	868	.018	.190	.012	1.40
.7	494	80	190	.5	--	33	873	884	<.010	.160	.870	1.60
6.7	250	140	580	.3	--	18	1,400	1,380	.014	1.40	.010	.190
4.4	298	100	540	.2	--	27	1,240	1,280	<.010	.560	.060	.330
3.2	270	63	77	.2	--	24	495	501	.011	.240	.009	.180
4.2	157	31	30	.2	--	13	270	257	<.010	.170	.370	.230

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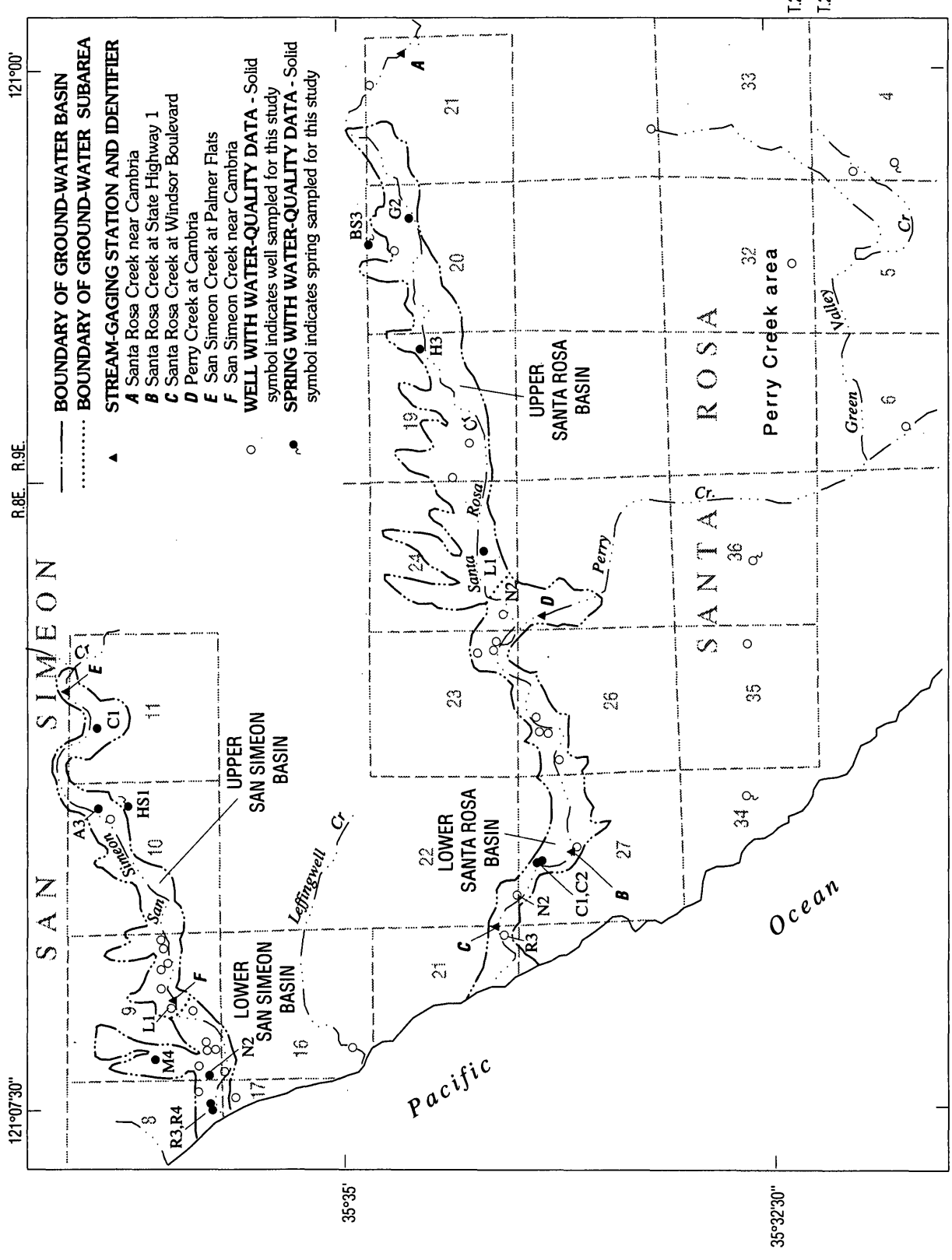

Figure 9. Locations of surface- and ground-water-quality measurement sites, San Luis Obispo County, California.

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percent at a single site. The variations tend to be inversely related to streamflow. Specific conductance, measured on the approximate date of the onset of winter streamflow, indicated that there is no increase in dissolved minerals associated with the first period of runoff of the winter season.

Specific conductance of San Simeon Creek at Palmer Flats ranged from 472 µS/cm (microsiemen per centimeter at 25 degrees Celsius) on December 20, 1988, the approximate date of the first winter flow, to 556 µS/cm on May 10, 1988. The stream discharges on these dates were 6.0 and 0.98 ft^3/s, respectively. Specific conductance at the gaging station on Perry Creek, just above the confluence with Santa Rosa Creek, ranged from 867 µS/cm on February 24, 1989, when the stream discharge was 0.37 ft^3/s to 1,360 µS/cm on November 17, 1988, when discharge was 0.04 ft^3/s. These data illustrate the inverse relation between discharge and specific conductance.

Ground-Water Quality

Ground-water samples were collected for this study from 11 wells and 2 springs along the San Simeon Creek and Santa Rosa Creek ground-water basins (fig. 9). Samples were collected in December 1988 and February 1989, when ground-water levels were near their minimum and maximum seasonal levels, respectively. Analyses of these samples (table 2) were combined with historical data for a more complete evaluation of ground-water quality. The historical data are of unknown accuracy although samples that did not exhibit a cation-anion balance were omitted. In cases where multiple samples were available for a well, the median concentration of a given ion was used in the spatial analysis of water quality.

Ground-water quality does not meet drinking-water standards in all parts of the basins. California State drinking-water standards for the constituents measured in this study are shown in table 2 and fall into two categories. Primary maximum contaminant levels are enforceable standards to protect public health. Of the constituents discussed here, only nitrate is regulated by a primary maximum contaminant level. Secondary maximum contaminant levels regulate aesthetic characteristics of drinking water, such as taste, odor, and color. Concentrations of pH, sulfate, chloride, fluoride, dissolved solids, iron, and manganese are regulated by secondary maximum contaminant levels. For the constituents listed in table 2, California State drinking-water standards (Title 22, California Code of Regulations, sections 64401-64473) are the same as Federal standards, except that secondary maximum contaminant levels are enforceable.

Identification of Subareas

Five subareas within the study area were identified on the basis of water-quality differences (fig. 9). The San Simeon and the Santa Rosa Basins were each divided into an upper and lower basin, and ground water in the Perry Creek drainage area was grouped as the fifth subarea. Pico Creek was not included in the delineation of subareas. Along San Simeon Creek, the boundary between the upper and lower basins is near well 27S/8E-9L1 at the downstream end of the CCSD well field. Along Santa Rosa Creek, the boundary is between wells 27S/8E-24N2 and 24L1, about 2,000 ft upstream of the confluence with Perry Creek. The boundary in the Santa Rosa Basin coincides with the location of one of the subsurface flow obstructions.

The differences in water quality among the five subareas are most clearly indicated by the concentrations of sodium, sulfate, chloride, and dissolved solids. The relative concentrations of sodium, sulfate, and chloride, in each subarea can be seen in the trilinear diagrams in figures 10*B* through 10*D*. In these figures, the range of historical data for each subarea is enclosed by a line, and data from samples collected for this study are plotted as individual points. Quantitative differences in concentrations of sodium, sulfate, chloride, and dissolved solids are indicated by the boxplots shown in figure 11. The boxplots schematically show the sample distribution of ion concentrations in the subareas.

The lower basins have higher concentrations of sodium, chloride, and dissolved solids than the upper basins. The difference between the upper and lower basins along San Simeon Creek is larger and more abrupt than along Santa Rosa Creek. Sodium and chloride increase equally, so that the relative concentrations of ions in wells near the coast approaches that of seawater (fig. 10*C*). Ground water in the Perry Creek Basin also is high in sodium, chloride, and dissolved solids (fig. 10*D*), but it is lower in sulfate than water in the lower Santa Rosa Basin to which it is tributary. Overall, water quality is best in the upper San Simeon Basin.

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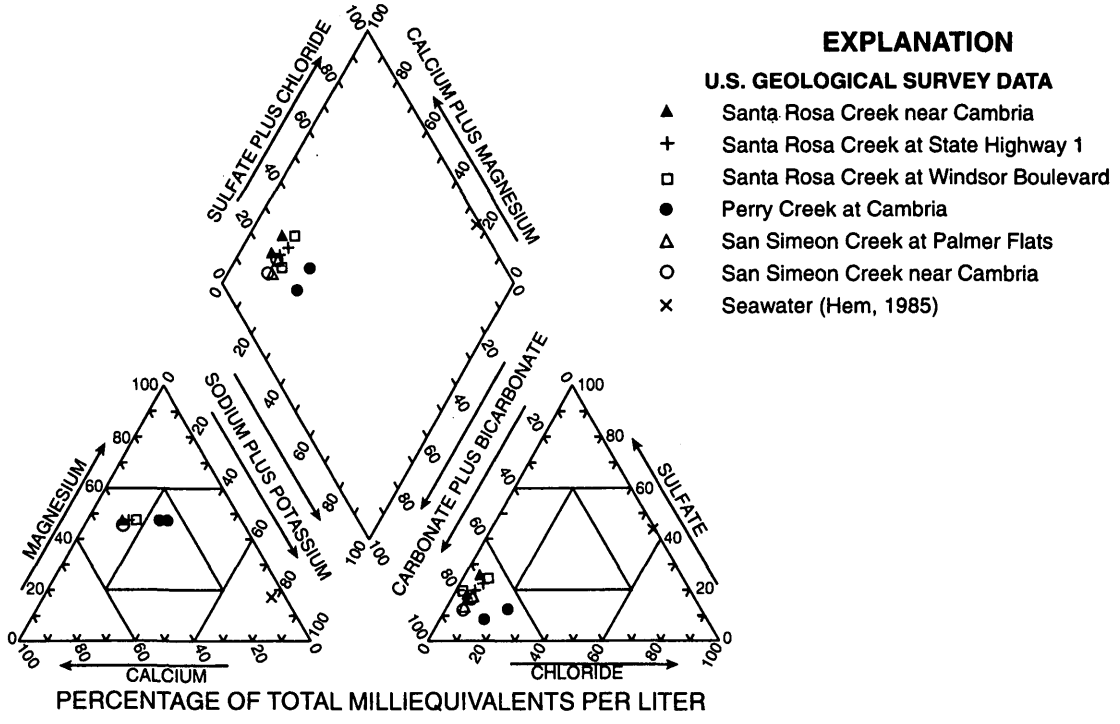
A. **Surface-water quality – Santa Rosa, San Simeon, and Perry Creeks**



B. **Ground-water quality – San Simeon basin**

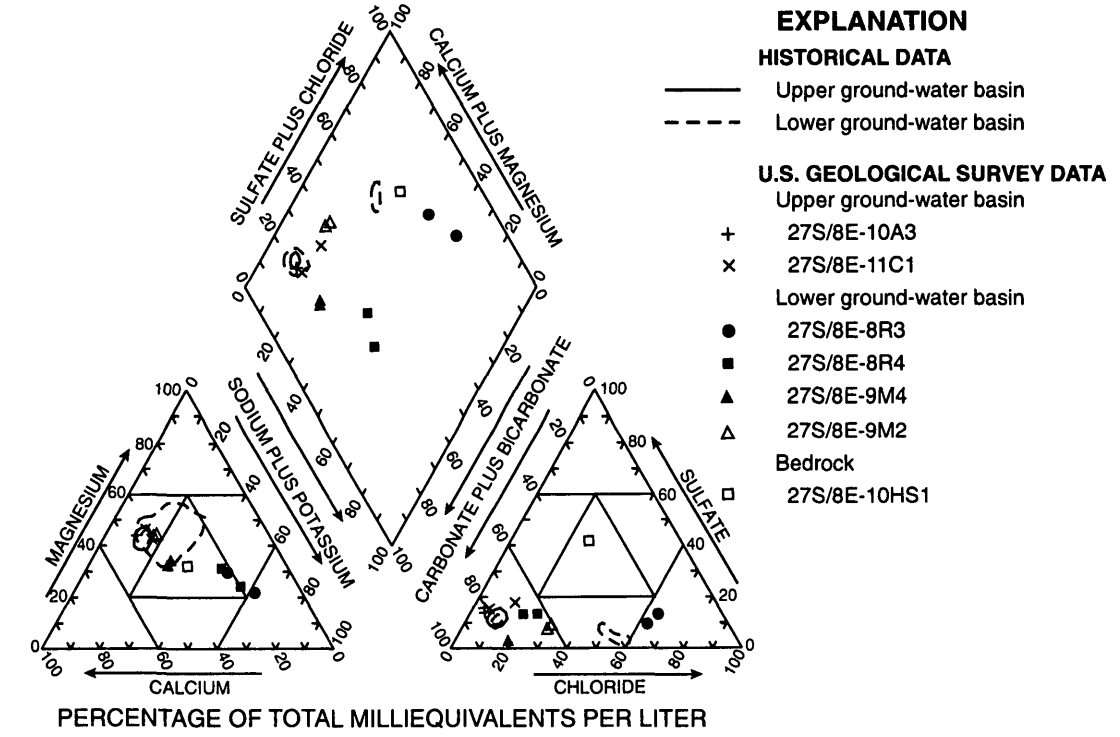


Figure 10. Quality of surface water of (*A*) Santa Rosa, San Simeon, and Perry Creeks and quality of ground water of (*B*) the San Simeon Basin, (*C*) the Santa Rosa Basin, and (*D*) the Perry Creek area, San Luis Obispo County, California. Historical data from STORET (U.S. Environmental Protection Agency, written commun., 1987) San Luis Obispo County (Glenn Britton, written commun., 1988, and John Stratford, Cambria Community Services District, written commun., 1988).

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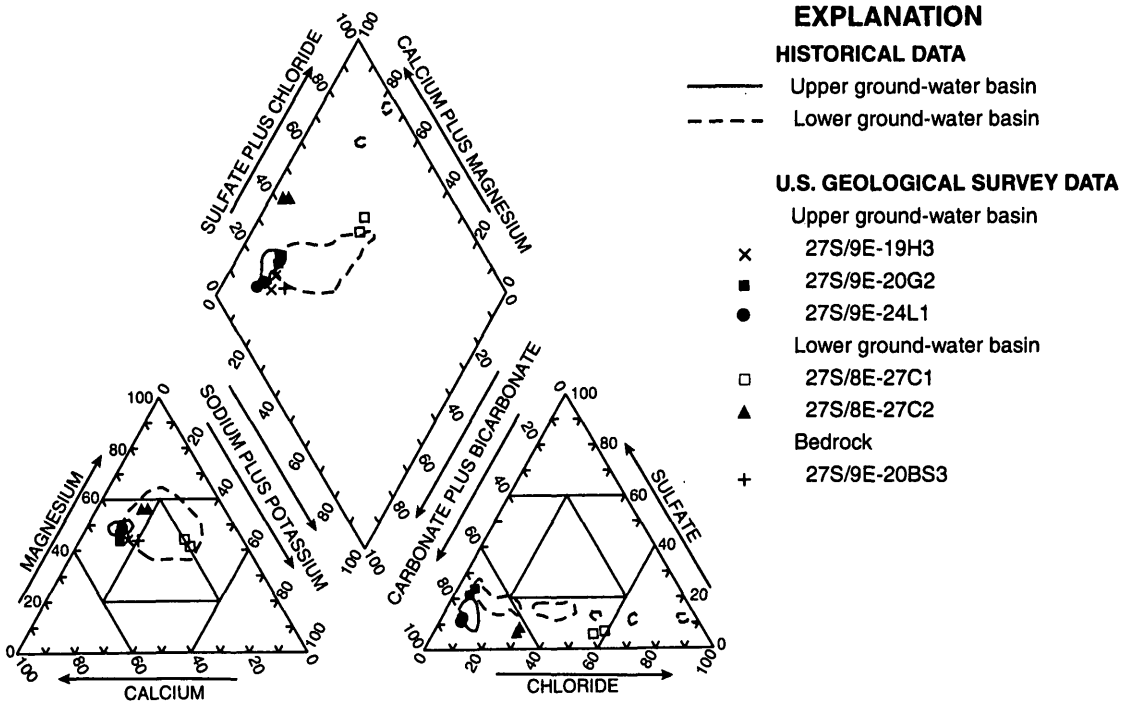
C. **Ground-water quality – Santa Rosa basin**



D. **Ground-water quality – Pico basin and Perry Creek area**

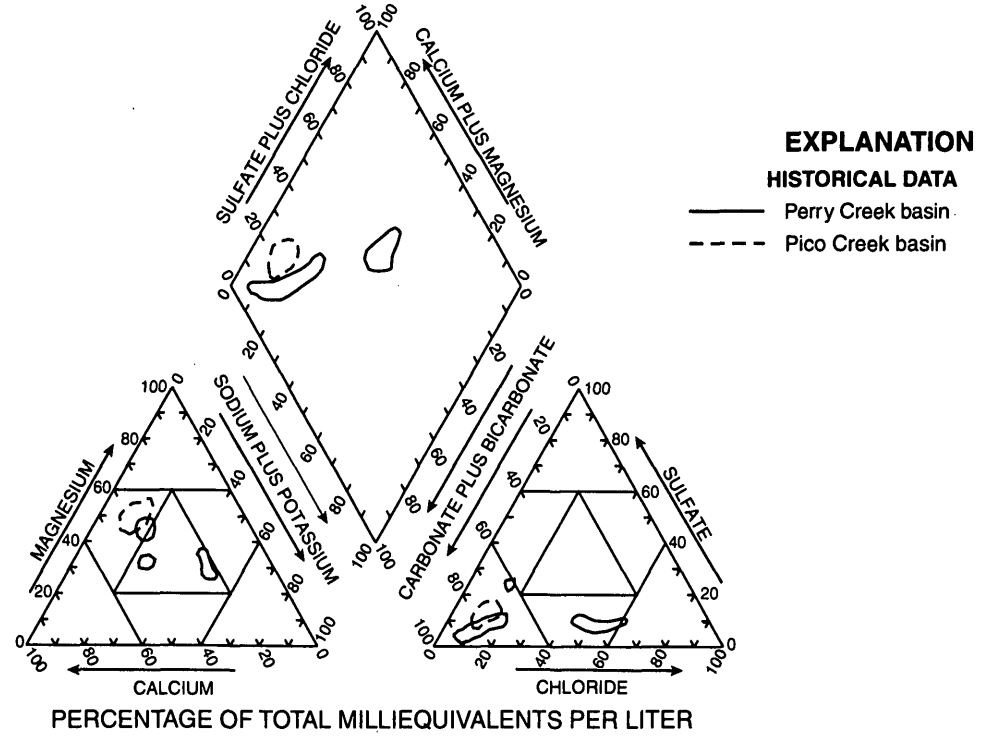


Figure 10. Quality of surface water of (*A*) Santa Rosa, San Simeon, and Perry Creeks and quality of ground water of (*B*) the San Simeon Basin, (*C*) the Santa Rosa Basin, and (*D*) the Perry Creek area, San Luis Obispo County, California. Historical data from STORET (U.S. Environmental Protection Agency, written commun., 1987) San Luis Obispo County (Glenn Britton, written commun., 1988, and John Stratford, Cambria Community Services District, written commun., 1988)—Continued.

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Salinity

Sources of Salinity

In this discussion, the term "salinity" refers to the concentrations of sodium, chloride, and dissolved solids. The source of salinity in the lower basins is of interest because water from some wells in those areas does not meet the secondary maximum contaminant levels for dissolved solids and chloride. The concentration of dissolved solids in wells 27S/8E -27C1 and 8R3 was between 1,240 and 1,520 mg/L in December 1988 and February 1989 (table 2). The secondary maximum contaminant level is 1,000 mg/L. The concentration of chloride in the two wells was between 540 and 650 mg/L; the secondary maximum contaminant level is 500 mg/L, but for taste reasons, the maximum concentration recommended is 250 mg/L (Title 22, California Code of Regulations, sections 64401-64473). Brackish water is water that is less saline than seawater but substantially more saline than fresh ground water. For this discussion, water with a dissolved-solids concentration greater than about 1,000 mg/L is considered brackish.

Possible sources of salinity in the lower basins and coastal areas include Perry Creek, the Cretaceous marine sandstone (unit Ks in fig. 3), other bedrock materials, municipal wastewater, irrigation-return flow, and the ocean. Although more than one of these sources might be significant in some locations, the ocean is the only source that can account for all the observed salinity effects.

Ground water in the Perry Creek area is more saline than ground water in the lower Santa Rosa Basin, but it has a lower sulfate concentration. Unless there is a separate source of sulfate, Perry Creek could not be the source of the salinity in the lower basin. Inflow from the Perry Creek area is small because the transmissivity of alluvial deposits in that area is too small relative to surface- and ground-water inflow from the upper Santa Rosa Creek Basin to account for the salinity increase. Also, because of its location, the Perry Creek area could not be the source of salinity in the lower San Simeon and the Pico Basins.

The Cretaceous marine sandstone that is exposed on the hillslopes surrounding the lower Santa Rosa Basin could contribute some saline water to that basin. However, it could not be a significant source of salinity in the lower San Simeon and the Pico Basins because it does not occur extensively in those areas.

Two springs in the upper basin areas were sampled to determine the quality of ground water moving through fractures in Franciscan bedrock. The springs had quite different water-quality types, so it is difficult to generalize about bedrock water quality. Spring 27S/8E-10HS1 near the south side of the upper San Simeon Basin had a dissolved-solids concentration of 892 mg/L, which is higher than the concentration in wells in that basin but lower than the concentration measured in some wells in the lower San Simeon Basin. That spring also had a higher proportion of sulfate than ground water in any of the basins in the study area (fig. 10, table 2). In contrast, spring 27S/9E-20BS3 near the north side of the upper Santa Rosa Basin had a water type similar to that of ground water in the basin, but its dissolved-solids concentration (373 mg/L) was lower. In spite of this variability, Franciscan bedrock probably is not a likely cause of high salinity in the lower basins. It is remotely conceivable that upland bedrock areas could have been flushed of brackish connate water by infiltration and through flow of meteoric waters. The spring water could originate from recent meteoric

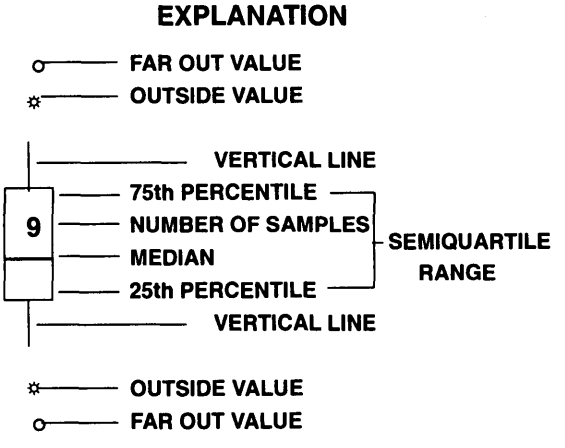

Figure 11. Concentrations of sodium, sulfate, chloride, and dissolved solids in ground-water subareas, San Luis Obispo County, California.

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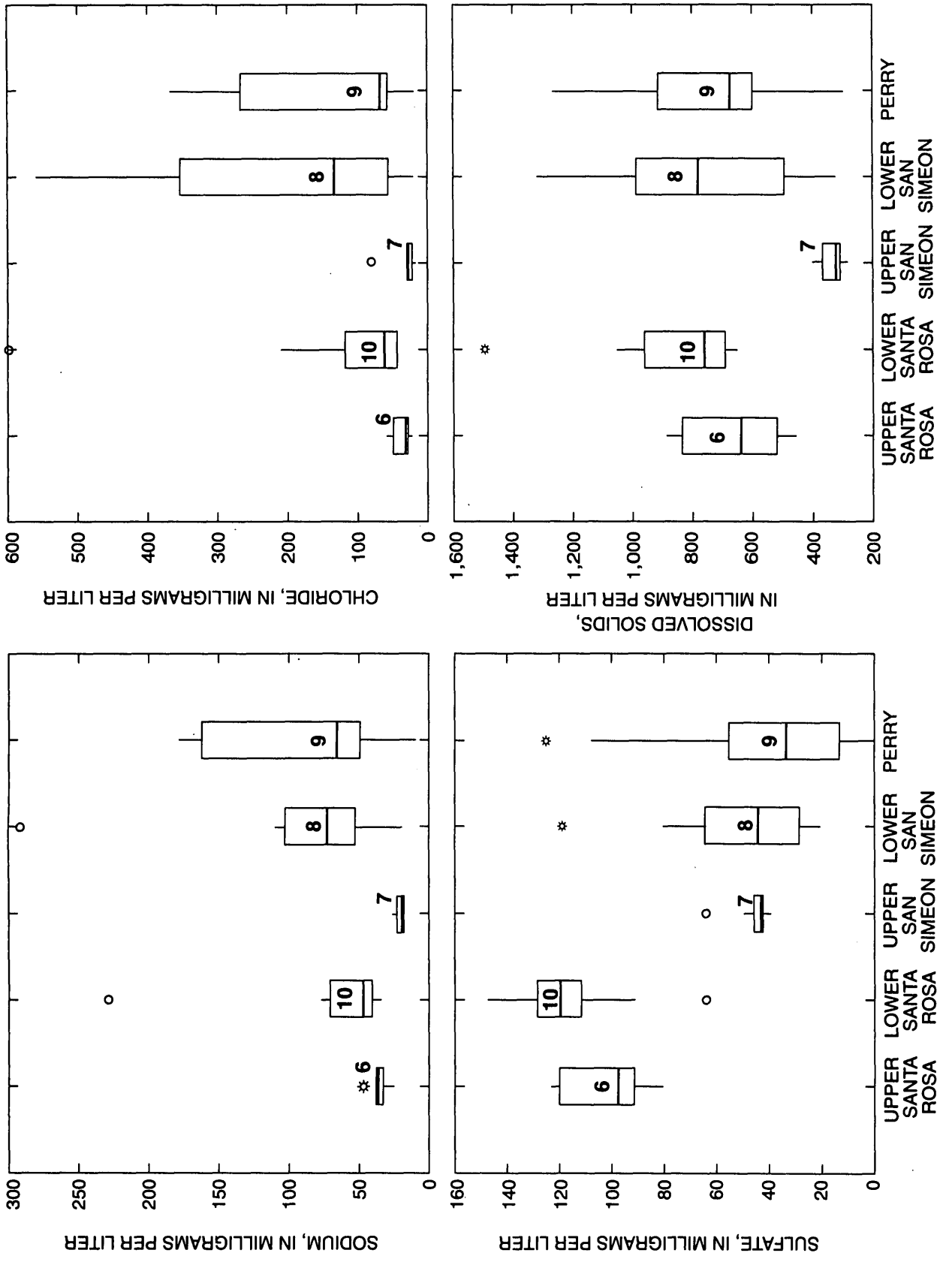

Figure 11. Concentrations of sodium, sulfate, chloride, and dissolved solids in ground-water subareas, San Luis Obispo County, California—Continued.

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sources, and older, denser connate water gradually could have migrated downward to deeper parts of the ground-water system, including the lower basins.

Wastewater from old septic systems, leaking sewer pipes, or the CCSD wastewater sprayfield could contribute some salinity to the lower basins, but these probably are not major sources. Use of septic systems in the lower Santa Rosa Basin was largely discontinued when the municipal sewer system was installed in 1972. Because the annual turnover of ground water in the basin is fairly high, significant quantities of old septic leachate probably are not still present. High salinity in the lower San Simeon Basin existed prior to the wastewater sprayfield operation, so wastewater cannot be the source of all salinity in that area. A comparison of the quantity of municipal water delivered to customers with the quantity of treated wastewater disposed of at the sprayfield in 1987 did not indicate that large quantities of wastewater are leaking from the sewer system. Finally, nitrate concentrations are not elevated in the lower basins, which commonly is the case in areas contaminated with wastewater.

Evaporative concentration of irrigation water could explain some of the downvalley increase in dissolved solids. Data from six wells between wells 27S/9E-20G2 and 27S/8E-24N2 in the upper Santa Rosa Basin indicate that the concentration of dissolved solids increases fairly consistently by 30 mg/L per thousand feet down the valley (correlation coefficient, r, = 0.87). Because ground water flows down the valley, water at the lower end has had more opportunity to be pumped to the surface and exposed to evaporation. However, this mechanism would not cause the observed shift in relative concentrations of anions (fig. 10).

The ocean is the probable source of high salinity in the lower basins and in the nearby Pico Creek Basin. Seawater could enter the ground-water basins by infiltration of salt spray, infiltration of storm waves that reach beyond the beach or up the creek, or lateral flow into the aquifers from offshore extensions of the basin-fill deposits. The first two mechanisms would add seawater at the water table, and salinity consequently would tend to decrease with depth. These mechanisms might occur in the Pico Creek Basin, where salinity is higher above the clay confining layer than below the confining layer (Cleath, 1986). However, differing quantities of lateral seawater inflow into the shallow and deep aquifers might produce the same result. Ordinarily, lateral inflow of seawater causes an increase in salinity with depth.

Seawater Intrusion

Seawater can enter onshore parts of a fresh ground-water basin as a result of (1) the density difference between seawater and freshwater, (2) ground-water overdraft—an excess of pumping over recharge—in onshore areas, and (3) local pumping near the coast causing water levels to drop below sea level. In the former case, a seawater wedge tapering inland will naturally form at the base of the basin near the coastline. The wedge often remains relatively stationary while fresh ground water flows up along the top of the wedge and discharges to the ocean. The Ghyben-Herzberg equation states that in isotropic sediments with static ground water the distance from sea level to the top of the seawater wedge is about 40 times the altitude of the water table above sea level (Bear and Dagan, 1964). In the case of overdraft or ground-water or local coastal pumping, the interface between seawater and freshwater tends to move inland when onshore water levels are at or below sea level. This phenomenon is called seawater intrusion.

In the lower Santa Rosa Basin, salinity increases with depth. Well 27S/8E-27C1, which has high salinity, is perforated near the base of the ground-water basin at an altitude of 80–90 ft below sea level (fig. 7*A*). Well 27S/8E-27C2 at the same location is perforated at an altitude of 15–25 ft below sea level. The dissolved-solids concentration was 440 mg/L less than in well 27S/8E-27C1, and the chloride concentration was 340 to 440 mg/L less (table 2).

Brackish water in well 27S/8E-27C1 might not be related to a natural seawater wedge or to seawater intrusion. Although an upward water-level gradient exists between this well and well 27S/8E-27C2, the gradient seems to be caused by a bedrock constriction. These wells, which are 4,500 ft from the coast, had minimum seasonal water levels in 1988 of more than 9 ft above sea level. These water levels indicate a theoretical interface altitude of 280 ft below sea level, which is far below the bottom of the basin. The theoretical interface altitude might not be accurate because conditions in the lower Santa Rosa Basin do not conform exactly to the assumptions of the Ghyben-Herzberg equation. In particular, the basin-fill deposits probably are not isotropic. Preferred grain orientation and interbedding of clay with sand and silt probably decrease vertical permeability relative to

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horizontal permeability, and this can flatten the interface profile relative to isotropic deposits (Meisler and others, 1985). This effect probably is not strong enough to extend the top of the wedge inland as far as these wells. The high water levels in these wells and in well 27S/8E-21R3, closer to the coast, eliminate seawater intrusion as a cause of the salinity. An alternative possibility is that the brackish water in well 27S/8E-27C1 is from a pocket of seawater left over from a previous high stand of sea level.

Historical water-quality data indicate that seawater intrusion might have occurred in the lower Santa Rosa Basin in the past. The chloride concentration in water from well 27S/8E-21R3 was 1,925 mg/L in November 1961. Background chloride concentrations typically ranged from 30 to 270 mg/L as shown in figure 12 (Glenn Britton, San Luis Obispo County Engineering Dept., written commun., 1988). Water-level data are not available for November 1961, but rainfall during the preceding 3 years was only 72 percent of average. An associated decrease in ground-water recharge could have allowed the seawater-freshwater interface to move inland. A similar salinity increase (to 933 mg/L) was measured in December 1969; however, the water level in well 27S/8E-21R3 was not unusually low at that time (Glenn Britton, San Luis Obispo County Engineering Dept., written commun., 1987). The salinity increase in 1969 could have been related to temporary changes in the creek outlet. A major flood occurred during the preceding winter, and it could have caused a breach in the beach large enough to allow a greater-than-normal advance of seawater up the creek during the summer. This could have increased ground-water salinity near well 27S/8E-21R3, which is only about 50 ft from the creek and about 1,900 ft inland.

In the lower San Simeon Basin, salinity also increases with depth. Well 27S/8E-8R3 is perforated at an altitude of 122 to 132 ft below sea level and has high salinity. Well 27S/8E-8R4 at the same location is

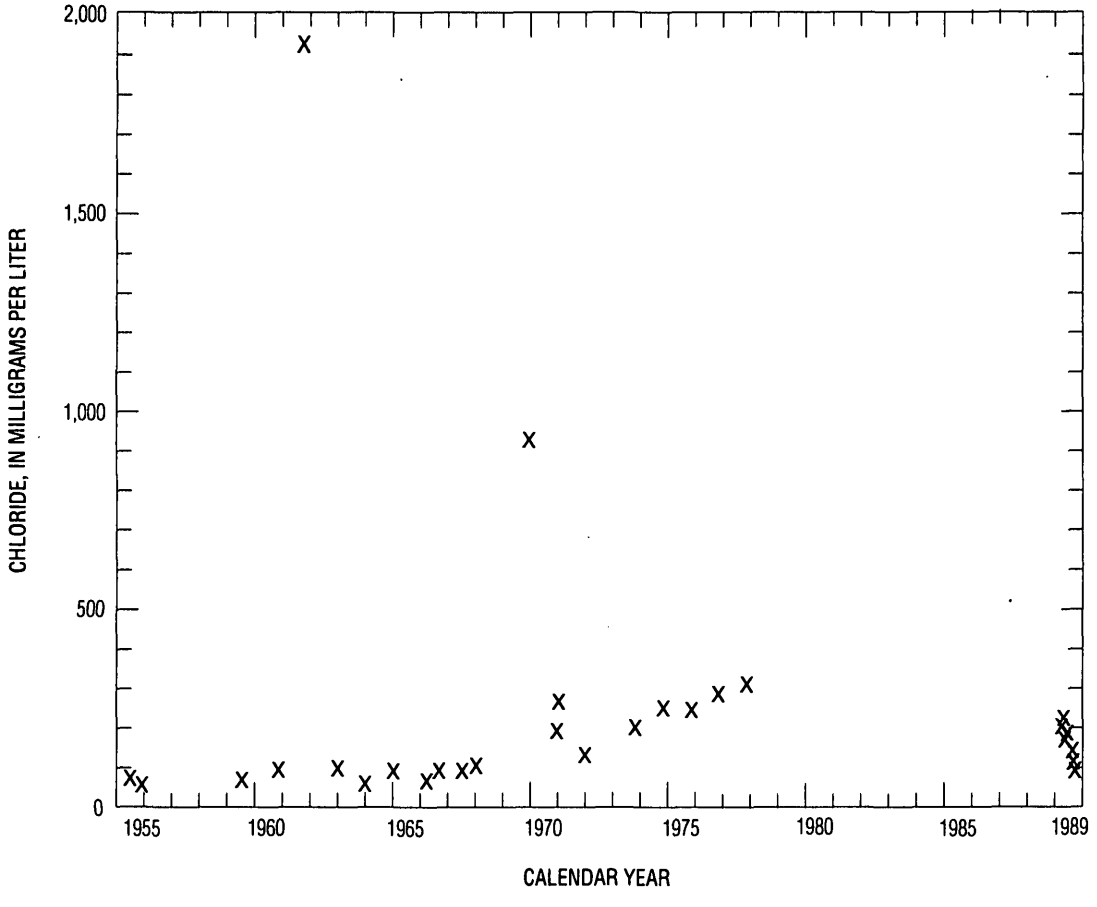

Figure 12. Chloride concentrations in ground water at well 27S/8E-21R3 in the Santa Rosa Basin, San Luis Obispo County, California, 1955–89.

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perforated at 76 to 86 ft below sea level, and the dissolved-solids concentration is 905 to 970 mg/L less than the dissolved-solids concentration in well 27S/8E -8R3 (table 2). The chloride concentration was 503 to 510 mg/L less than the chloride concentration in well 27S/8E-8R3.

Water levels indicate that the salinity gradient between wells 27S/8E-8R3 and 8R4 results from a natural, relatively stable seawater wedge. The minimum water level in well 27S/8E-8R3 during 1988–89 was about 3.4 ft above sea level. The Ghyben-Herzberg relation indicates that for this water level, the top of the seawater wedge would be at an altitude of 136 ft below sea level, which is close to the altitude of the well screen (122 to 132 ft below sea level). Also, the discharge of fresh ground water over a saltwater wedge theoretically will create upward flow of ground water. This is confirmed by water-level data for wells 27S/8E-8R3 and 8R4 next to San Simeon Creek. Water levels decrease progressively from the deeper well up to the creek, indicating an upward gradient of 0.001 to 0.010 ft/ft.

Brief salinity increases concurrent with low ground-water levels have occurred in the Pico Basin and almost certainly resulted from pumping which caused water levels temporary to drop below sea level. During November and December 1984, chloride concentrations in several wells in the Pico ground-water basin increased from background chloride concentrations of less than 45 mg/L to concentrations as high as 460 mg/L within 2 weeks after water levels in those wells declined below sea level (Stephen Havlicek, San Simeon Acres Community Services District, written commun., 1985; Cleath, 1986). Concentrations returned to background levels within 4 months after water levels rose back above sea level. Similar but less well-documented events occurred in 1981 and possibly 1982 (Cleath, 1986).

Chemistry of Brackish Water

Differences in proportional concentrations of calcium, magnesium, sodium, sulfate, and chloride in brackish water can be used to indicate the extent to which the seawater component has fully reacted with clays in the basin-fill deposits. If the interface is advancing, these differences qualitatively indicate how recently the interface reached the well location. If the interface is stationary, the differences indicate how close the well is to the interface. Table 3 shows the percentage of seawater in coastal wells in the lower Santa Rosa, the lower San Simeon, and the Pico Basins. The percentage of seawater is calculated assuming nonreactive mixing of seawater and fresh, inland ground water. Separate estimates of the percentage of seawater are calculated using data for each ion. Chloride is the most conservative of the five ions and probably gives the best estimate of percentage of seawater.

In all three basins, the percentage of seawater estimated using the calcium and magnesium ions is greater than or equal to the chloride estimate, and the sodium estimate is lower than the chloride estimate. This effect is caused by cation exchange between seawater and clays in the basin-fill deposits. Prior to intrusion, the cations adsorbed to the clays were predominantly calcium and magnesium. Although calcium and magnesium adsorb more tightly than sodium, seawater contains seven times as many sodium ions as calcium and magnesium ions combined. The effect of mass action is to replace adsorbed calcium and magnesium with sodium. The result in the solution phase is to create a relative increase in calcium and magnesium and a relative decrease in sodium, compared with mixing without cation exchange. These increases and decreases have a corresponding effect on the estimated percentage of seawater. This effect is greatest in the Pico Basin, where intrusion was recent at the time the samples were collected. The percentage of seawater estimated from the chloride concentration was 1.7 percent. The calcium and magnesium estimates were much larger (17 and 4.2 percent, respectively), and the sodium estimate was much lower (0.21 percent) (table 3).

If seawater continues to flow through a previously fresh aquifer, the adsorbed phase equilibrates with the composition of the brackish water. Cation-exchange reactions diminish, and estimates of the percentage of seawater calculated from cation concentrations approach the estimate calculated from chloride concentration. This indicates that the brackish water at well 27S/8E-8R3 in the lower San Simeon Basin is the most fully equilibrated of the samples investigated. The chloride estimate was 2.8 percent, and the calcium, magnesium, and sodium estimates were 8.7, 2.8, and 2.6 percent, respectively (table 3). The water at well 27S/8E-27C1 in the lower Santa Rosa Basin showed an intermediate amount of equilibration.

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Factors Affecting Use

In addition to salinity, several other water-quality characteristics potentially might affect ground-water use in the Cambria area. These include hardness and the concentrations of sulfate, nitrate, boron, iron, manganese, and trihalomethanes. Historical and present land-use practices also might affect water quality.

The calculated percentages of seawater (table 3) indicate that sulfate is not a conservative ion. Although sulfate is relatively unaffected by cation-exchange processes, it can be removed from solution by reduction to sulfide. This effect is not evident in the lower San Simeon Basin and is small in the Pico Basin. In the lower Santa Rosa Basin, however, reduction is so strong that the sulfate concentration is lower in brackish water than in either seawater or fresh ground water. This results in an unrealistic (negative) value for the percentage of seawater. The reduction was confirmed by the odor of hydrogen sulfide at wells 27S/8E-27C1 and 22N2. The odor of hydrogen sulfide is unpleasant even in small concentrations. The reduction process probably is associated with organic matter in fine-grained beds in the basin-fill deposits. The concentration of sulfate in water from spring 27S/8E-10HS1 exceeded the secondary maximum contaminant level of 250 mg/L given in Title 22, California Code of Regulations, 1986, sections

Table 3. Percentage of seawater in coastal wells in the lower Santa Rosa, lower San Simeon, and Pico ground-water basins, San Luis Obispo County, California

[Chemical analyses of ground water are in milligrams per liter]

Basin	Item	Calcium	Magnesium	Sodium	Sulfate	Chloride
Lower Santa Rosa	Fresh ground water[1]	71	74	46	125	58
	Brackish ground water[2]	125	145	230	62	600
	Percentage of seawater[3]	15.9	5.6	1.8	–2.4	2.9
Lower San Simeon	Fresh ground water[4]	53	36	20	42	20
	Brackish ground water[5]	84	73	295	120	560
	Percentage of seawater[3]	8.7	2.8	2.6	2.9	2.8
Pico	Fresh ground water[6]	72	55	35	52	145
	Brackish ground water[7]	130	110	56	85	460
	Percentage of seawater[3]	17	4.2	.21	1.2	1.7
Seawater (mg/L)[8]		410	1,350	10,500	2,700	19,000

[1]Average composition of four samples from wells 27S/8E-26C5 and 26D1 between 1967 and 1972.

[2]Average composition of two samples from well 27S/8E-27C1 in December 1988 and February 1989.

[3]Percentage of seawater calculated from a mixing-model equation:

$$x = \frac{100(C_{BW} - C_{FW})}{(C_{SW} - C_{FW})},$$

where x is percentage of seawater, and C_{BW}, C_{FW}, and C_{SW} are the concentrations of an ion in brackish water, freshwater, and seawater, respectively.

[4]Average composition of four samples from wells 27S/8E-9J1, 9L1, and 9J4 between 1965 and 1981.

[5]Average composition of two samples from well 27S/8E-8R3 in December 1988 and February 1989.

[6]Average composition of samples from San Simeon Acres Community Services District Wells #1 and #2 in December 1984 (data from Stephen Havlicek, San Simeon Acres Community Services District, written commun., 1985).

[7]Average composition of samples from two private wells (Cavalier Motel and Silver Surf Motel) in November 1984 (data from Stephen Havlicek, San Simeon Acres Community Services District, written commun., 1985).

[8]Average composition of seawater (Hem, 1985).

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64401-64473 (table 2). Unless removed, ground water in parts of the lower Santa Rosa Basin could become unacceptable for potable purposes.

Iron and manganese concentrations in ground water exceed the secondary maximum contaminant levels in many locations throughout the study area but especially in the lower basins. Seventeen of the 24 manganese analyses done for this study exceeded the secondary maximum contaminant level of 0.05 mg/L, whereas only 2 of the 24 iron analyses exceeded the secondary maximum contaminant level of 0.3 mg/L (table 2). Manganese concentrations in ground water along the Santa Rosa Basin increased downstream and ranged from 0.002 at well 27S/9E-20G2 to 1.70 mg/L at well 27S/8E-27C1. The median value for that basin was 0.470 mg/L. Manganese concentrations also increased downstream in the San Simeon ground-water basin, ranging from 0.002 mg/L at well 27S/8E-10A3 to 1.60 mg/L at well 27S/8E-9N2. The median concentration for that basin was 0.190 mg/L. The two samples with iron concentrations in excess of the standard were from wells 27S/8E-11C1 and 8R4 in the lower San Simeon Basin (table 2). Iron and manganese are more soluble in a reduced state, and the high concentrations in the lower basins probably result from low oxidation potential in those areas.

Manganese concentrations in surface-water samples were less than 0.010 mg/L for Santa Rosa Creek and San Simeon Creek and was 0.043 mg/L for Perry Creek (table 2). The relatively low concentrations in surface water result partly because the creek water is oxidized. Manganese concentration in seawater is only 0.002 mg/L (Hem, 1985). The source of the manganese in ground water probably is the basin-fill deposits.

Nitrate concentrations met the primary maximum contaminant level of 10 mg/L as nitrogen in all surface- and ground-water samples collected for this study. Eleven of 24 samples had concentrations less than the detection limit of 0.010 mg/L as nitrogen. The highest concentration was 2.90 mg/L at well 27S/8E -11C1 (table 2). Historical data of unknown accuracy indicate that nitrate concentrations exceeded the primary maximum contaminant level twice in wells in the CCSD wastewater sprayfield. However, both samples were collected before 1976 and pre-date the sprayfield operation.

Historical nitrate data indicate that concentrations are highly variable in space and time. The distribution of concentrations does not indicate an obvious source, such as fertilizers, leaking sewers, or residual effects of old septic systems in residential areas. The ocean has a nitrate concentration of only 0.67 mg/L as nitrogen, so it cannot be the source of high nitrogen concentrations. Relatively high concentrations might result from inadequate surface seals on wells near pastures, barnyards, rural septic systems, or fertilizer handling areas. Buried organic material in the basin-fill deposits also could contribute nitrogen to ground water.

Historical ground-water data indicate that boron concentrations were high, 1.0 to 1.4 mg/L, in a cluster of three wells near Perry Creek about 5 mi southeast of Cambria. The source of this boron might be a marine graywacke unit of the Franciscan Complex that is exposed near these wells (Hall and others, 1979). A boron concentration of 1.4 mg/L was measured in brackish water from well 27S/8E-8R3 (table 2). Other coastal wells with high salinity have much lower boron concentrations, which indicate that the source of the boron in well 27S/8E-8R3 might be local bedrock. Boron concentrations less than 1.0 mg/L—which include all other samples in the study area—are not likely to affect crops grown in the area. Several crops could be adversely affected by boron concentrations between 1.0 and 2.0 mg/L. These crops in order of decreasing sensitivity are beans, bell peppers, oats, peas, and tomatoes (Bohn and others, 1979).

Hardness concentrations in the ground-water samples are consistently greater than 180 mg/L (as $CaCO_3$). Hence, ground water throughout the study area is hard (Hem, 1985). Hardness concentrations in ground water tend to increase downstream, with historical values ranging from 250 to 400 mg/L in the upper basins and from 300 to 1,000 mg/L in the lower basins. Concentrations in the Perry Creek area generally are between 400 and 500 mg/L.

Trihalomethanes are carcinogenic organic compounds containing bromine or chlorine that can occur naturally or from chlorination of water containing organic carbon. Bromide was detected in surface-water samples collected for this study. The municipal water supply is chlorinated prior to delivery; however, trihalomethane concentrations measured by the Cambria Community Services District (1990) were less than 0.01 mg/L. The primary maximum contaminant level is 0.1 mg/L.

Seasonal and Long-Term Trends

Ground water at the 11 wells sampled for this study became more dilute between December 1988 and

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February 1989. The concentration of dissolved solids decreased in 10 of 11 wells; the average decrease was 76 mg/L (12 percent). The increase at the remaining well was only 2 mg/L (0.3 percent). The dilution resulted from ground-water recharge during the 2 months between sampling dates. The principal source of recharge was flow in San Simeon and Santa Rosa Creeks. Near the upper ends of the upper basins, the concentration of dissolved solids in ground water in February was nearly the same as the concentration in the creeks, indicating little dissolution of aquifer minerals during the recharge process. The gradual increase in dissolved solids during spring, summer, and autumn could result from gradual dissolution of aquifer minerals or from the evaporative concentration of ground water as it is used and reused for irrigation.

The composition of ground water in wells near the coast did not show a consistent trend away from the composition of seawater as a result of basin recharge between December 1988 and February 1989. This indicates that salinity in those wells is not a transient response to seasonal water-level fluctuations but rather is the result of more stable long-term processes.

Although ground water generally became more dilute during the winter of 1989, concentrations of iron and manganese increased at many wells. Manganese concentrations increased an average of 0.076 mg/L (11 percent) at 8 of 11 wells, decreased an average of 0.018 mg/L (10 percent) at 2 wells, and did not change in the remaining well (table 2). Increases in iron concentrations were even more dramatic. Iron concentration increased an average of 0.188 mg/L (1,370 percent) at 8 of 11 wells. Decreases at the remaining three wells averaged only 0.024 mg/L (46 percent). These increases suggest that ground water became more reduced during recharge because iron and manganese are more soluble in their reduced state. The transition of iron from the ferric to the ferrous state occurs at a lower oxidation potential than the analogous transition in manganese, which could explain the larger changes in iron concentrations. The seasonal variations in oxidation potential could be caused by the seasonal cycles in pumping and water levels. Pumping water from deep, reduced strata tends to draw relatively aerated water down from shallower strata. Seasonal variations in pumping can thus cause seasonal variations in the movement of dissolved oxygen into reduced strata.

With one possible exception, historical ground-water-quality data do not indicate any long-term trends in water quality. The possible exception is evident in water-quality samples collected from well 27S/8E -21R3 in the lower Santa Rosa Basin between 1955 and 1977. In addition to the previously described transient intrusion in 1962 and 1969, the data might indicate a slight increasing trend in salinity between 1970 and 1977. This trend can be seen in the plot of chloride concentrations for 1955–89 shown in figure 12. The slope of the chloride trend for 1971–77 (29.7 mg/L per year) was significantly greater than zero at the 95-percent confidence level. On a trilinear diagram (not shown), the anion composition of ground water for 1971–77 shows a trend toward the composition of seawater, indicating that the increasing chloride concentrations did not result from a simple evaporative process. However, 17 samples collected in 1989 (Bryan Bode, Cambria Community Services District, written commun., 1990) indicated that the chloride concentration had not continued to steadily increase since 1977. The chloride concentration during 1989 was highly variable, which could indicate that the apparent trend during the early 1970's is not accurately defined by the small number of data points.

WATER BUDGETS

Water budgets provide a quantitative means of comparing various processes that affect a hydrologic system. They can also reveal opportunities and constraints for water-supply development. Ground-water budgets for the Santa Rosa and the San Simeon Basins are presented in this section. Climatic and surface-water processes that influence flows to and from the ground-water basins also are described. Although field data were used to develop the estimates for each budget item, some estimates were revised using ground-water-flow models documented later in this report. Model calibration indicated that some of the initial estimates of flows and aquifer characteristics were inaccurate or mutually inconsistent. The revised estimates are briefly mentioned in this section for completeness. They are described more fully in the section on "Digital Simulation of Hydrologic System."

Annual ground-water budgets for each basin for April 1988 through March 1989 are shown in table 4. Nonzero budget items range from 4 to 1,175 acre-ft/yr. Model results are precise in that small changes in input result in small, predictable changes in output. Accuracy of the water budgets is limited primarily by the accuracy of the assumptions and data used in the model

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and probably is not greater than two significant digits. To retain small items in the budgets while giving a reasonable indication of accuracy for large items, all values in the table and text are rounded to the nearest 10 acre-ft/yr. Only head-dependent flows, which include seepage to and from the creek, ground-water outflow to the ocean, phreatophyte transpiration, and net storage change, are simulated by the models. The remaining budget items are estimated from field data and are specified as input to the models. Some inflows are directly offset by related outflows. From a management standpoint, a more useful picture of the water budgets emerges when related flows are combined into a net flow. For example, flow losses from Santa Rosa Creek are a large budget item, but so is ground-water flow into the creek. The actual quantity of streamflow captured as ground-water recharge is best indicated by the net flow loss from the creek. Net flow losses for the creeks and net pumpage are shown in the table 4.

The budget period was chosen to begin and end in late winter when the basins are virtually full. Ground-water levels tend to recover during winter to a level that is in equilibrium with the level of the water surface in the creek. This level usually is within a few feet of the same level every year. High creek stages could result in high ground-water levels, but high stages occur only briefly during storms. Similarly, if ground-water levels rise because of rainfall recharge or inflow from bedrock, the water tends to drain fairly quickly into the creek until levels return to equilibrium with the creek stage. Thus, although some budget items

Table 4. Simulated annual water budgets for the Santa Rosa and the San Simeon ground-water basins, San Luis Obispo County, California, April 1988 through March 1989

[All values rounded to nearest 10 acre-feet per year. Positive net flow indicates flow into basin; negative net flow indicates flow out of basin. CCSD, Cambria Comumunity Services District. <, actual value is less than value shown]

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 and 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	-240	0	550	-120
Rural pumpage[1]	0	10		0	<10	
Wastewater recharge:						
CCSD sprayfield[2]	0	0		440	0	
Septic tanks	10	0		<10	0	
Irrigation-return flow	10	0		0	0	
Phreatophyte transpiration	0	160	-160	0	30	-30
Total inflows and outflows			-50			-10
Net storage change			-30			-10
Mass-balance error			20			0

[1]Includes domestic and industrial pumpage.
[2]Recharge at sprayfield equals applied wastewater plus rainfall minus ET_0.

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vary from dry years to wet years, these variations usually are offset by compensating changes in other budget items so that late-winter water levels remain about the same. Exceptions occur in extremely dry years (drier than 1988–89) when ground-water levels do not fully recover in winter.

Rainfall

Rainfall distribution in the study area was estimated by combining measurements from six permanent rainfall stations and measurements from four temporary stations operated during 1987–89. The temporary stations were operated to better define local variations in rainfall distribution. Average annual rainfall at the temporary stations was estimated by correlation with measurements at the permanent stations during water year 1988. Locations of the gaging stations and annual rainfall during water year 1988 are shown in figure 1.

Rainfall distribution during 1988 was consistent with the patterns of average rainfall for 1936–67 shown on a map developed by the San Luis Obispo County Flood and Water Conservation District (Glenn Britton, written commun., 1989). The additional stations did not reveal any obvious local anomalies in rainfall distribution. In particular, local orographic effects were not evident, although only two stations were located on hillsides above the valley floor. Generally, average annual rainfall increased uniformly from 20 in. at the coast to about 26 in. at the inland ends of the Santa Rosa and the San Simeon Basins. Average annual rainfall at the headwaters of the creek drainages is about 40 to 50 in.

Records for local rainfall stations are fairly short. The Hearst Ranch station (fig. 1) has been in operation since 1939, but most of the other stations have been in operation for a much shorter time. A better indicator of long-term climatic trends and variability is the 120-year rainfall record for the station at the California Polytechnic State University Institute in San Luis Obispo, 30 mi southeast of Cambria. Annual rainfall at the San Luis Obispo-Poly station correlates well with rainfall at stations in the Cambria area (r between 0.85 and 0.96).

Cumulative departure of annual rainfall at the San Luis Obispo-Poly station during 1870–1989 is shown in figure 13. Using the period 1957–72 as representative of long-term average climatic conditions, average annual rainfall at Hearst Castle, San Simeon, and CalTrans stations is 31.6, 23.4, and 21.1 in., respectively. The CalTrans station was moved in January 1969. A double-mass plot indicated that rainfall at the old location averaged 85 percent of rainfall at the new location, and the historical data were adjusted accordingly. The cumulative departure

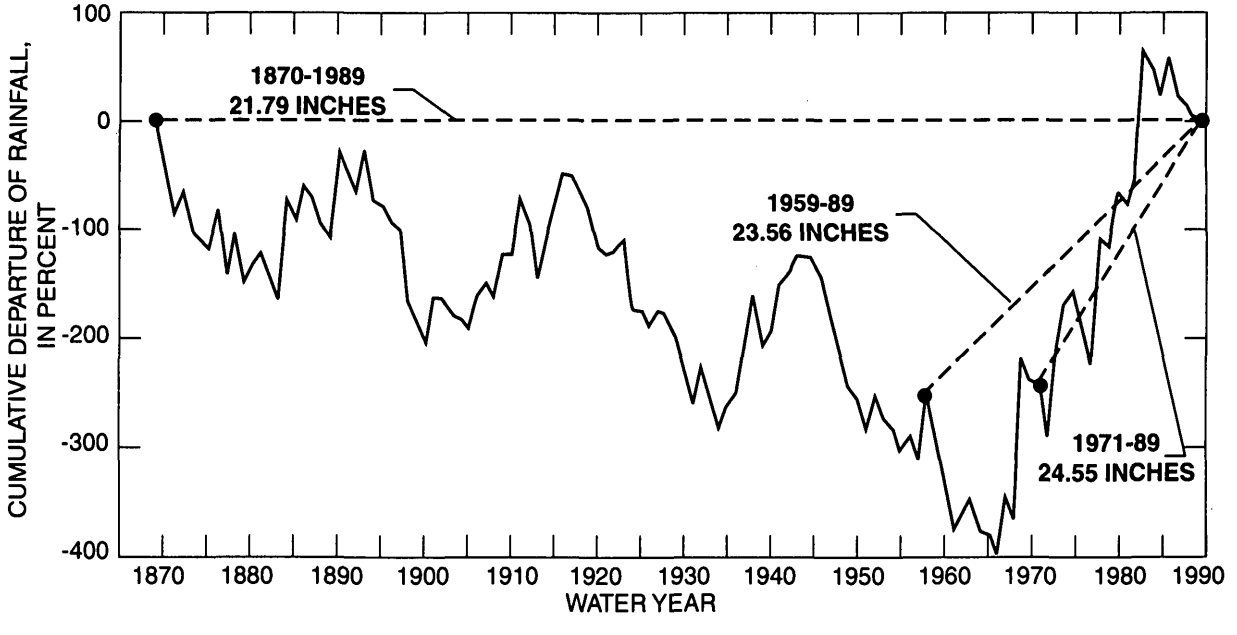

Figure 13. Cumulative departure of annual rainfall at the San Luis Obispo-Poly station, San Luis Obispo County, California, 1870–1989.

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diagram also indicates that water years 1988 and 1989 were drier than normal. Rainfall at the three stations during water year 1988 was between 71 and 87 percent of the long-term average. Rainfall at the three stations during water year 1989 was between 55 and 66 percent of the long-term average.

Typically, about 93 percent of annual rainfall occurs between November and April. Winter storm systems bring periods of rainy weather lasting several days. A large storm on December 23–26, 1988, brought 2.0 to 3.8 in. of rainfall to the valley floors and resulted in large streamflow peaks.

Streamflow

Flow Entering Ground-Water Basins

The drainage areas of Santa Rosa and San Simeon Creeks extend inland to the crest of the Santa Lucia Range (fig. 1), which reaches altitudes of 3,400 ft above sea level. Runoff from the areas upstream of the ground-water basins and from the Perry Creek drainage area was measured with continuous-record stream-gaging stations (fig. 2). Because of the steep terrain in the upstream areas, streamflow responds markedly to rainfall. Some water is retained in the soil and fractured rock, however, and reemerges as base flow in the creeks. In most years, base flow gradually decreases in spring and ceases or becomes a trickle of several gallons per minute by early summer.

The drainage area of San Simeon Creek is 26.2 mi^2 of which 3.2 percent is occupied by the ground-water basin, 86.2 percent is upstream of the upper end ground-water basin, and 10.6 percent is in small drainage on the hillslopes along the sides of the basin. Van Gordon Creek enters San Simeon Creek about 0.5 mi east of the Pacific Ocean and has a drainage area of 2.6 mi^2. The drainage area of Santa Rosa Creek is 24.5 mi^2, and the distribution among basin, upstream, and hillslope areas is 7.7, 60.2, and 32.1 percent, respectively. Perry Creek enters Santa Rosa Creek about 1 mi east of Cambria and has a drainage area of 22.7 mi^2.

Streamflow has been measured since 1959 at the upstream gaging station on Santa Rosa Creek (Santa Rosa Creek near Cambria) and since 1971 at the upstream gaging station on San Simeon Creek (San Simeon Creek at Palmer Flats) (fig. 2). Streamflow during occasional periods of missing record was estimated by correlation with flow in Santa Rita Creek near Templeton, about 15 mi east of Cambria (outside of study area). Santa Rita Creek is similar to San Simeon and Santa Rosa Creeks in terms of drainage area, terrain, and rainfall.

The downstream gaging station on Santa Rosa Creek (Santa Rosa Creek at State Highway 1) (fig. 2) has been in operation since 1976, although it may soon be discontinued because a new gaging station was installed at the Main Street bridge. The downstream gaging station on San Simeon Creek and the gaging station on Perry Creek were installed for this study and were operated during water years 1988–89.

Flow-duration curves for daily mean flows at the upstream gaging stations on Santa Rosa and San Simeon Creeks for the period of record for each gaging station are shown in figure 14. The curves indicate that peak flows in San Simeon Creek tend to be larger and that smaller flows are less persistent. Flow is virtually 0 about 47 percent of the time at the San Simeon Creek gaging station and about 25 percent of the time at the Santa Rosa Creek gaging station. The curves do not represent long-term average conditions because the periods of record for both gaging stations were wetter

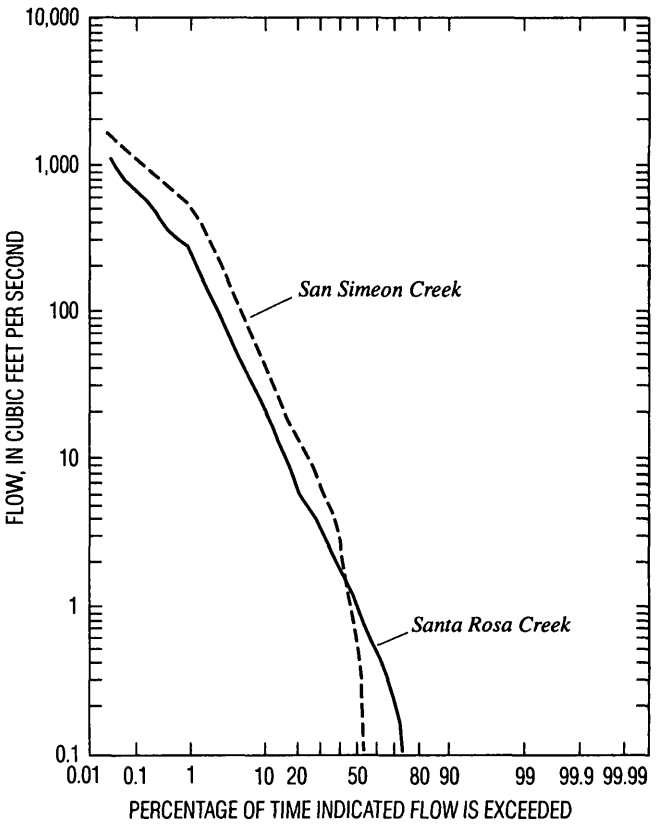

Figure 14. Flow-duration curves for daily mean flow in San Simeon Creek at Palmer Flats (1971–89) and Santa Rosa Creek near Cambria (1959–89), San Luis Obispo County, California.

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than average. This issue is described more fully in the section "Occurrence and Effects of Drought."

The persistence of base flow in late spring and summer is affected by evapotranspiration in the upper parts of the drainage areas. A long-time Cambria resident observed that summer base flow in Van Gordon Creek was much more persistent for several years following large brush fires along the upper reaches of the creek (Clyde Warren, oral commun., 1989). Controlled brush-removal experiments in small semiarid drainage areas with similar vegetation have demonstrated that shrubs close to the creekbed can consume as much as 40 percent of annual streamflow (Hibbert and others, 1982).

Flow in Perry Creek is not closely related to flow in Santa Rosa Creek. A tiny trickle of base flow (less than 0.1 ft^3/s) persists throughout the summer and probably is supported by emerging ground water. After omitting flows of less than 0.03 ft^3/s, a least-squares regression of daily mean flows in the two creeks during 1988–89 indicated that flow in Perry Creek was generally about 0.18 times as large as flow in Santa Rosa Creek (r=0.80). Streamflow during some storms was distinctly different, however. For example, the largest mean daily flow in Perry Creek during a storm on December 23–26, 1988, was only one-half as large as the largest flow during a storm on January 17–19, 1988. This is exactly opposite of the relative flow magnitudes in Santa Rosa Creek during the same two storms.

Annual stream discharge during 1959–89 at the upstream gaging station on Santa Rosa Creek ranged from 244 to 27,800 acre-ft, with a mean value of 7,840 acre-ft and a median value of 5,010 acre-ft. Annual discharge during 1971–89 at the upstream gaging station on San Simeon Creek ranged from 475 to 42,600 acre-ft, with a mean value of 16,200 acre-ft and a median value of 13,100 acre-ft.

The flow-duration curves and annual discharge statistics for Santa Rosa and San Simeon Creeks probably are not representative of the long-term average because the periods of record for the stream-gaging stations were wetter than usual, based on long-term rainfall records. Better estimates of long-term mean and median annual discharges were obtained by relating annual discharge in Santa Rosa and San Simeon Creeks to annual rainfall at San Luis Obispo, as shown in figure 15. The data indicate that the relation of discharge and rainfall is approximately linear. Correlation coefficients of ordinary least-squares regression lines were 0.91 and 0.96 for Santa Rosa and San Simeon Creeks, respectively.

Mean and median rainfall in San Luis Obispo during 1870–1989 were 21.79 and 19.76 in., respectively. The regression equations indicate that the corresponding mean and median annual discharges in Santa Rosa Creek are 6,800 and 5,700 acre-ft, respectively. In San Simeon Creek, the mean and median are 13,100 and 10,900 acre-ft, respectively. These means are 13 to 19 percent smaller than the means calculated for the period of streamflow record. The medians are about the same for both periods. The mean exceeds the median because wet-year outliers create a positive skew to the annual rainfall distribution.

Daily mean flow at the upstream gaging stations on Santa Rosa and San Simeon Creeks during water years 1988–89 is shown in figure 16. Peak instantaneous flow on December 24, 1988, was 1,870 ft^3/s at the upstream gaging station on Santa Rosa Creek and 2,280 ft^3/s at the upstream gaging station on San Simeon Creek. Annual discharge in Santa Rosa, San Simeon, and Perry Creeks during 1988–89 was 1,925, 4,320, and 304 acre-ft, respectively. The drainage areas of the creeks are of nearly equal size. The differences in annual discharge result primarily from differences in rainfall and land slope. Perry Creek drains foothill areas where rainfall and land slopes are much less than in the other two drainage areas.

Runoff from small drainages in the hills along the sides of the ground-water basins occurs only during brief periods of intense rainfall. On December 23–26, 1988, between 1.4 and 2.4 in. of rain fell on the

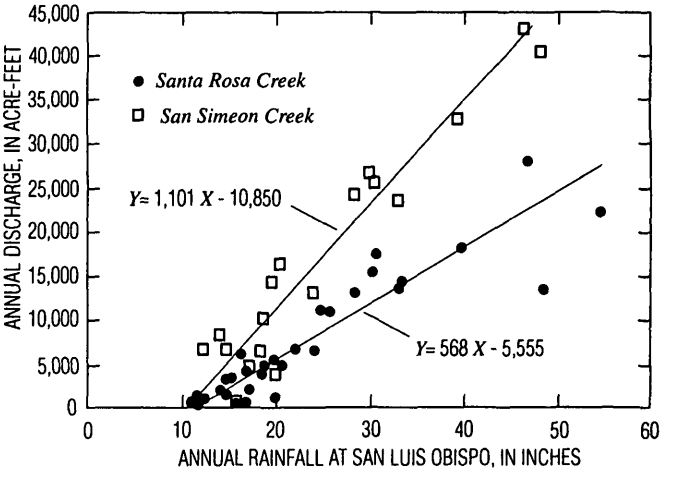

Figure 15. Relation of annual rainfall at San Luis Obispo and annual discharge in San Simeon and Santa Rosa Creeks, San Luis Obispo County, California.

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hillslopes, and flows of less than 0.5 ft^3/s were measured in several small drainages. Rainfall intensity tapered off to a drizzle, and by the next day flow in most of the small drainages had stopped. The combined runoff from all the small drainages along the hillslopes was less than 1 percent of the flow in the main creeks at that time. Likewise, runoff from the valley floors was negligible. Local runoff could contribute a larger percentage of flow if rainfall intensity for a particular storm was relatively high in the small drainage.

Gains and Losses Within Ground-Water Basins

As the creeks flow across the ground-water basins, they can gain or lose water through the creekbeds. In winter, seepage from the creeks provides the largest source of recharge to the ground-water basins. In summer, movement of ground water into the creeks creates flow along some stream reaches. Streamflow gains and losses were measured using three methods: (1) instantaneous streamflow measurements, (2) continuous records of streamflow at gaging stations, and (3) estimates of storage changes in the ground-water basin.

Flow measurements were made at four locations (fig. 2) along San Simeon Creek and at four locations along Santa Rosa Creek during the recession phase of the storm on December 23–26, 1988. The measurements indicated a loss of streamflow along all reaches of San Simeon Creek. The rate of loss between the upstream and downstream gaging stations decreased from 15.6 ft^3/s on December 25 to 2.2 ft^3/s on December 27. A similar pattern was observed on Santa Rosa Creek after accounting for inflow from Perry Creek and from an unnamed tributary near the northeast corner of sec. 21, T.27S., R.9E. The rate of loss along Santa Rosa Creek was highest along the reach between the upstream gaging station and a point near well 27S/9E-19J1. These flow loss measurements probably underestimate the average loss rate for the storm because they were made after the flow peak. As flow receded, some of the water stored in streambanks during the peak probably moved back into the creek, thereby offsetting losses through the bottom of the creekbed.

Estimating flow gains and losses on the basis of continuous records of streamflow at gaging stations can minimize errors caused by transient bank storage. This

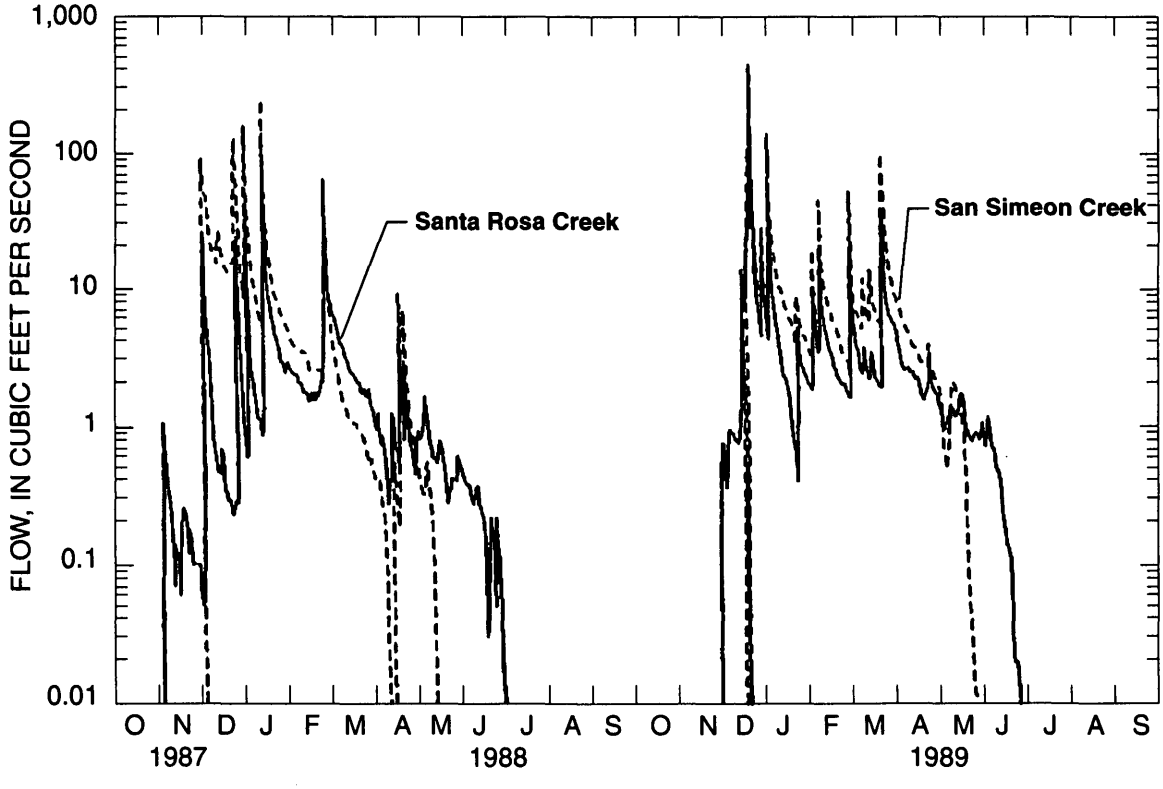

Figure 16. Daily mean flow in Santa Rosa Creek (Santa Rosa Creek near Cambria) and San Simeon Creek (San Simeon Creek at Palmer Flats), San Luis Obispo County, California, water years 1988–89.

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was done by comparing cumulative discharges at the upstream and downstream gaging stations on each creek for a period of several days or weeks. This method is accurate only when flows for the gaging stations on Santa Rosa and San Simeon Creeks are less than about 50 ft^3/s. As flows increase, gains and losses become a smaller percentage of total flow and become smaller than the uncertainty in the flow measurements. Also, there are discrepancies between the rating curves used to calculate flow from stream stage at each gaging station. The accuracy of these curves is poor at high flow because few data are available to define the curve. Errors in the rating curve result in a consistent bias in calculated flow. For example, the upstream gaging station on San Simeon Creek gives a low reading at high flows relative to the downstream gaging station. As a result, flow gains are unrealistically large (as much as 323 ft^3/s) along the intervening reach when total flow exceeds about 100 ft^3/s. These gains are too large to be attributable to ground-water inflow, and there is little, if any, surface inflow.

Rating curves are more accurate for flows less than 50 ft^3/s, and in this range continuous streamflow records can be used to estimate net gains or losses in flow as the creeks cross the ground-water basins. Generally, calculated gains and losses along Santa Rosa and San Simeon Creeks are consistent with instantaneous flow data and indicate that the rate of flow to or from ground water is controlled by adjacent ground-water levels. Daily mean flow loss rates of 20 to 40 ft^3/s are common during the first few weeks of streamflow when ground-water levels are low. Net losses in mid-winter are small when ground-water levels rise to the level of the thalweg. An exception occurs near municipal wells which operate all year and induce flow losses from the channel even after nearby ground-water levels have fully recovered.

Because flow losses could not be estimated accurately at high flows, continuous streamflow records could not be used to estimate total annual ground-water recharge from the creeks.

A third estimate of seepage losses was obtained from estimates of storage changes in the aquifer. Water levels rose rapidly during and after the storm on December 23–26, 1988. Nearly all the rise was attributable to stream recharge because rainfall during the month prior to the onset of streamflow had little or no effect on water levels and because water levels abruptly ceased rising once they reached the approximate level of water in the creek. Water-level rises were multiplied by area and specific yield for local areas within the basins. These were summed to obtain the total storage change for each basin. The calculations indicated that aquifer storage in the San Simeon Creek Basin increased about 480 acre-ft during the first week after the onset of streamflow and about 40 acre-ft during the following week. At that point, the basin was virtually full and storage did not continue to increase. In the Santa Rosa Creek Basin, storage increased about 360 acre-ft during the first week after the onset of streamflow, 90 acre-ft the following week, and 130 acre-ft during the subsequent 11 weeks.

Streamflow and water-level data indicate that most of the recharge from the creek occurs early in the winter flow season. Once water levels rise to the level of the creek, further recharge is rejected. A comparison of manual flow measurements in March and December 1988 confirmed that net flow losses are relatively small when the basins are full at end of the flow season.

In summer, Santa Rosa Creek acts locally as a drain for ground water. Because of subsurface flow obstructions, the water table intersects the creekbed near well 27S/9E-19H2 and emerges as flow in the creek. During the summer of 1988, this flow was several cubic feet per second and continued downstream as far as well 27S/8E-24N2. During the summer of 1989, flow eventually receded to the vicinity of well 27S/8E-24J4.

The first reach of the creeks to dry up during streamflow recession is important for fisheries management. After each of two streamflow peaks in December 1988, one of the first reaches of Santa Rosa Creek to go dry was the reach adjacent to well 27S/8E -27H1. The first reach to go completely dry on San Simeon Creek during the summer of 1988 was between the CCSD well field and the wastewater sprayfield. Pools persisted all summer between the sprayfield and the coast, but flow in that reach was too small to detect visually.

On several occasions during low-flow conditions, flow in Santa Rosa Creek at the Windsor Boulevard bridge was greater than flow at the State Highway 1 bridge (fig. 2) but by less than 1 ft^3/s. This gain in flow probably is caused by ground water that is forced to the surface by a bedrock constriction in the aquifer.

All three methods used to estimate seepage losses from the creeks indicate that seepage rates are highest at the beginning of the streamflow season when rates in both basins average 400 acre-ft per week.

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These rates decrease rapidly as ground-water levels rise to the levels of the creeks. The calibrated ground-water-flow models indicated that net seepage losses during the first week of streamflow following the storm on December 23–26, 1988, were 300 acre-ft in the Santa Rosa Basin and 410 acre-ft in the San Simeon Basin. Net seepage losses for April 1988 through March 1989 were 470 and 540 acre-ft in the Santa Rosa Basin and the San Simeon Basin, respectively (table 4).

Areal Recharge

Deep percolation of rainfall and irrigation water past the root zone of plants is another source of ground-water recharge. This type of recharge occurs throughout the ground-water basin wherever soils are not covered by impervious materials. The amount of deep percolation is affected by rainfall, irrigation, evaporative demand, plant type, and soil-moisture conditions. These factors were all accounted for in one-dimensional soil-moisture budgets developed for areas of uniform land use and vegetation type. Rainfall and irrigation are described in other sections of this report. The remaining factors and the budget calculations are described in this section.

Evaporative Demand

Evaporative demand refers to the humidity gradient that causes water to move in the vapor phase from plants, soils, and surface-water bodies, which are relatively moist, to the atmosphere, which is relatively dry. Evaporative demand in the study area during water years 1988 and 1989 was estimated from temporary local climate stations and permanent climate stations elsewhere on the coast.

A commonly used measure of evaporative demand is called reference evapotranspiration (ET_0). This is the amount of evapotranspiration that occurs from an areally extensive plot of irrigated short-cropped grass. The California Department of Water Resources (1988) operates a network of climate stations under a program called the California Irrigation Management Information System (CIMIS). ET_0 at each station is calculated using the modified Penman equation, which requires measurements of net solar radiation, temperature, windspeed, relative humidity, and soil heat flux. The CIMIS program uses empirical coefficients to adjust the raw Penman calculations to match measured consumptive water use by irrigated short-cropped grass.

A climate station similar to the ones used in the CIMIS program was operated at the CCSD well field (fig. 2*B*) during July through October 1988. In addition, measurements of actual evapotranspiration were made using the eddy-correlation method (Duell, 1990) during 3- to 4-day periods in July and October. These measurements were made at the well-field site, in a tomato field in July, and in a sugar pea field in October. Actual evapotranspiration can differ from ET_0, depending on vegetative characteristics and the availability of soil moisture. Data collected for the eddy-correlation measurements also were used to calculate ET_0 using the Penman equation. However, the humidity measurements of the eddy-correlation stations were made using a wet-bulb psychrometer rather than the dry-bulb psychrometer used at the Penman and CIMIS stations.

Monthly ET_0 measured at the well field was compared with the average of monthly ET_0 at CIMIS stations at Castroville, 90 mi north of the study area, and at Betteravia, 60 mi south of the study area. These stations were selected because they are both within a few miles of the coast, as is the study area. Coastal fog is common in summer, and consequently, ET_0 at the coastline can be as little as 65 percent of ET_0 at stations 10 to 20 mi inland (California Department of Water Resources, 1975).

Monthly ET_0 during 1988 is shown in table 5 including the measured values at the well field, the average of the two CIMIS stations, and two published estimates of long-term average ET_0. ET_0 at the well field is consistently higher than the CIMIS values. The discrepancy decreases from 34 percent in July to 13 percent in October. The difference probably results largely from differences in site characteristics. Dry site conditions can result in ET_0 measurements that are 15 percent too high (William Pruitt, University of California, Davis, oral commun., 1988). Instead of irrigated short-cropped grass, the well-field site is in an open field of nonirrigated, unmown wild grass with scattered native shrubs. The grass was dry and brown in July. In October, it had started to resprout in response to early winter rains and more closely approximated conditions at the CIMIS stations. This could explain the decreasing discrepancy between the ET_0 measurements. Daily ET_0 calculated using the Penman equation at the tomato and sugar pea sites was consistently less than at the well-field site, which

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Table 5. Estimates of monthly reference evapotranspiration (ET_0) near Cambria during calendar year 1988 and for long-term average climatic conditions, San Luis Obispo County, California

[Well field: U.S. Geological Survey data, using CIMIS version of Penman equation. CIMIS: Average of values for CIMIS stations at Castroville and Betteravia. Cambria: Values for Cambria from Pruitt and others (1987). Central Coast: Values for central coast coastal valleys and plains (California Department of Water Resources, 1975). CIMIS, California Irrigation Management Information System. All values in inches. —, no data]

Month	1988		Long-term average	
	Well field	CIMIS	Cambria	Central Coast
January	—	1.91	1.86	1.8
February	—	3.00	2.22	2.1
March	—	4.74	2.93	3.1
April	—	4.50	3.54	3.9
May	—	5.68	4.15	4.7
June	—	4.88	4.49	4.9
July	6.61	4.94	4.76	5.3
August	5.95	4.57	4.27	4.8
September	4.39	3.39	3.54	3.8
October	2.79	2.46	3.05	3.2
November	—	2.06	2.03	2.2
December	—	1.86	1.64	1.5
Total	—	43.99	38.48	41.3

further indicates that the relatively hot, dry conditions at the well-field site might have resulted in an overestimate of ET_0. Use of the wet-bulb psychrometer at the crop sites also might have contributed to the difference.

Temperatures during 1988 might have been slightly higher than normal, which also would tend to increase ET_0. The average annual ET_0 for the two CIMIS stations at Castroville and at Betteravia in 1988 was 43.99 in., which is higher than the long-term average for those stations (39.42 in.) and higher than both of the published estimates of long-term average ET_0 (table 5).

The presence of a climatic gradient near the coast was evident in the daily temperature data collected at three locations along the Santa Rosa Creek valley. The stations were 0.4, 2.5, and 4.5 mi from the coast. Monthly averages of maximum, mean, and minimum daily temperatures at the stations are shown in figure 17. The influence of marine air is evident in the data for the station closest to the coast (CCSD wastewater plant), which has the narrowest range of daily temperature fluctuations in almost all months. The station farthest from the coast (Scooter Rhoades) generally has the largest range. Although the range of

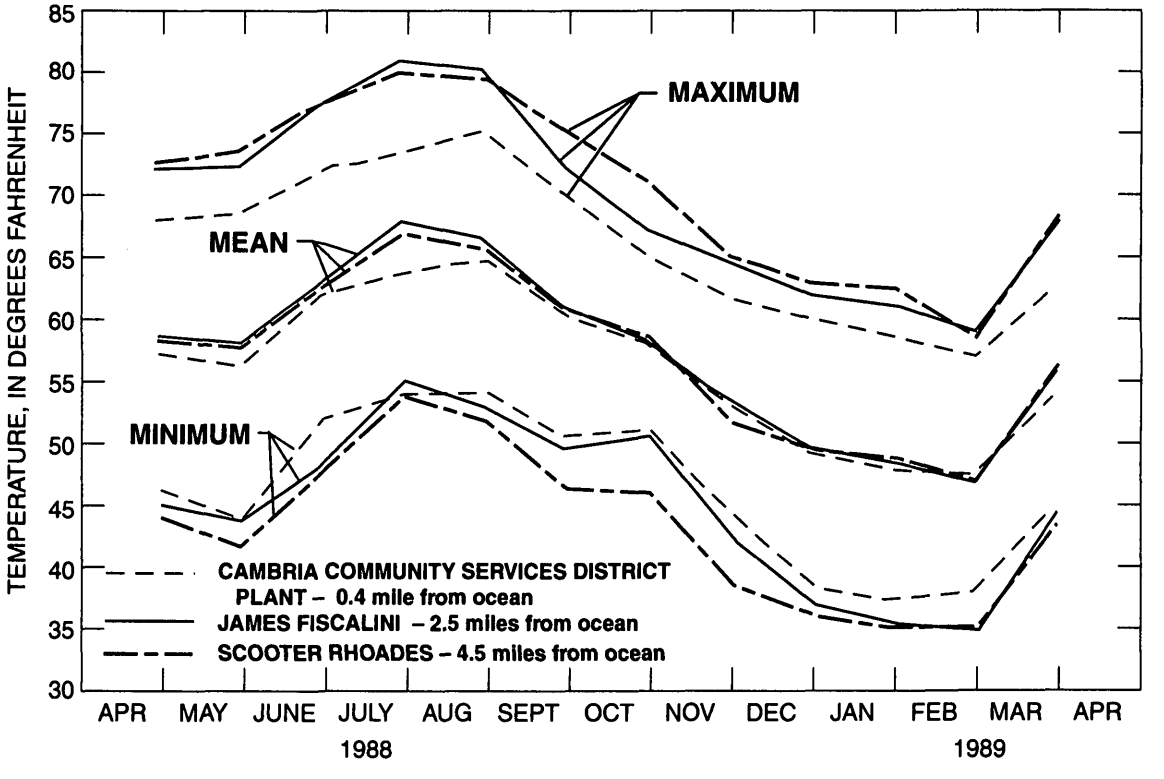

Figure 17. Monthly averages of maximum, mean, and minimum daily temperatures at three distances from the coast in the Santa Rosa Basin, San Luis Obispo County, California, 1988–89. (See figure 2 for location of climate measurement stations.)

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daily temperature fluctuations increases inland, the daily mean temperature is similar for all stations in every month except July, when the mean temperature at the station closest to the coast was about 4°F lower than at the other two stations. The coastal station might have been heavily influenced by fog, which is common in summer.

Estimates of ET_0 were not adjusted to account for the coastal climatic gradient. ET_0 is related to daily mean temperature (U.S. Soil Conservation Service, 1967), which in this case does not vary significantly with distance from the coast. Fog can decrease solar radiation near the coast, but the corresponding decrease in ET_0 was assumed to be small relative to the overall

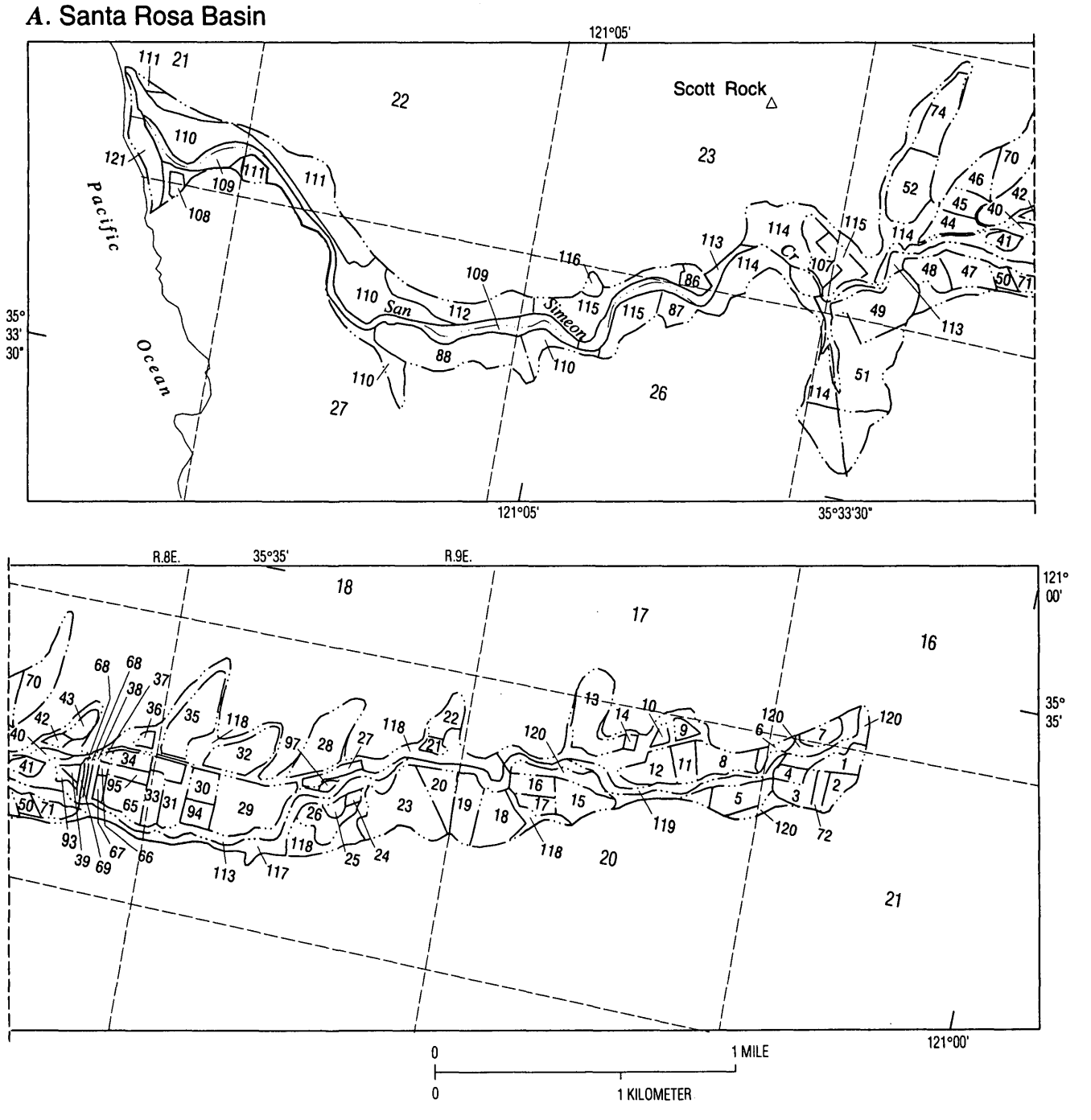

Figure 18. Fields and zones of uniform vegetation type in (*A*) the Santa Rosa and (*B*) the San Simeon ground-water basins, San Luis Obispo County, California.

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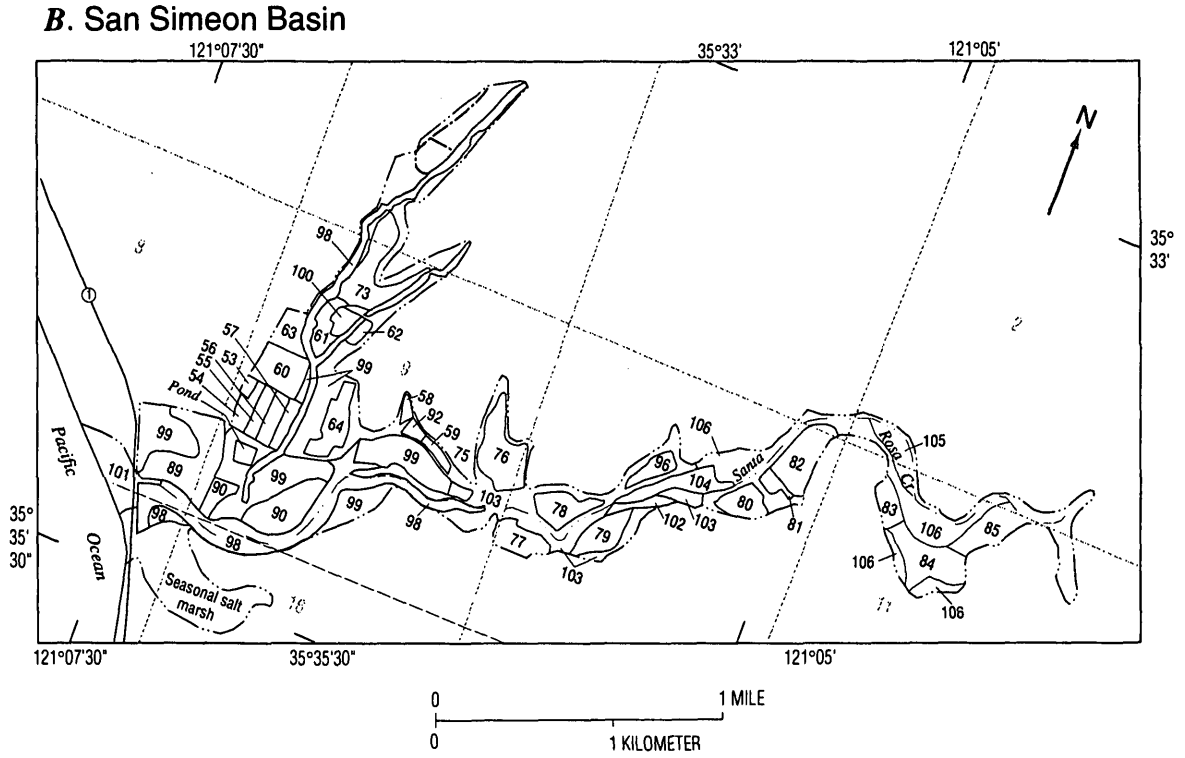
uncertainty in estimating ET_0 and crop evapotranspiration. Also, an analysis of water use at individual irrigation wells did not indicate an obvious inland increase in quantities of applied water, which would be expected if ET_0 increased inland.

Eddy-correlation measurements in the tomato and sugar pea fields were used to calculate crop coefficients, which are the ratio of actual evapotranspiration (AET) to ET_0. The tomato crop was measured in July; measurement began 2 days after an irrigation. The plants were one-half grown (staked to 3 ft tall) with about 30 percent canopy coverage. The crop coefficient was 0.82. Other estimates of the crop coefficient for half-grown tomatoes at the peak of their growing season generally are in the range of 0.76 to 0.95 (U.S. Soil Conservation Service, 1967; California Department of Water Resources, 1975; Doorenbos and Pruitt, 1977). The sugar pea field was measured in October starting the day after an irrigation. The vines were fully mature and strung to a height of about 6 ft in rows 3 ft apart. The calculated crop coefficient was 1.05. Published estimates of crop coefficients for sugar peas are not available, but the calculated values seem reasonable given the height of the crop and the damp soil conditions.

Land Use

Land use in the Santa Rosa and the San Simeon ground-water basins was mapped to determine the distribution of areal recharge. Land use was systematically observed every 1 to 3 months during 1988, and areas of uniform vegetation type were identified. A map of individual fields and zones of uniform vegetation type is shown in figure 18. A



EXPLANATION

BOUNDARY OF GROUND-WATER BASIN-Dashed where approximately located

80 **FIELD OF UNIFORM VEGETATION** - Numbers correspond to table 6

Figure 18. Fields and zones of uniform vegetation type in (*A*) the Santa Rosa and (*B*) the San Simeon ground-water basins, San Luis Obispo County, California—Continued.

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tabulation of vegetation type, applied irrigation water, and ground-water recharge for each field and land-use zone is shown in table 6. A summary tabulation, grouped into irrigated and nonirrigated categories, is shown in table 7.

In 1988, 43 percent (519.5 acres) of the Santa Rosa Basin was crop land. About 36 percent of the basin area was irrigated at least once during the year. Residential, commercial, and industrial uses accounted for 8.5 percent (104 acres) of the basin area.

The relative amounts of agricultural and irrigated land in the San Simeon Basin in 1988 were similar to those in the Santa Rosa Basin. However, the cropping intensity was slightly greater. Cropping intensity is the ratio of cropped area or harvested acreage to total crop land. An intensity greater than 1.0 indicates that some fields produce more than one crop during the year. The cropping intensities in the Santa Rosa and the San Simeon Basins were 1.5 and 1.8, respectively. Assuming irrigation rates for each crop type are similar in both basins, the average quantity of irrigation water applied to each acre of crop land was greater in the San Simeon Basin.

Land use in the Santa Rosa and the San Simeon Creek valleys has changed significantly over the past several decades. Information regarding land use was obtained from interviews with local farmers (Jon Pedotti, Larry Fiscalini, and Scooter Rhoades), the California Department of Water Resources (Mark VanVlack, written commun., 1987), and from field surveys done during 1987–89 for this study. Sugar beets were the principal crop in the Santa Rosa Creek valley in the 1950's and 1960's. There was a shift toward dry-farmed crops such as garbanzo beans and oat hay in the 1970's, although about one-half of the crop land continued to be irrigated for alfalfa, pasture, and sudan grass. In the early 1980's, there was a rapid change to irrigated vegetable crops including cherry tomatoes, sugar peas, squash, and fava beans. Many fields were double-cropped in winter with dry-farmed hay and grains. These continued to be the principal crops at the time the surveys were done for this study.

The evolution of cropping patterns in the San Simeon Creek valley was similar. The San Simeon Creek valley was part of the William Hearst ranch until the 1930's and probably was used to raise fodder crops. From the 1930's to 1960's, there was some irrigation for sugar beets and flowers. During 1970–81, the principal crops were dry-farmed garbanzo beans, oat hay, and barley. The only significant irrigation during 1974–77 was for pasture at the present site of the CCSD wastewater sprayfield and for 60 acres of alfalfa. As in the Santa Rosa Basin, there was a rapid conversion to irrigated vegetable crops beginning in 1981.

Soil-Moisture Budget

A one-dimensional daily soil-moisture budget was calculated for 119 zones of uniform vegetation during January 1988 through March 1989. Zones consisted of individual agricultural fields or areas of natural vegetation and ranged in size from 0.5 to 152 acres (table 6). Rainfall was interpolated linearly to each zone using long-term rainfall patterns and daily rainfall at Soto Ranch and the CCSD wastewater plant. Surface runoff of rainfall was assumed to occur if daily rainfall exceeded 3.0 in. Irrigation was estimated from crop water demand and agricultural energy use, as described in a later section of this report.

Evapotranspiration of soil moisture was divided into two components. Evaporation of recent rainfall from the soil surface was assumed to occur at the ET_0 rate. This evaporation occurred from a hypothetical surficial soil layer with a storage capacity of 0.5 in. Evaporation of irrigation water from the soil surface was accounted for in the crop coefficients used to estimate crop water use. The second component of evapotranspiration was actual evapotranspiration by plants and was calculated by multiplying ET_0 by a monthly crop coefficient. Crop coefficients reflect plant type, growth stage, and season. Coefficients for agricultural crops were obtained from previous studies of crop water use (U.S. Soil Conservation Service, 1967; California Department of Water Resources, 1975; and Doorenbos and Pruitt, 1977) and ranged from 0.35 for oats just before harvest to 1.21 for fully mature and staked sugar peas in midsummer. Other coefficients used were 0.25 for bare soil and 1.00 for riparian vegetation and native brush and grass.

In nonirrigated areas, AET is limited by the amount of soil moisture available to plants. Available water capacity is the quantity of water that can be stored in the plant root zone between soil-moisture tensions corresponding to field capacity and wilting point. Available water capacity for each zone was calculated from water-retention characteristics of the local soils (U.S. Soil Conservation Service, 1984) and plant root depths. AET was adjusted by a multiplier which decreased sigmoidally according to soil type from 1.0 at field capacity to 0.0 at the wilting point (Dunne and Leopold, 1978, p. 142). For example,

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Table 6. Vegetation type, applied irrigation water, and ground-water recharge for April 1988 through March 1989 and for average rainfall conditions for individual fields and land-use zones in the Santa Rosa and the San Simeon ground-water basins, San Luis Obispo County, California

[Location of fields shown in figure 18. Double-cropping with the same type of crop indicated by 2. acre-ft, acre-foot]

Field or zone number	Area (acres)	Vegetation type	April 1988—March 1989		Average rainfall	
			Applied irrigation water (acre-ft)	Ground-water recharge (acre-ft)	Applied irrigation water (acre-ft)	Ground-water recharge (acre-ft)
		Santa Rosa Basin				
1	6	Peas (2)	19.6	11.84	19.3	15.38
2	3	Peas, squash, lettuce	7.6	4.66	7.5	6.62
3	6	Peas (2)	23.3	12.40	22.9	15.91
4	3	Squash, lettuce	8.1	4.70	8.1	6.78
5	10	Oats, irrigated pasture	18.4	10.11	15.4	13.25
6	3	Peas	5.5	3.96	5.2	5.45
7	4	Peas, squash, lettuce	13.5	7.33	13.5	10.14
8	10	Oat hay, irrigated pasture	18.2	9.70	18.1	15.76
9	2	Oat hay, irrigated pasture	3.8	2.20	3.7	36
10	1	Oat hay, irrigated pasture	1.8	12	1.8	1.42
11	6	Alfalfa	17.5	76	17.6	10.97
12	10	Oat hay, irrigated pasture	17.5	8.78	17.5	15.57
13	15	Peas, tomatoes	28.5	11.44	28	192
14	1	Domestic orchard	0	.20	0	.74
15	10	Peas	26	13.99	22.1	186
16	6	Peas	6.7	4.45	4.5	6.93
17	4	Peas	12.2	6.61	12.3	90
18	12	Oat hay, squash	34	19.22	30.7	24.44
19	12	Oat hay, tomatoes	28.3	15.63	27.9	22.50
20	9	Peas, irrigated pasture	20.3	11.90	17.1	13.74
21	2	Irrigated pasture	6.3	3.63	4.7	3.24
22	5	Irrigated pasture	15.8	96	11.8	8.10
23	22	Irrigated pasture	53.4	24.14	53.5	38.52
24	1	Peas	1.1	.73	1.1	1.15
25	2.5	Peas	2.8	1.84	2.8	2.90
26	8	Nonirrigated pasture, peas	9.1	5.88	8.9	9.75
27	4	Peas	7.1	3.86	6.9	5.76
28	17	Nonirrigated pasture	0	1.24	0	8.17
29	26	Oat hay, squash	35.7	18.96	35.1	29.80
30	6.5	Oat hay, squash	7.2	5.22	7.1	7.95
31	8	Peas, oat hay	7.6	4.24	4.9	7.94
32	16	Irrigated pasture	45.3	21.79	40	26.36
33	6	Peas, oat hay	13.1	5.59	13.2	8.54
34	5	Lettuce, peas	10.5	4.94	8.8	6.51
35	20	Nonirrigated pasture	0	15	0	8.70
36	2	Nonirrigated pasture	0	.10	0	.87
37	.5	Tomatoes, peppers	1.2	.49	1	.63
38	2	Oat hay, tomatoes	2.7	.73	2.6	1.40
39	2.5	Fallow	0	.02	0	.92
40	3	Peas	5.5	2.33	5.4	3.38
41	4	Oat hay, squash	5.8	2.55	5.7	4.37
42	1.5	Nonirrigated pasture	0	.01	0	.54

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Table 6. Vegetation type, applied irrigation water, and ground-water recharge for April 1988 through March 1989 and for average rainfall conditions for individual fields and land-use zones in the Santa Rosa and the San Simeon ground-water basins, San Luis Obispo County, California—Continued

Field or zone number	Area (acres)	Vegetation type	April 1988—March 1989		Average rainfall	
			Applied irrigation water (acre-ft)	Ground-water recharge (acre-ft)	Applied irrigation water (acre-ft)	Ground-water recharge (acre-ft)
			Santa Rosa Basin—Continued			
43	4	Nonirrigated pasture	0	0.02	0	1.45
44	6	Peas, oat hay	4.7	1.97	3.1	4.85
45	6	Peas, oat hay	10.5	2.96	8.9	5.78
46	8	Peas, oat hay	14.7	68	14.4	9.74
47	10	Peas, oat hay	16.9	8.26	13.4	11.92
48	7	Peas, oat hay	16	7.68	16	11.27
49	24	Oat hay, peas	24.2	10.94	15.9	176
50	3	Squash and zucchini	5.7	28	5.4	3.33
51	33	Peas, oat hay	98.7	48.99	97	65.46
52	14	Oat hay, squash	19	9.86	18.8	165
65	11	Peas (2)	25.8	9.80	22.6	14.32
66	1	Tomatoes (2)	2.3	.97	2.2	1.39
67	1.5	Tomatoes, squash	3.6	1.63	3.6	2.39
68	1.5	Tomatoes, oat hay	1.9	.52	1.9	1.22
69	.5	Peppers, oat hay	.8	.30	.8	.54
70	14	Irrigated pasture	34.4	127	26.7	14.21
71	4	Peas	8.8	36	7.7	47
72	3	Peas, squash	9.8	5.40	8.7	6.28
74	13	Oat hay, squash	23.6	8.23	20.2	12.74
86	4	Nonirrigated pasture	0	0	0	1.14
87	6	Irrigated pasture	20.4	9.84	15.8	9.82
88	33	Nonirrigated pasture	0	0	0	7.52
93	1.5	Peas	2.4	1.20	2.4	1.74
94	4.5	Oat hay, peas	8.8	4.95	7.7	6.51
95	3	Squash, lettuce	5.9	2.86	5.1	3.57
97	1	Fallow	0	.04	0	.45
107	8	Turf	32.1	16.27	26.6	166
108	1	Turf and shrubs	3.5	1.72	2.8	1.65
109	22	Riparian vegetation	0	0	0	0
110	102	Upland vegetation	0	0	0	0
111	33	Commercial	0	0	0	51
112	23	Residential	0	4.15	0	17.66
113	43.5	Riparian vegetation	0	0	0	0
114	152	Upland vegetation	0	0	0	0
115	38	Commercial	0	.17	0	7.96
116	1.5	Residential	0	.45	0	1.47
117	45	Riparian vegetation	0	0	0	0
118	86.5	Upland vegetation	0	0	0	0
119	18.8	Riparian vegetation	0	0	0	1.98
120	115	Upland vegetation	0	0	0	5.82
121	10	Beach	0	2.55	0	5.47
Total	1,214.3		935.5	470.62	854.4	718.14

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Table 6. Vegetation type, applied irrigation water, and ground-water recharge for April 1988 through March 1989 and for average rainfall conditions for individual fields and land-use zones in the Santa Rosa and the San Simeon ground-water basins, San Luis Obispo County, California—Continued

Field or zone number	Area (acres)	Vegetation type	April 1988—March 1989		Average rainfall	
			Applied irrigation water (acre-ft)	Ground-water recharge (acre-ft)	Applied irrigation water (acre-ft)	Ground-water recharge (acre-ft)
			San Simeon Basin			
53	1	Christmas trees	2	0.64	2	1.13
54	5	Squash, fava beans	10.1	48	8.6	5.23
55	5	Peas, fava beans	13.2	5.68	11.8	7.24
56	6	Peas, squash	11.5	5.4	10	7.52
57	5	Zucchini, peas	12.9	5.7	11.8	6.71
58	.8	Peas, Christmas trees	1.6	.71	1.6	12
59	3.9	Christmas trees	9.7	4.5	7.2	4.14
60	22	Peas, oat hay	53.8	22.86	53.6	323
61	9	Peas, oat hay	20.7	8.29	20	11.25
62	2.6	Peas, oat hay	5.8	2.43	5.8	3.46
63	6	Oat hay	0	0	0	1.54
64	14	Peas	40.8	162	35.8	19
73	24	Nonirrigated pasture	0	0	0	6.8
75	1.5	Fava beans, oat hay	4.5	1.94	4.2	2.52
76	17	Tomatoes, oat hay	37.3	14.98	30.3	17.34
77	9	Fava beans, oat hay	17.4	81	17.3	12.69
78	12	Zucchini, oat hay	22.8	12.28	21.1	159
79	12	Fava beans, oat hay	24.5	12.86	24.3	18.92
80	6.5	Zucchini, fava beans	17	9.31	15	10.21
81	1.5	Irrigated pasture	5.1	2.41	4.6	2.72
82	15	Squash, fava beans	37.4	20.14	37.4	20.14
83	5.5	Zucchini, oat hay	16.8	9.15	16.8	9.15
84	16	Squash, oat hay	43.5	27.53	43.5	27.53
85	12	Zucchini, fava beans	34.7	21.57	31.4	21.3
89	24	Campground (nonirrigated)	0	0	0	0
90	22	Wastewater sprayfield[1]	0	0	0	0
92	1.1	Christmas trees	2.7	1.3	2	1.17
96	7	Peas	7	4.69	7	7.2
98	46	Riparian vegetation	0	0	0	0
99	118.2	Upland vegetation	0	0	0	0
100	4	Equipment yard	0	0	0	1.42
101	16.1	Beach	0	4.11	0	8.8
102	15	Riparian vegetation	0	0	0	0
103	68.9	Upland vegetation	0	0	0	0
104	10	Gravel plant	0	11	0	5.24
105	10.2	Riparian vegetation	0	0	0	.55
106	50.5	Upland vegetation	0	0	0	0
Total.....	605.3		452.8	227.6	423.1	289.06

[1]Applied water and ground-water recharge at the municipal waste were estimated separately using a different method.

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Table 7. Land use in the Santa Rosa and the San Simeon ground-water basins, San Luis Obispo County, California, calendar year 1988

[Irrigated: Includes all fields and crops that were irrigated at least once during the year. All values in acres. CCSD, Cambria Community Services District]

Type of land use	Santa Rosa Basin		San Simeon Basin	
	Irrigated	Nonirrigated	Irrigated	Nonirrigated
Crop land	[1]438.0	81.5	[2]189.3	[3]37.0
Campground	0	0	0	18.8
CCSD well field	0	0	0	20.0
CCSD wastewater sprayfield	0	0	54.2	0
Residential[4]	.5	23.5	0	0
Commercial[4]	1.8	78.2	0	0
Industrial	0	0	0	14.0
Native vegetation				
Riparian	0	100.0	0	78.0
Nonriparian[5]	0	473.5	0	163.7
Rural impervious[6]	0	20.0	0	5.0
Total	[1]440.3	776.7	[2]243.5	[3]336.5
Cropped area				
Alfalfa	18.5	0	0	0
Christmas trees	0	0	4.9	0
Fava beans	0	0	66.0	0
Leafy vegetables	16.0	0	0	0
Oat hay	146.5	0	100.4	6.0
Pasture	100.0	81.5	1.5	31.0
Peppers	1.0	0	0	0
Squash	83.0	0	83.0	0
Sugar peas	247.5	0	72.4	0
Tomatoes	48.5	0	17.0	0
Total	661.0	81.5	345.2	37.0
Cropping intensity[7]	1.5	1.0	1.8	1.0

[1]Includes 3 acres of crop land outside the ground-water basin boundaries.

[2]Includes 14 acres of crop land outside the ground-water basin boundaries.

[3]Includes 28 acres of crop land outside the ground-water basin boundaries.

[4]Proportion of irrigated to nonirrigated acreage estimated from monthly distribution of municipal water use.

[5]Includes beach areas.

[6]Includes rural roads and buildings.

[7]Cropping intensity is the ratio of total cropped area to total area of cropped land. Values greater than 1.0 are possible when more than one crop is grown per year.

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decreases in available soil moisture cause the AET of native brush and grass to decline rapidly during spring and early summer. The soil-moisture budget calculations indicate that there is little AET in summer, which is consistent with observations in other areas (Miller and others, 1983).

In irrigated areas, irrigation was assumed to occur as soon as soil-moisture depletion caused a decrease of 20 percent in AET. This resulted in irrigation frequencies of 14 to 21 days for sugar peas and tomatoes in summer, which are consistent with local farming practice (Larry Fiscalini and Gary Silveira, farmers, oral commun., 1989).

Deep percolation was assumed to occur when the amount of soil moisture in storage exceeded field capacity after adding inflows from rainfall and irrigation and subtracting evapotranspiration. In irrigated fields, most of the deep percolation is from excess applied irrigation water. During 1988–89, for example, deep percolation on typical irrigated fields consisted of about 8 in. of irrigation-return flow and 4 in. of rainfall recharge. No rainfall recharge occurred on nonirrigated fields or in areas of native vegetation (except the beach) during 1988–89. Total rainfall recharge from April 1988 through March 1989 was 140 acre-ft in the Santa Rosa Basin and 50 acre-ft in the San Simeon Basin (table 4). Agricultural irrigation-return flow was 320 and 170 acre-ft in the two basins, respectively. These totals differ from those shown in table 6 because of adjustments made to implement variable time-step durations in the ground-water-flow model.

Irrigation tends to increase rainfall recharge by leaving the soil in a relatively moist condition at the beginning of the winter rainy season. Smaller amounts of rainfall are then needed to bring the soil to field capacity and initiate deep percolation. The absence of deep percolation in nonirrigated areas during 1988–89 is not surprising because rainfall was only about 68 percent of the long-term average. In the central coast region, most deep percolation occurs during relatively wet years (Blaney and others, 1963; Yates, 1988).

To illustrate the threshold-type relation between annual rainfall and areal recharge, areal recharge during 1988–89 was recalculated assuming average rainfall. This was done by increasing daily rainfall by 46 percent, resulting in a twofold to threefold increase in rainfall recharge to about 410 acre-ft in the Santa Rosa Basin and 130 acre-ft in the San Simeon Basin. Agricultural pumpage and irrigation-return flow decreased by 7 to 9 percent. Total recharge from rainfall and irrigation-return flow under normal rainfall conditions was about 720 acre-ft in the Santa Rosa Basin and 290 acre-ft in the San Simeon Basin (table 6).

Subsurface Inflow and Outflow

Ground water enters the ground-water basins as subsurface inflow from bedrock areas along the sides of the basins. Infiltrated rainfall that percolates beneath the root zones of plants growing on the hillslopes gradually flows downward toward the valley floor through fractures in the bedrock. Some of this water emerges in springs, but the remainder seeps directly into the ground-water basins. Although fractured bedrock generally is much less permeable than alluvial aquifers, the total quantity of inflow is potentially large in this case because the thin, narrow basins have a large surface area in contact with bedrock.

An estimate of subsurface inflow from bedrock areas was obtained by multiplying the long-term average rainfall recharge rate by the area of hillslopes along the sides of the basin (fig. 19; table 8). Ridgetops were assumed to coincide with ground-water-flow divides. An estimate of the rainfall recharge rate was obtained from a 6-year study of soil-moisture profiles for a coastal area with similar vegetation about 80 mi south of Cambria (Blaney and others, 1963). The reported long-term average recharge rate for grassy areas was about 1.7 in/yr. This rate would correspond to 720 and 290 acre-ft/yr of inflow into the Santa Rosa and the San Simeon Creek Basins, respectively.

Rainfall on the Cambria hillslopes (21 to 27 in/yr) is greater than in the area where the soil-moisture study was done (13 in/yr), so one might expect inflow to be larger in the Cambria area. However, calibration of the ground-water models indicated that even the original estimates are too large because they cause unrealistic water-level recovery in late autumn. The calibrated estimates of inflow were about 370 and 150 acre-ft/yr for the Santa Rosa and the San Simeon ground-water basins, respectively (table 8). Subsurface inflow for some of the larger tributary areas, such as Van Gordon Creek, was estimated by applying Darcy's law to conditions at the basin boundary. Most of the deep percolation in these drainage basins was assumed to emerge as streamflow in the tributary creek rather than as subsurface inflow into the ground-water basin.

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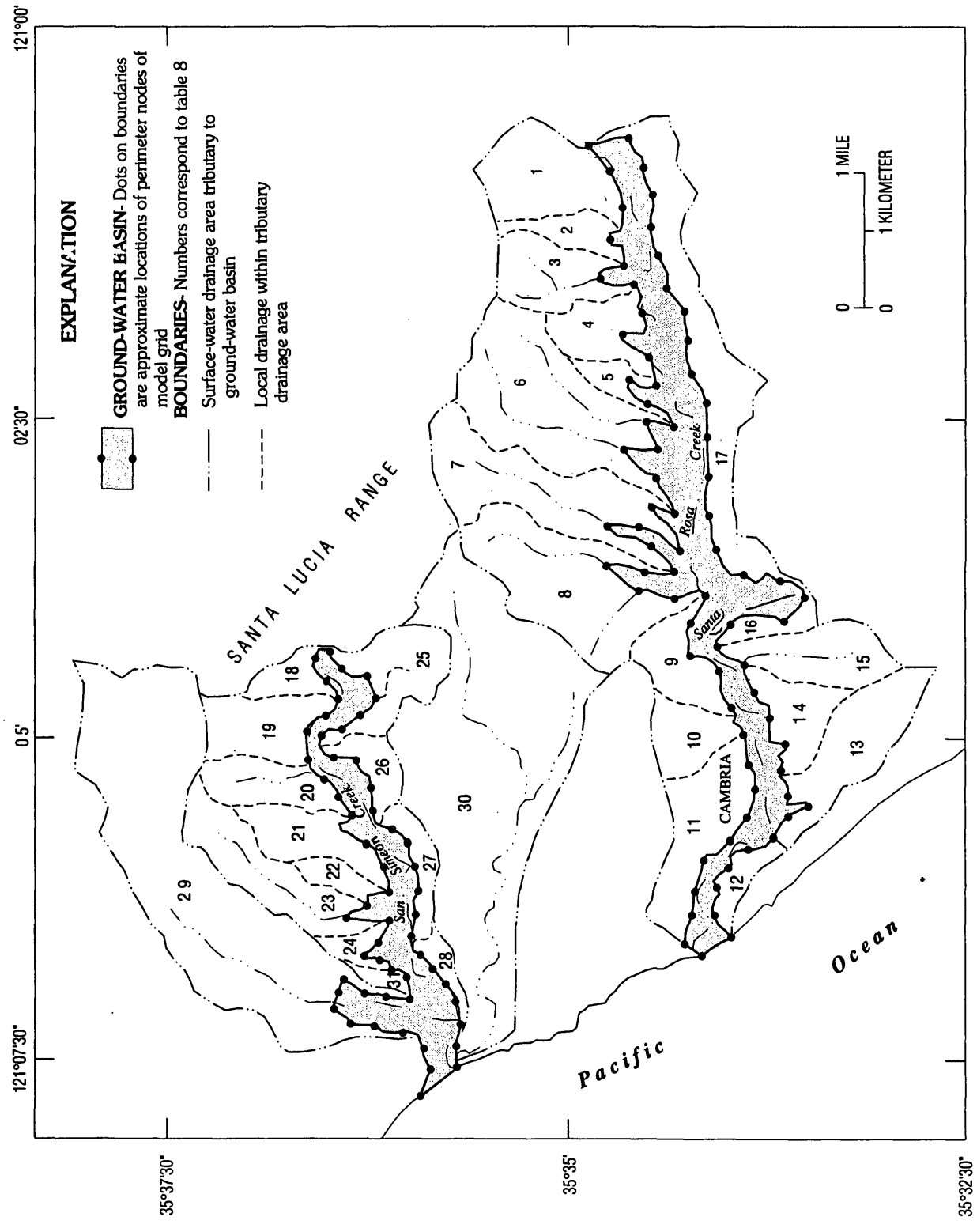

Figure 19. Tributary drainage basins contributing subsurface inflow to the Santa Rosa and the San Simeon ground-water basins, San Luis Obispo County, California.

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Table 8. Drainage area and estimated subsurface inflow from tributary drainage basins adjacent to the Santa Rosa and the San Simeon ground-water basins, San Luis Obispo County, California

[Location of drainage basins shown in figure 19. acre-ft/yr, acre-foot per year]

Drainage basin No.	Drainage area (acres)	Subsurface inflow (acre-ft/yr)
Santa Rosa Basin		
1	349	27
2	108	8
3	248	19
4	185	14
5	73	5
6	705	52
7	541	36
8	622	39
9	184	11
10	163	10
11	344	30
12	87	7
13	340	31
14	190	14
15	256	19
16	73	5
17	588	44
Total	5,056	371
San Simeon Basin		
18	130	9
19	243	17
20	207	14
21	203	14
22	67	5
23	340	23
24	98	7
25	269	20
26	121	10
27	107	7
28	54	3
29	1,652	12
30	1,820	5
31	50	3
Total	5,361	149

Subsurface outflow occurs at the coast where the basin-fill deposits extend offshore beneath the ocean. Fresh ground water can reach the ocean by discharging directly through the ocean floor or by seeping into the creek and flowing to the ocean as surface-water outflow. The proportion of outflow that occurs as subsurface outflow depends on water-level gradients, aquifer transmissivity, and streambed leakances near the coast. A maximum estimate of subsurface outflow can be obtained by assuming that all outflow is subsurface, in which case it equals the product of hydraulic conductivity, cross-sectional flow area, and water-level gradient. For the Santa Rosa Basin, hydraulic conductivity was about 50 ft/d; the average water-level gradient in 1988 was about 0.00267, and the calculated outflow was 140 acre-ft/yr. Corresponding values for the San Simeon Basin were 400 ft/d for hydraulic conductivity, 0.00303 for average water-level gradient, and 790 acre-ft/yr for calculated outflow. The calibrated ground-water-flow models estimated that the rates of outflow for the two basins during 1988–89 were 60 and 320 acre-ft/yr, respectively. The rates of subsurface outflow probably do not vary substantially from year to year because the presence of the creek channel and the small amount of pumping near the coast tend to maintain relatively constant water-level gradients.

Transpiration by Phreatophytes

In areas where the water table is shallow, deep-rooted plants can use ground water in addition to soil moisture. In the Cambria area, this occurs primarily along creek channels, which are bordered by dense thickets of shrubs and trees. This riparian vegetation covers about 129 acres along Santa Rosa Creek and 71 acres along San Simeon Creek (table 6). The quantity of ground water transpired decreases rapidly with increasing depth to the water table. Few measurements of actual evapotranspiration by riparian vegetation on the central California coast have been done. A maximum estimate of the quantity of water consumed can be calculated by assuming that riparian vegetation obtains all its water from ground water and transpires at a rate equal to ET_0. These assumptions yield estimates of 330 acre-ft/yr for the Santa Rosa Basin and

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260 acre-ft/yr for the San Simeon Basin. Estimates calculated by the ground-water models for 1988–89 were smaller: 160 and 30 acre-ft/yr (table 4). The smaller estimates result because depth to the water table limits phreatophyte transpiration in some of the areas mapped as riparian vegetation.

Water Use

Agricultural

Agricultural water use was estimated from crop water demand and from records of electricity use by wells and ditch pumps. Crop water use (AET), described earlier in the section, "Areal Recharge," gives an estimate of the consumptive water use by crops. Electricity use gives an estimate of agricultural pumpage. The ratio of AET to pumpage is the irrigation efficiency. Estimates of AET and pumpage were calculated independently and then compared to see if the resulting irrigation efficiency was reasonable.

With the permission of the well owners, records of monthly electricity use were obtained for the 18 principal irrigation wells in the Santa Rosa and the San Simeon Basins. Almost all irrigation water is supplied by wells, most of which have individual electric meters. Water occasionally is pumped out of the creek at two locations, but in both cases, the ditch pumps are electric and are connected to the same meter as a nearby well. Unit electricity use is the number of kilowatt-hours (kWh) used to pump 1 acre-ft of water. It is a function of well efficiency and total pumping lift. The efficiency of each well was measured for this study at least once during 1988 (Dennis Kunkel, Pacific Gas and Electric Company, written commun., 1988). The results of 23 well-efficiency tests indicated that unit electricity use ranged from 178 to 401 kWh/acre-ft with a median value of 323 kWh/acre-ft. Pumping efficiency ranged from 27 to 80 percent, with a median value of 56 percent. For some of the tests, water was discharged to waste at low pressure. This would result in lower total pumping lift and possibly lower pumping efficiency than under normal operating conditions.

Total pumping lift is the sum of the static depth to water in the well, the drawdown of water in the well when the pump is operating, the difference in altitude between the wellhead and the discharge point, and the discharge pressure at the discharge point (converted from units of pounds per square inch to feet of water). In the Cambria area, estimating pumpage from electricity use is complicated because most wells serve fields at different altitudes, the static depth to water gradually increases during the irrigation season, and discharge pressure for furrow irrigation is different from that for sprinkler irrigation. Variations in the first two factors were relatively small and could be estimated fairly accurately. The largest source of uncertainty stemmed from the irrigation method. The discharge pressure for furrow irrigation is less than 5 lb/in^2, and the discharge pressure for sprinklers typically is about 60 lb/in^2. This pressure difference corresponds to a difference in pumping lift of 127 ft, which is much larger than variations typically associated with static depth to water or field altitude. A sample of 18 sprinkler set-ups indicated a wide range of operating pressures, from 25 to 72 lb/in^2 with a median pressure of 58 lb/in^2.

Estimating total pumping lift is further complicated by the fact that many farmers irrigate a single crop by both sprinkler and furrow methods, depending on the maturity of the crop. Other farmers irrigate the same crops entirely by sprinkler. Thus, in any given month, a well is likely to serve several different crops at different stages of maturity using different irrigation methods. The irrigation method for each field in each month was estimated from observations of crop maturity and from information provided by individual farmers.

An increase in total pumping lift causes an increase in unit electricity use. The proportional increase was calculated for six wells where efficiency tests were done for several values of total pumping lift. The results were highly variable but averaged 1.4 kWh/acre-ft per foot of increase in total pumping lift. This value was assumed to apply to the remaining 12 irrigation wells.

A final source of uncertainty in calculating agricultural pumpage from electricity use arose where the electricity meter for a well was not functioning correctly or where the service connection supplied electricity for uses other than pumpage. In these cases, the magnitude of the error was estimated and the electricity record adjusted accordingly.

The pumpage at each well was calculated by allocating the amount of electricity used in a given month among the fields served by the well. The allocation for each field was then divided by the unit electricity use calculated from the total pumping lift conditions at that field during that month. The allocations were based on the irrigation water demand

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calculated by the soil-moisture budget algorithm described earlier. Total agricultural pumpage from April 1988 through March 1989 was 890 acre-ft in the Santa Rosa Basin and 450 acre-ft in the San Simeon Basin (table 4). Monthly agricultural pumpage during that period is shown in figure 20 for each basin.

Irrigation efficiency is the ratio of AET to the quantity of irrigation water applied to a crop. Irrigation efficiencies were calculated for each well by comparing total crop water demand in all fields served by a well with the pumpage at that well. Crop water demand is calculated by the soil-moisture budget algorithm as the quantity of irrigation water needed to avoid water stress caused by soil-moisture depletion. This was converted to electricity demand using the total pumping lift at each field and the pumping efficiency of the well. When compared on a monthly basis, there was often a considerable discrepancy between the calculated and the measured amount of electricity use. Much of the error resulted from slight miscalculations of the timing of periods of irrigation. For example, if irrigation occurred at the end of a month and the soil-moisture budget algorithm predicted that it was near the beginning of the following month, a discrepancy between calculated and measured electricity use would result for both months.

Irrigation efficiency was assumed to be constant for each well and was selected so that total calculated energy use equaled total measured energy use from April 1988 to March 1989. Irrigation efficiencies ranged from 53 to 80 percent, with a median value of 66 percent. Some of the high values probably result from under irrigation of low-value forage crops such as pasture, alfalfa, and oat hay.

Municipal and Industrial

More than 98 percent of the households in the Cambria area receive water from the five CCSD municipal wells. Two of these wells are along Santa Rosa Creek (27S/8E-26C5 and 26D1) and three are in the CCSD well field along San Simeon Creek (27S/8E-9J4, 9J5, and 9K3) (fig. 2). The San Simeon wells generally are used in preference to the Santa Rosa wells, so pumpage from the Santa Rosa wells typically varies depending on streamflow patterns and ground-water levels in the San Simeon Basin. Municipal pumpage for Cambria during 1956–88 (John Stratford, General Manager, written commun., 1989) is shown in figure 21.

Municipal pumpage has increased substantially in recent years from about 130 acre-ft in 1956 to about 820 acre-ft in 1988 (fig. 21). Long-term municipal pumpage trends indicate a greater yearly average increase in pumpage from 1982 to 1988 than from 1967 to 1976. From 1967 to 1976, pumpage increased an average of 6.0 percent per year. During the 1977–78 drought and the 5 years immediately following, production increased an average of only 2.2 percent per year. This lower rate probably is attributable to successful water conservation efforts and to extensive water main repairs done in the late 1970's. From 1982 to 1988, pumpage increased at an average of 8.4 percent per year.

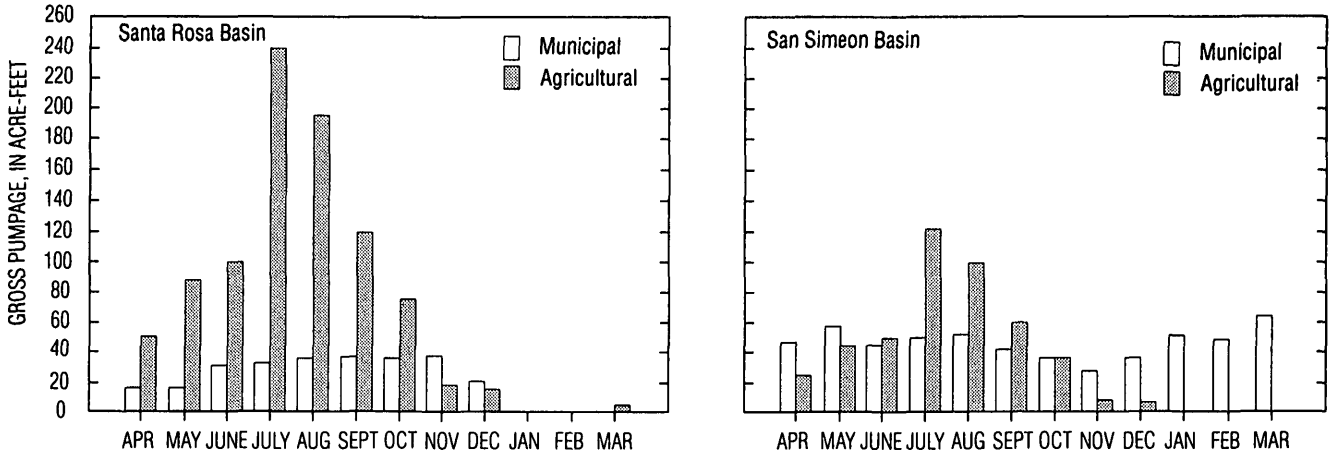

Figure 20. Monthly municipal and agricultural pumpage for the Santa Rosa and the San Simeon ground-water basins, San Luis Obispo County, California, April 1988 through March 1989.

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Monthly municipal pumpage from April 1988 through March 1989 is shown in figure 20 for each basin. The absence of municipal pumpage from the Santa Rosa Basin for January and February 1989 reflects the preferential use of San Simeon water, which is of higher quality than water from the Santa Rosa Basin, when the San Simeon supply is adequate.

Comparison of metered consumption and metered pumpage indicates that in 1988 about 10 percent of the water pumped in the distribution system was unaccounted for. Water losses that are unaccounted for result from leaks, underrecording by meters, and unmetered uses such as flushing water mains, firefighting, and water supply for the wastewater-treatment plant and the San Simeon Beach campground. System losses have decreased substantially in recent years. About 30 percent of the water pumped into the system was unaccounted for during 1966–79, whereas only about 15 percent was unaccounted for during 1980–84.

The average monthly distribution of municipal pumpage during calendar years 1979–88 is shown in figure 22. Outdoor water use was estimated by a curve separation procedure in which indoor use is subtracted from total use. Indoor water use was assumed to equal total municipal water use in January. Seasonal fluctuations in indoor water use were estimated by comparing San Luis Obispo County's population estimate for Cambria of 3,900 in January 1985 with the CCSD's maximum seasonal population estimate for Cambria of 5,000 (McClelland Engineers, Inc., 1986). On the basis of these estimates, the peak seasonal population is about 28 percent greater than the population in January. A similar curve separation of municipal wastewater flows for 1984–88 indicated a peak summer population about 17 percent greater than the minimum winter population. For this analysis, a 10-percent average increase in indoor water use was assumed for May and September and a 20-percent average increase for June through August. Outdoor water use was calculated by subtracting indoor use from total use for each month. Annually, about 83 percent of municipal pumpage is used indoors and the remaining 17 percent is used outdoors.

A complete water-use budget was calculated for calendar year 1987. It indicated that 9.7 percent of the 777 acre-ft of water pumped in 1987 was lost from the system before delivery. On the basis of a municipal water-use curve separation for water delivered in 1987, 74 percent was used indoors and 26 percent was used outdoors. About 98 percent of the water used indoors enters the sewer system and the remaining 2 percent is

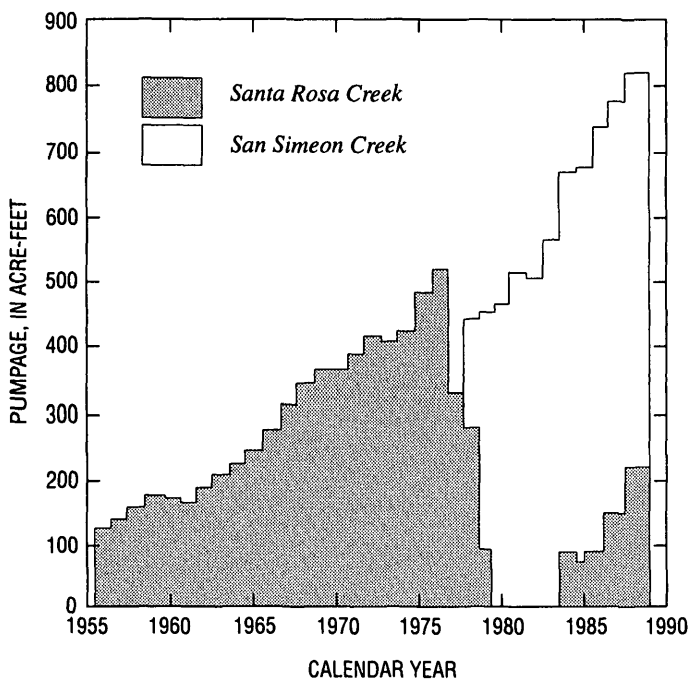

Figure 21. Annual municipal pumpage for Cambria, San Luis Obispo County, California, 1956–88.

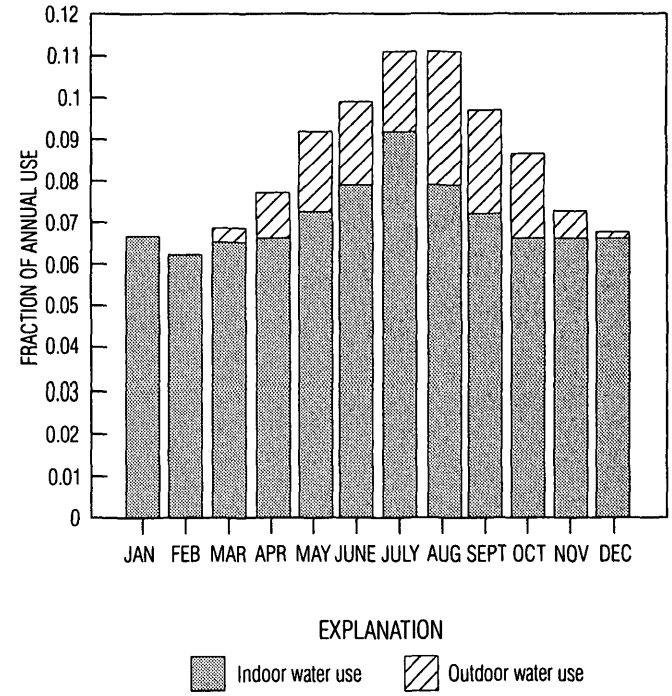

Figure 22. Average monthly distribution of municipal pumpage, San Luis Obispo County, California, 1979–88.

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consumed (California Department of Water Resources, 1983). On the basis of the preceding calculations, about 570 acre-ft of water entered the sewer system in 1987. By comparison, the measured quantity of wastewater reaching the CCSD sprayfield was 530 acre-ft. The 7-percent discrepancy may be the result of sewer main losses or of errors in the estimates of indoor and outdoor water use.

Average annual per capita water consumption is about 140 gal/d. This amount was calculated using population estimates for 1985 and consumption data for July 1985 through June 1986. Total water consumption was 640 acre-ft from July 1985 to June 1986, and the average annual population in 1985 was 4,200 people.

Individual domestic wells and springs provided water for about 90 permanent residents and an approximately equal number of migrant field workers in 1988. Rural domestic pumpage was about 12 acre-ft/yr in the Santa Rosa Basin and 5 acre-ft/yr in the San Simeon Basin. These estimates are based on the assumption that per capita domestic water use is the same for permanent rural residents as it is for residents within the CCSD service area. Per capita water use by migrant field workers was assumed to be one-third that of permanent rural residents.

Overview of Budgets

In 1988–89, the creek was the largest source of inflow to the Santa Rosa and the San Simeon Basins, followed by subsurface inflow and rainfall recharge. Rainfall recharge would be significantly larger in a year with above-average rainfall, but there would be a corresponding decrease in seepage from the creek. In both basins, net pumpage was the largest outflow; net agricultural pumpage was about twice as large as net municipal and rural nonagricultural pumpage. However, these lumped, basinwide budgets mask significant differences in the distribution and quality of return flow from municipal and agricultural uses. Most irrigation-return flow occurs in the middle or upstream parts of the valleys and contributes to the supply for agricultural and municipal wells farther down the valley. Treated municipal wastewater is returned to the basins at only one location, the CCSD sprayfield. Water-quality regulations prohibit direct use of the recharged wastewater for potable purposes, and reuse for irrigation is limited by the downstream location of the sprayfield.

There are several differences between the water budgets for the two basins. Net municipal pumpage is larger in the Santa Rosa Basin even though gross municipal pumpage is smaller because all treated wastewater is returned to the San Simeon Basin. Ground-water inflow is relatively large in the Santa Rosa Basin because areas of tributary ground-water inflow along the sides of the basin are much larger. Ground-water outflow to the ocean is a much larger percentage of total outflow in the San Simeon Basin than in the Santa Rosa Basin where ground water tends to reach the ocean by the creek instead. This tendency also partly explains why net creek seepage is a smaller percentage of total inflow in the Santa Rosa Basin than in the San Simeon Basin (48 percent compared with 73 percent).

The nonzero net storage change does not imply that there is a significant or long-term imbalance between inflow and outflow. Both basins were virtually full at the beginning and end of the budget period. The small net storage change simply reflects slight differences in streamflow, rainfall, and cropping patterns between the first and last months of the budget period. Similarly, the mass-balance error is an artifact of the precision specified for solving the equations in the models. It is negligible in both basins.

The budgets for 1988–89 reflect dry climate and streamflow conditions. Ground-water budgets and model simulations were not done for periods of average or wet climatic conditions. However, the response of the system to wetter conditions can be inferred from sensitivity analyses of the models and the configuration of head-dependent boundaries.

If ground-water levels fully recover in winter—which happens in all but extremely dry years—additional recharge from deep percolation, flow losses, or subsurface inflow is largely rejected and simply contributes to increased streamflow to the ocean. Additional rainfall in summer and autumn could significantly decrease agricultural pumpage but would have little effect on municipal pumpage. Increasing the rate and, more importantly, the duration of streamflow in summer would greatly decrease dry-season water-level declines by providing a large source of recharge to offset ground-water pumping.

DIGITAL SIMULATION OF HYDROLOGIC SYSTEM

Digital models were developed to provide an integrated analysis of ground- and surface-water flow

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in the Santa Rosa and the San Simeon Basins. Separate models were developed for each basin. The models accounted for spatial variations in aquifer characteristics and interactions among inflows, outflows, and water levels. They also provided a means to estimate flows and basin characteristics for which direct measurements were inaccurate or unavailable. The models were calibrated to simulate accurately the hydrologic systems under present-day conditions. They were then used to simulate the effects of hypothetical streamflow and pumping conditions.

The digital models are mathematical representations of the conceptualized hydrologic system and are not as detailed or complex as the real system. The accuracy and precision of model results are limited by the validity and accuracy of the assumptions and data used in the model.

Model Design

Ground-water flow in the basin-fill deposits was simulated using a three-dimensional finite-element model (FEMFLOW3D) developed by Durbin and Bond (1998). The model code simulates a linearized three-dimensional free-surface ground-water system with a fixed grid. A complete description of the background, the mathematical basis, and the structure of FEMFLOW3D is presented in Durbin and Bond (1998).

The model code was applied to the Santa Rosa and the San Simeon Basins by preparing separate sets of input data for each basin. Plan views of the model grids are shown in figure 23. The Santa Rosa model has 910 nodes and 678 triangular prismatic elements. The San Simeon model has 768 nodes and 595 triangular prismatic elements. Small node spacings were chosen to achieve a high level of spatial resolution in simulated results, particularly between the creeks and nearby wells.

Values of hydraulic conductivity (K) and storage coefficient (S) are assigned to each element. An algorithm presented by Glover (1988) is used to include horizontal anisotropy of K. In these models, anisotropy is the ratio of K perpendicular to the major valley axis to K parallel to the major valley axis.

Transmissivity is adjusted according to the saturated thickness of the aquifer in each time step, which is consistent with unconfined conditions. For comparison, several simulations were done assuming confined conditions (constant saturated thickness). Results were better using the unconfined assumption, which is consistent with the absence of extensive confining layers in most parts of the basins. Measured and calibrated storage coefficients also indicated that conditions are unconfined or only slightly confined.

Onshore boundaries of the basins are represented in the models as no-flow or specified-flow boundaries. The ocean boundary coincides with the coastline in both basins and is represented as a head-dependent flow boundary. Seawater is assumed to have the same density as freshwater, and the boundary head is equal to sea level. For comparison, simulations also were done with a static saltwater wedge acting as a no-flow boundary.

Some flows into and out of the ground-water basins are not influenced by ground-water levels. These include pumpage and recharge from rainfall and irrigation-return flow. These flows are calculated prior to each simulation and are included in the model as specified flows at appropriate nodes (fig. 18, table 6). The timing of agricultural pumpage, irrigation-return flow, and rainfall recharge is determined by the soil-moisture budget algorithm.

Ground-water inflow also is assumed to be independent of ground-water levels in the basins. Although this is not strictly true, the permeability of bedrock is small enough that inflow probably changes slowly in response to water-level fluctuations in the basins. Also, those fluctuations are small compared to the total gradient from the hilltops to the valleys. Furthermore, seasonal fluctuations in recharge on adjacent hillsides are diminished as the recharge water percolates slowly toward the basin. However, inflow from bedrock probably decreases during several consecutive dry years. In early 1991 after 4 consecutive years of below-average rainfall, three springs along the Santa Rosa Creek valley went dry and flow in three others was less than one-half of normal (Scooter Rhoades, local resident, oral commun., 1991). For simulations of 1 to 2 years the assumption of constant inflow from bedrock is reasonable. In the 1988–89 simulation, inflow from each drainage area was distributed along the boundary of the ground-water basin so that inflow was concentrated at the node closest to the point where the surface-water drainage entered the valley floor (fig. 19).

Other flows into and out of the ground-water basins are influenced by ground-water levels. These head-dependent flows include ground-water flow to

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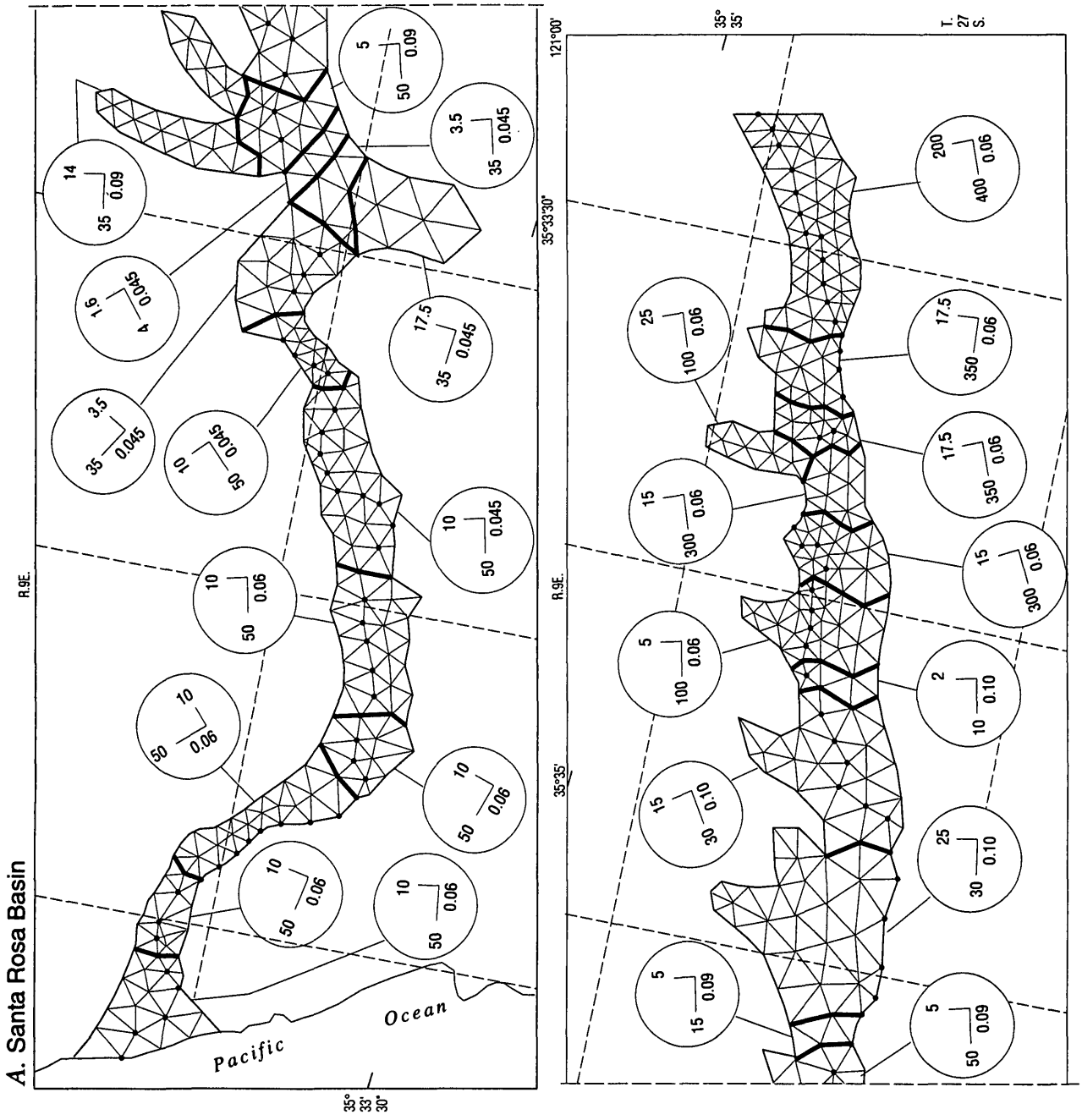

Figure 23. Nodal grids and zones of uniform hydraulic characteristics for the ground-water-flow models of the Santa Rosa and the San Simeon ground-water basins, San Luis Obispo County, California.

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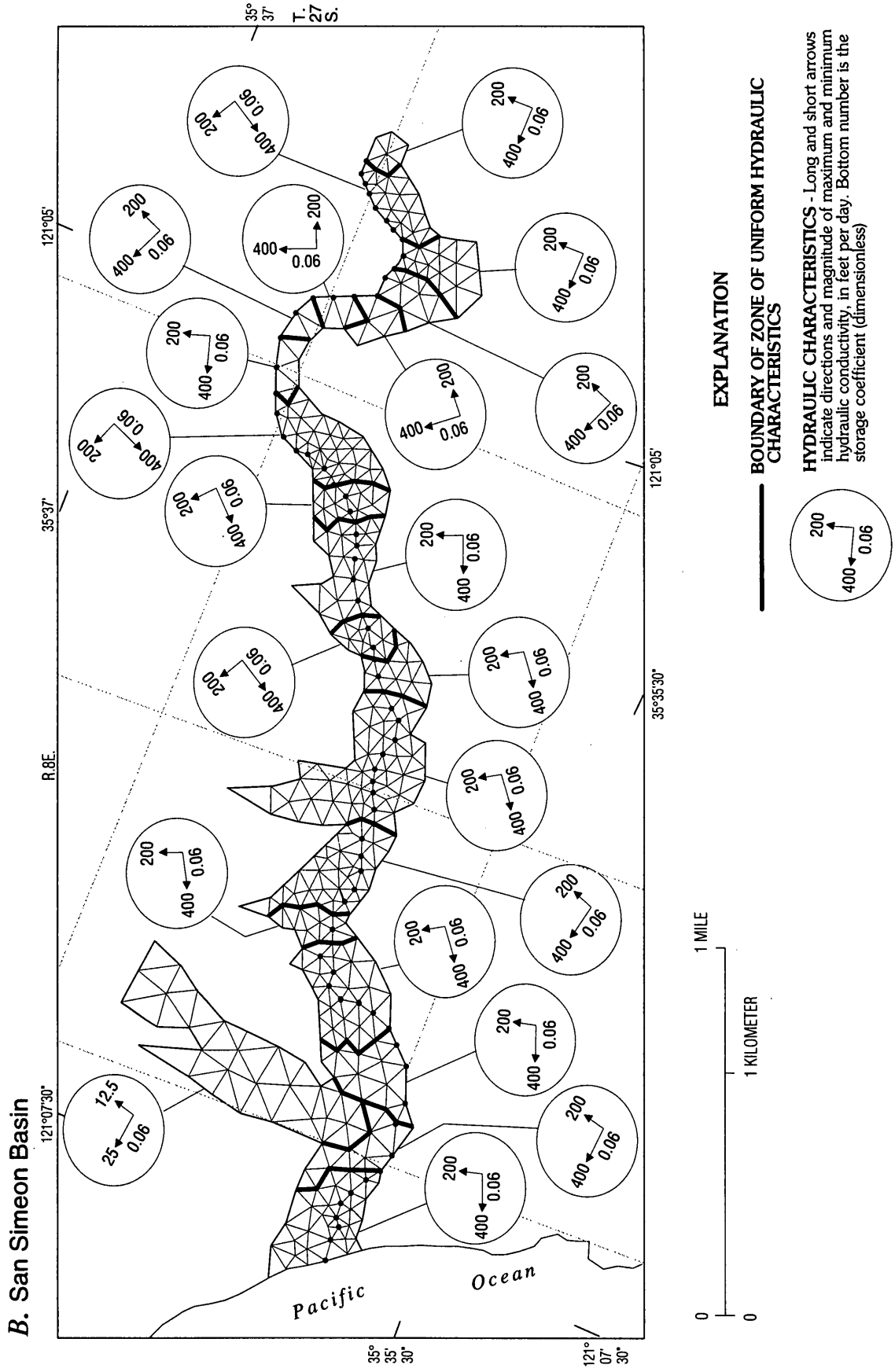

Figure 23. Nodal grids and zones of uniform hydraulic characteristics for the ground-water-flow models of the Santa Rosa and the San Simeon ground-water basins, San Luis Obispo County, California—Continued.

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and from the creeks, transpiration by phreatophytes, and flow across the ocean boundary.

Seepage to and from the creeks is calculated as a linear function of streambed leakance, wetted area, and the difference in water level between the stream surface and nearby ground water. Streambed leakance is the vertical hydraulic conductivity of the streambed divided by a length term that theoretically represents the distance from the streambed to the point where ground-water level is measured. Calibrated leakances range from 0.5 to 0.7 per day in the Santa Rosa model and are 0.7 per day in the San Simeon model.

The altitude of the stream surface in each reach in each model time step is obtained by adding stream stage to the thalweg altitude. Stream stage and width are calculated from streamflow using power functions fitted to rating curves for stream-gaging stations in the study area. The functions are

$$S = 0.1471 Q^{0.5136} \quad (1)$$

where

S is stream stage, in feet; and
Q is stream discharge, in cubic feet per second;

$$W = \begin{cases} 7.25\ Q^{0.3934}, \text{ if } h_s > h_{gw} \\ 7.25\ Q_{gw}{}^{0.3934}, \text{ if } h_s < h_{gw} \end{cases} \quad (2)$$

where

W is wetted perimeter, in feet;
h_s is the altitude of the stream surface, in feet;
h_{gw} is the altitude of the ground-water level next to the creek, in feet; and
Q_{gw} is the stream discharge, in cubic per second, that would occur if h_s were equal to h_{gw}.

Streamflow entering the upper ends of the basin areas is routed reach-by-reach in a downstream direction. Each reach is associated with a particular model node, resulting in a total of 106 reaches in the Santa Rosa model and 82 reaches in the San Simeon model. Inflow to each reach equals outflow from the preceding reach, and stream stage and seepage are calculated from local streamflow and ground-water levels. In this way, mass balance is presented for streamflow and ground water.

Transpiration of ground water by phreatophytes is calculated for areas of riparian vegetation, which cover about 129 acres in the Santa Rosa Basin and 71 acres in the San Simeon Basin (fig. 18, table 6). The transpiration rate is adjusted according to the depth of the simulated water table at nodes in those areas, decreasing linearly from a maximum rate equal to residual ET_0 when the water table is at land surface to zero when the water table is at a depth of 18 ft or more. Residual ET_0 is the amount of evaporative demand that cannot be supplied by soil moisture and was calculated using the soil-moisture budget algorithm described earlier for field soils. Residual ET_0 varies by month and land-use zone. Water-table altitude varies for each model node and time step, and the extinction depth of 18 ft is constant for all nodes in all time steps.

Flow across the ocean boundary is assumed to be possible in both directions, depending on whether water levels at nodes along the coastline are above or below sea level. The rate of flow is regulated by a conductance value assigned to each boundary node. Conductance equals a leakance term multiplied by the cross-sectional area of flow. The leakance term includes a hypothetical length representing the effective distance from the coastline to the point where the aquifer crops out on the ocean floor. Because this distance is highly speculative, boundary conductances were selected primarily on the basis of model calibration.

Model Calibration

The models were calibrated by adjusting selected input variables until simulated water levels and streamflow matched measured values. Calibration provides a means of estimating variables that are difficult to measure directly, such as streambed leakances and aquifer storage coefficients. It also offers a means of checking the accuracy of prior estimates of other input variables, and it ensures that the estimates for all variables are mutually consistent. Calibration and sensitivity analysis also indicate the variables to which model results are most sensitive. In sensitivity analysis, variables are systematically adjusted within their ranges of uncertainty to determine the relative contribution of individual variables to overall model uncertainty.

The principal period used for model calibration was from April 1988 through March 1989. Simulations were transient, with time steps ranging from 1 day during the first week of winter streamflow to 1 month during the summer dry season. Initial water levels

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equaled measured water levels at the beginning of April 1988. Steady-state simulations were used to estimate water levels in areas for which measured data were not available.

Model results were compared with 548 water-level measurements at 32 wells in the Santa Rosa Basin and 396 water-level measurements at 21 wells in the San Simeon Basin. Simulated seepage gains and losses along the creeks were compared with gaged flows for 2 downstream locations and with 66 manual flow measurements for 9 other locations.

Additional simulations for January 1976 through March 1977 were done using measured rainfall, streamflow, and municipal pumpage and estimated agricultural pumpage. Soil-moisture budgets and areal recharge were recalculated to reflect the smaller quantity of irrigated area at that time. These simulations were used to verify that model variables calibrated for 1988–89 would correctly simulate the incomplete recovery of ground-water levels during the winter of 1977.

Generally, the San Simeon model proved easier to calibrate than the Santa Rosa model because of the greater variability of aquifer characteristics and the observed emergence of summer streamflow in the Santa Rosa Basin. Abrupt discontinuities in hydraulic conductivity were necessary to simulate subsurface-flow obstructions, and a large degree of anisotropy was necessary to simulate large transverse water-level gradients at some locations in the Santa Rosa Basin. In contrast, the San Simeon Basin was accurately simulated with a nearly homogeneous distribution of aquifer characteristics and only a small degree of anisotropy. Simulating the emergence of ground water into Santa Rosa Creek during the dry season was difficult because it creates two avenues of downvalley water movement. These avenues interact in a complex manner and had to be correctly balanced to achieve an acceptable calibration.

The distributions of calibrated hydraulic conductivity and storage coefficient are shown in figure 23. The calibrated values of K parallel to the valley axis are within the range of measured values. The calibrated value for most of the San Simeon Basin (400 ft/d) is higher than most of the measured values. Possible reasons for the discrepancy are that measured values represent an average of K along the longitudinal and transverse axes of the valley or that drawdowns inside pumping wells increased at a different rate than in the adjacent aquifer because of partially clogged well screens. Like the measured values, calibrated values of K are more variable in the Santa Rosa Basin than in the San Simeon Basin.

Model calibration indicated that K is anisotropic in most areas although to different degrees. This is consistent with the results of the drawdown and streamflow-response tests and with the anisotropic continuity of individual layers in the basin fill. Conceptually, the basin fill probably consists of braided strands of highly permeable channel deposits preferentially oriented parallel to the valley axis and embedded in fine-grained, less permeable overbank deposits. High yields result where wells happen to penetrate one of the permeable strands. The exact location and extent of the permeable strands cannot be detected accurately from the land surface. Thus, for practical purposes, the basin fill functions as a locally homogeneous but anisotropic porous medium.

Calibrated storage coefficients are 0.06 throughout the San Simeon Basin and range from 0.045 to 0.10 in the Santa Rosa Basin (fig. 23). These values are larger than those obtained from drawdown tests (table 1) and are at the low end of the range commonly found in unconfined aquifers (Freeze and Cherry, 1979). The smallest calibrated storage coefficients are between the high school and the State Highway 1 bridge in the Santa Rosa Basin, which is the area most likely to have an extensive confining layer. The difference between the measured and calibrated S values probably results from delayed-yield storage effects.

Delayed-yield storage effects have been observed in other stream-dominated ground-water systems (Loeltz and Leake, 1983; Yates, 1988). These effects become evident when a larger storage coefficient is needed to simulate long-term storage changes than to simulate short-term ones. Delayed yield probably results from gradual movement of water into and out of fine-grained strata and from vertical movement of water between aquifer layers and the perforated interval of the well casing. Calibrated storage coefficients are larger than the ones calculated from drawdown tests because the models simulate storage responses for periods of days to years, whereas the drawdown tests measured storage responses for periods of minutes to hours. By providing additional water to wells during extended dry periods, delayed yield potentially could be a significant source of water in the Cambria area. However, model results indicate that the additional quantity of water is small for time

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intervals between 1 week and as much as 1 year. The single set of calibrated storage coefficients adequately simulated the rapid water-level recovery following the onset of winter streamflow and the gradual water-level decline during the 7-month dry season.

Model Results

Water Levels

Hydrographs of simulated water levels for January 1988 through March 1989 are shown with the measured water levels presented earlier (fig. 6). Measured and simulated water levels are for nonpumping conditions, when the well pump has been off for at least several hours.

With several exceptions, the models were able to closely simulate measured water levels. One exception was water levels in well 27S/8E-8R2, which were anomalously high compared with the regional trends indicated by nearby wells. Simulated water levels were still too low when reasonable local variations in hydraulic conductivity and recharge were introduced into the model. Whatever the reason for the anomaly, water levels in the well clearly are not representative of regional conditions, which the model otherwise simulates well. A second exception occurs at a few scattered wells (for example, 27S/8E-10A1 and 26D1), where simulated water levels declined too rapidly at the beginning of the dry season (fig. 6). Finally, simulated water levels at some irrigation wells (for example, 27S/8E-24N2 and 27S/9E-19M3) are irregular in summer. This is an artifact of the process of converting periods of irrigation (calculated on a daily basis) into average monthly pumping rates.

The difference between simulated and measured water levels in the Santa Rosa Creek Basin ranged from -28.6 to 19.9 ft. The median difference for 548 measurements was 0.6 ft; 84 percent of the differences were less than 5 ft. In the San Simeon Creek Basin, differences ranged from -6.0 to 9.0 ft, with a median value of 0.02 ft. For 396 measurements, 83 percent of the differences were less than 2 ft. The absolute value of the mean error was less than 0.3 ft for both basins, which further indicates that simulated water levels are not biased. The accuracy of the model results is good, considering that seasonal water-level fluctuations exceed 30 ft in some locations and that basinwide variation in water levels ranges from -12 to 210 ft.

Flows

Seepage to and from creeks, phreatophyte transpiration, and ground-water flow to the ocean are head-dependent flows that are calculated by the model. The annual quantities of each of these flows during the calibration period were presented earlier in the section "Water Budgets" (see table 4).

The model calculated seepage losses of 91 and 150 acre-ft from Santa Rosa and San Simeon Creeks, respectively, on December 22, 1988, the first day of substantial streamflow in the winter runoff season. These losses correspond to daily average rates of 46 and 76 ft^3/s, respectively, and were the highest rates of the season.

Net seepage loss during the first week of streamflow was 300 and 410 acre-ft for the Santa Rosa and the San Simeon Basins, respectively. The amounts are 82 and 95 percent of estimated ground-water storage increase during that period in the respective basins. These large percentages are consistent with measured water levels. At almost all wells, a large, rapid water-level recovery began abruptly on the first day of streamflow and ceased when the water level reached the approximate altitude of the water surface in the creek. Seepage from the creek is the only plausible source of recharge for this recovery pattern. In terms of surface flow in the creeks, the loss rates are consistent with observed flow losses described earlier in the section "Gains and Losses Within the Ground-Water Basins." These data indicate that the model simulates stream-aquifer interactions reasonably well.

In the Santa Rosa Basin, the model correctly simulated gaining flow during the dry season for three locations. In June 1988, a simulated flow of 0.26 ft^3/s emerged into the creek near well 27S/9E-19H2. Influent seepage of about the same amount emerged into the creek at the narrows upstream of the high school, and a flow of about 0.03 ft^3/s emerged into the creek in the lower part of the basin where the valley becomes narrow upstream of the Windsor Boulevard bridge. Flow gains have been observed at all of these locations. In June, simulated flow was continuous between the upper two locations, which also is consistent with field observations. By August, simulated gains ceased at the lowermost location, and a short dry reach had formed above the middle location. The rate of emerging flow gradually decreased at the upper location to 0.07 ft^3/s in early December 1988.

In the San Simeon Basin, seepage into the creek during the dry season was limited to the reach between

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the wastewater sprayfield and the ocean, which is consistent with field observations.

About 78 percent of transpiration by phreatophytes was during May through September. Transpiration rates were low in other months because of low residual ET_0 demand in winter and spring and low ground-water levels in autumn at some locations. Transpiration constituted 15 percent of net outflow from the Santa Rosa Basin and 4 percent of net outflow from the San Simeon Basin. Measurements of phreatophyte transpiration are not available to compare with simulated transpiration.

The rate of subsurface outflow to the ocean varied by a factor of only about 2 during the calibration period. Rates were high in late winter when water levels were highest, and rates were low in late autumn. Subsurface outflow was 60 acre-ft (table 4), or about 6 percent of annual net outflow from the Santa Rosa Basin. Subsurface outflow was 320 acre-ft (table 4), or about 43 percent of annual net outflow in the San Simeon Basin. The higher absolute and percentage values in the San Simeon Basin resulted from higher hydraulic conductivity of the alluvial deposits and steeper water-level gradients caused by the wastewater sprayfield.

Sensitivity Analysis

Sensitivity analysis is a systematic evaluation of the effect of small changes in individual variables on model results. Model calibration and sensitivity analysis often provide a great deal of insight into the nature of the hydrologic system. Significant hydrologic effects of the main model variables are discussed below. Unless otherwise noted, the response of both models to input variations is similar, and all changes are with respect to the fully calibrated simulations.

The general effect of hydraulic conductivity (K) is to control the downvalley water-level gradient, with smaller values steepening the gradient. At a given location, changes in K tend to shift the water-level hydrograph up or down without significantly altering its shape. An exception is near large pumping wells, where a decrease in K tends to increase slightly the amount of dry-season drawdown by localizing the cone of depression. Because K is a factor of transmissivity (T) and hence diffusivity (T/S), decreases in K tend to retard the rate of water-level recovery following the onset of winter streamflow.

The only noticeable effect of mild anisotropy (ratio of transverse to axial K between 1.0 and 0.1) is to slow the rate of recovery following the onset of streamflow. More extreme anisotropy (ratio less than 0.1) tends to create noticeable transverse water-level gradients by rising water levels along the sides of the basin throughout the year. A value of 0.05 was needed near well 27S/9E-20E1 in the Santa Rosa Basin to simulate the 8-foot difference in winter water levels between the well and the creek, which is only 225 ft away. Simulation results generally are better when the direction of anisotropy is aligned with the valley axis rather than the local orientation of the creek channel. Finally, by decreasing the overall K near a pumping well, anisotropy tends to increase slightly the amount of dry-season drawdown near large wells.

Storage coefficients strongly affect the magnitude of dry-season water-level declines and the rate of water-level recovery in winter. However, they have no effect on the level to which water levels recover. For example, an increase in S from 0.09 to 0.12 throughout the area upstream of well 27S/8E-24L1 on Santa Rosa Creek decreases the dry-season drawdown by as much as 5 ft. The increase in storage coefficient also increases the persistence of dry-season streamflow downstream of well 27S/9E-19H2 because base flow is supported by a larger volume of stored ground water. These effects constrain the range of calibrated S values. Storage coefficients significantly affect local water supplies because they strongly influence the quantity of ground water available during the dry season.

Streambed leakance strongly affects the rate of seepage between the creek and the ground-water system. Because it affects seepage in both directions, a uniform change in leakance has a relatively small effect on net seepage. For example, decreasing the streambed leakance along Santa Rosa Creek downstream of well 27S/9E-20G3 from 0.5 to 0.3 per day decreases seepage to the creek by 63 acre-ft/yr (10 percent) and decreases seepage from the creek by 57 acre-ft/yr (5 percent). Net seepage from the creek decreases only 6 acre-ft/yr (1 percent).

The effect of streambed leakance on seepage is similar to the effect of diffusivity. A decrease in either variable noticeably retards the rate of water-level recovery following the onset of winter streamflow and makes a more uniform distribution of seepage rates during the first week of recovery. These effects were the primary factors used to calibrate streambed leakance.

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Streambed leakance is important to water-resources management because it potentially could limit the percentage of annual stream discharge captured as ground-water recharge during exceptionally dry years. This possibility was investigated using simulations of the 1976–77 drought. When calibrated streambed leakances were decreased by a factor of two, all streamflow during the winter of 1977 was still captured as recharge. This indicates that the calibrated values are not so small that they significantly limit seepage during low-flow periods. Consequently, they probably are not a significant source of error in simulations of drought conditions.

The proportion of ground-water outflow to the ocean that occurs as subsurface underflow instead of as seepage into the creek is largely determined by the balance between streambed leakances and the ocean boundary conductance. Associated changes in water levels and streamflow are too small to allow accurate estimation of the proportion. For example, coastal water levels tend to remain in a narrow range between sea level and the creek thalweg (except, perhaps, if leakances or boundary conductance is very small). Likewise, if all subsurface outflows in the calibrated models were forced into the creeks by decreasing the ocean boundary conductance, streamflow at the coast would increase by an annual average of only 0.08 ft^3/s in Santa Rosa Creek and 0.44 ft^3/s in San Simeon Creek. These increases amount to small changes in streamflow and would be nearly undetectable.

Conductance of the ocean boundary is important to water-resources management because it strongly influences the potential for seawater intrusion. If the conductance is large, high rates of intrusion will occur when ground-water levels near the coast decline below sea level. If the conductance is small, coastal water levels could be drawn down below sea level without incurring large quantities of seawater intrusion. In effect, a low boundary conductance creates a one-way outlet valve for fresh ground water. Ground water can still discharge to the ocean through the creek, but the ocean cannot flow up the creek to intrude the basin.

The effect of a saltwater-freshwater interface near the coast was tested by including a stationary saltwater wedge at the base of the San Simeon Basin near the coast. The wedge was assumed to form a no-flow boundary of the fresh ground-water system. The top of the wedge decreased from a depth of 30 ft at the coastline to a depth of 130 ft near well 27S/8E-9N2, where the wedge was assumed to pinch out against bedrock. The effect of the wedge was to shunt 15 acre-ft/yr (6 percent) of subsurface outflow into the creek. Water levels near the coast were higher by less than 2 ft. These small changes indicate that model results are not strongly affected by the omission of the effects of density difference(s) between the ground water and the seawater.

Irrigation efficiency has almost no effect on the model because it affects pumpage and return flow by equal amounts. A change in irrigation efficiency changes the rate of local cycling of water between the aquifer and field soils. This cycling occurs predominantly in the vertical direction and consequently is not considered in a single-layer model. Exceptions occur if an irrigation well is not located near the fields it serves. For example, fields along Van Gordon Creek primarily are served by wells in the CCSD wastewater sprayfield. Irrigation-return flow exceeds pumpage in the immediate vicinity of the fields, which contributes significantly to the relatively steep water-level gradients from that area southward toward the main part of the San Simeon Basin.

Potential evapotranspiration (ET_0) has indirect and direct effects on model results. By affecting the amount of soil moisture used by plants, it indirectly influences the quantity of irrigation, irrigation-return flow, and recharge from rainfall. In terms of quantities and percentages, changes in ET_0 cause greater changes in irrigation than in recharge from deep percolation through soils. For example, a 10-percent change in ET_0 results in a 9- to 18-percent change in irrigation and a 2- to 13-percent change in recharge. The direction of change is the same for all three variables. The change in recharge from deep percolation is relatively small because it consists of recharge from irrigation-return flow and rainfall, which are oppositely affected by a change in ET_0. That is, an increase in ET_0 causes an increase in irrigation-return flow (because of the concomitant increase in pumpage) but a decrease in recharge from rainfall.

By altering crop water demand, changes in ET_0 influence the quantity of irrigation pumpage and recharge in the model and directly affect the rate of transpiration by phreatophytes. The overall effect of a 10-percent decrease in ET_0 year round in the San Simeon model is a decrease in pumpage by 41 acre-ft/yr and a decrease in areal recharge from soils by 15 acre-ft/yr. These decreases result in a net increase in inflow of 26 acre ft/yr. This is largely offset by a decrease in net seepage from the creek (17 acre-ft/yr),

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an increase in subsurface outflow to the ocean (6 acre-ft/yr), and a slight increase in phreatophyte transpiration (1 acre-ft/yr). All these changes are less than 6 percent of the calibrated reference values. The effect on water levels is a decrease in the amount of dry-season decline of 2 ft or less.

The effect of changes in rainfall on model results is strongly influenced by the season in which the change occurs. Increased rainfall during the winter generally increases the quantity of rainfall recharge, but this is almost entirely offset by a decrease in net seepage from the creek. Rain occurring during the irrigation season results in a nearly equal decrease in net irrigation pumpage. However, as long as the creek is still flowing, the decrease in net pumpage simply causes a corresponding decrease in net seepage from the creek. For this reason, rain in autumn, prior to the onset of streamflow, is of particular value in increasing the overall annual water supply.

If the amount of rain falling on the San Simeon Basin during April 1988 through March 1989 had been greater by 331 acre-ft (46 percent), total annual rainfall would have equaled the long-term average. Including this additional rainfall in the soil-moisture budget algorithm (assuming no change in the daily distribution of rainfall) results in an increase in areal recharge of 71 acre-ft/yr and a decrease in gross agricultural pumpage of 28 acre-ft/yr. In the model, this combined increase of 99 acre-ft/yr in net inflow is largely balanced by a decrease in net seepage from the creek (78 acre-ft/yr) and increases in subsurface outflow to the ocean (10 acre-ft/yr) and to storage (9 acre-ft/yr). The percentage change in all these items is considerably less than the percentage change in rainfall. Thus, model results generally are less sensitive to total annual rainfall than to the seasonal distribution of rainfall.

The effects of ground-water inflow from bedrock tend to be masked by larger or more variable inflows and outflows except in late autumn, after most irrigation has ceased and before the creeks have started to flow. Water levels in most wells change only slightly during this period. If inflow from bedrock is increased, simulated water levels recover more rapidly than measured levels. On an annual basis, a change in the assumed rate of inflow generally results in an equal and opposite change in the simulated quantity of stream recharge.

Inflow from bedrock is important to water-resources management because it is a more reliable source of water supply than recharge from streamflow or rainfall on the valley floor. The latter sources of recharge can decrease to zero as a result of even a single extremely dry year. In contrast, inflow from bedrock decreases gradually over a period of several years during a prolonged drought.

The assumption that inflow from bedrock is at a constant rate year-round was tested by trying an alternative simulation in which the rate varied seasonally. The rate was assumed to equal the calibrated rate in November and December and twice that rate in April and May with gradual transitions in between. This distribution is an attenuated and slightly delayed replication of the rainfall distribution. The additional ground-water inflow is 73 acre-ft/yr and is largely (81 percent) offset by a decrease in net seepage from the creek. The effect on water levels is a slight decrease in dry-season decline throughout the basin. The assumption of constant ground-water inflow has minimal implications for water-resources management because any seasonal variations would probably add inflow during the streamflow season when water is already abundant.

Initial water levels at the beginning of model simulations have little effect on model results because they adjust rapidly to the new set of conditions imposed for each simulation. Except at the edges of the valleys, water levels adjust to new stresses within 1 month. In areas of low hydraulic conductivity or a large degree of anisotropy, simulated water levels in wells near the edge of the valley (for example, wells 27S/8E-9M1 and 24J2) can take more than a year to adjust to a new set of conditions. Only the final 12 months of the 15-month calibration simulations were used for comparison. The first 3 months of simulation provided sufficient time for the effects of initial conditions to become negligible.

The models were calibrated assuming unconfined conditions; that is, transmissivity was adjusted in each time step to reflect the current saturated thickness of aquifer sediments. The sensitivity of the model results to this assumption was tested with two simulations in which saturated thickness and transmissivity were held constant. In one simulation, relatively large values of thickness and transmissivity were calculated using high winter water levels. In the second simulation, relatively small values were calculated using low autumn water levels. Storage coefficients were not changed for this test.

The effect of confinement was similar in both basins. Effects are largest where seasonal water-level

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fluctuations are greatest, such as at the upper ends of the basins. When winter transmissivity is used throughout the year, much more water drains downvalley during the dry season. Seasonal water-level declines at the upper ends of the basins increased as much as 12 ft. This additional downvalley drainage caused a 1- to 4-foot decrease in dry-season water-level declines at most wells downstream of well 27S/8E -10G2 in the San Simeon Basin and well 27S/9E-20G3 in the Santa Rosa Basin. There also was a large decrease in seasonal drawdown at the municipal wells in the Santa Rosa Basin (27S/8E-26C5 and 26D1) because transmissivity was much greater in summer and autumn than under unconfined conditions.

When autumn transmissivity is used throughout the year, effects are opposite and slightly smaller. Dry-season water-level declines at the upper ends of the basins decrease by as much as 12 ft and increase by as much as 3 ft farther downstream.

The assumption of constant transmissivity had little effect on the annual water budgets. Winter transmissivity results in increased seepage to and from the creek, but the change in net seepage is an increase of less than 18 acre-ft/yr. Autumn transmissivity results in large decreases in seepage to and from the creek, but the change in net seepage is a decrease of less than 16 acre-ft/yr. Changes in annual net seepage were less than 3 percent in both basins.

The final set of calibrated variables is not necessarily unique. In some cases, the effects of adjusting one variable can be offset by adjusting one or more other variables. For example, the rate of water-level recovery following the onset of winter streamflow is fairly sensitive to K, S, anisotropy, and streambed leakance; all affect the diffusivity of the flow path perpendicular to the creek. At a given well, the effect of greater anisotropy can be offset by a decrease in storage coefficient or an increase in streambed leakance. The hydraulic characteristics of the streambed and the alluvial deposits result from a combination of flow regime and sediment type at the time and the place of deposition. Although the characteristics are somewhat interrelated, local variations in depositional environment result in a range of possible combinations. Other examples of nonunique calibrated values are tradeoffs between streambed leakance and ocean boundary conductance near the coast and between K and S near the upper ends of the basins. In all cases, tradeoffs among variables were limited to a fairly narrow range by the noncompensating effects of the variables in other locations or seasons and by the range of physically plausible values.

Limitations of Model

The accuracy of model results and the suitability of the models for addressing certain hydrologic questions are limited by simplifications and assumptions inherent in model design and by the sensitivity of model results to some input variables. Following are some of the more significant limitations of the models.

1. Vertical movement of ground water is not simulated because the ground-water system is simulated as a single layer.

2. The calibration simulations were for a period of only 15 months. Climatic conditions during the calibration period were drier than normal. The ability of the model to accurately simulate wet conditions or extremely dry conditions has not been tested.

3. The accuracy of simulated water levels near the edges of the valleys is not well defined and probably is less than the accuracy in midvalley areas.

4. The coarseness of the model grids precludes simulation of highly localized water-level variations. In general, this includes variations that generally occur over distances less than the node spacing, which ranges from about 90 to 600 ft in the San Simeon model and from about 150 to 1,200 ft in the Santa Rosa model. This effect is particularly noticeable near the creeks. Where well nodes coincide with stream nodes, simulated water-level recoveries during the December 1988 storm were noticeably more abrupt at wells one or more nodes away from the creek.

5. The models do not simulate the effects of different fluid densities where freshwater meets seawater near the coast. The effects of density differences on water levels and ground-water budgets were small in 1988–89. The accuracy of model results for conditions of seawater intrusion is unknown, nor does the model indicate the position of the interface between seawater and freshwater.

6. The proportion of ground-water discharge to the ocean that occurs as subsurface outflow as opposed to surface outflow might not be accurately simulated because neither water levels nor streamflow is sensitive to the proportion.

7. The models might not accurately simulate local variations in streamflow and seepage because they assume that stream-channel geometry is the same

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in all reaches and that the distribution of streambed leakances is relatively uniform. The models would not be accurate enough to identify critical riffles for fish migration; but generally, they simulate known gaining and losing reaches accurately.

8. The models cannot accurately determine the separate amounts of seepage to and from the creeks because the seepage rates are sensitive to streambed leakance, which is poorly known. However, the simulated amount of net seepage is much more accurate because it is determined largely by the net balance of other inflows and outflows, which are better known.

9. Seepage from the creek to the ground-water system is assumed to be head-dependent even when the water table is far below the thalweg. In reality, an unsaturated zone probably exists beneath the streambed under those circumstances and seepage might not be head-dependent until that zone becomes fully saturated. Errors resulting from the head-dependent assumption are most likely to occur during rapid water-level recovery following the onset of winter streamflow. However, measured recovery rates at wells close to the creek did not exhibit noticeable delays in recovery that could be attributed to the effects of an unsaturated zone. Any errors resulting from the head-dependence assumption were compensated for by the leakance values, which were calibrated to simulate accurately the measured rates of recovery.

10. Simulated amounts of phreatophyte transpiration are only approximate because the model does not include the details of local topography and root depth distribution.

11. Water levels simulated by the models are equivalent to static water levels measured when wells are not pumping. They reflect the general effects of pumping on basinwide water levels but do not accurately indicate the water level in the immediate vicinity of a pumping well or the water level in the well casing. The amount of local drawdown included in the simulated water levels is affected by the coarseness of the model grid with larger node spacing associated with less simulated drawdown.

SIMULATED RESPONSES TO HYDROLOGIC CHANGES

Effects of Agricultural and Municipal Pumpage

The effects of different types of pumpage on water budgets and on water levels in each basin were investigated by selectively eliminating all pumpage or either municipal or agricultural pumpage from the calibration simulation. The simulated water budgets indicated the sources of recharge for each type of pumpage. For the simulation without agricultural pumpage, areal recharge through field soils was recalculated assuming that the fields contained nonirrigated annual grass. For the simulation without municipal pumpage, recharge from reclaimed wastewater at the CCSD wastewater sprayfield was assumed to continue, as if CCSD had simply switched to an imported water supply. Rural domestic and industrial pumpages also were retained in the simulation. The simulation without any pumpage represents predevelopment conditions, and recharge by reclaimed wastewater was omitted. Areal recharge was recalculated assuming the valley floors were covered with deep-rooted native vegetation.

The simulated effects of pumpage on water levels are indicated by the hydrographs shown in figure 24. Four sets of simulated water levels are shown for each of the 16 wells for 1988–89: calibrated water levels (shown for comparison), water levels without agricultural pumpage, water levels without municipal pumpage, and water levels without any pumpage.

The sources of water that supplied each type of pumpage are shown in table 9. The relative magnitude of each source was obtained by comparing water budgets for simulations with and without each type of pumpage. There are consistent patterns in the sources of each type of pumpage. In both basins, a relatively large percentage (43 to 48 percent) of agricultural pumpage was supplied by an increase in areal recharge, about two-thirds of which was from irrigation-return flow and the remainder was from rainfall that percolated to the water table. A slightly smaller percentage (36 to 45 percent) of agricultural pumpage was supplied by an increase in net recharge from the creek. In both basins, 86 percent of municipal pumpage was supplied by increased recharge from the creek. This percentage is much higher than for agricultural

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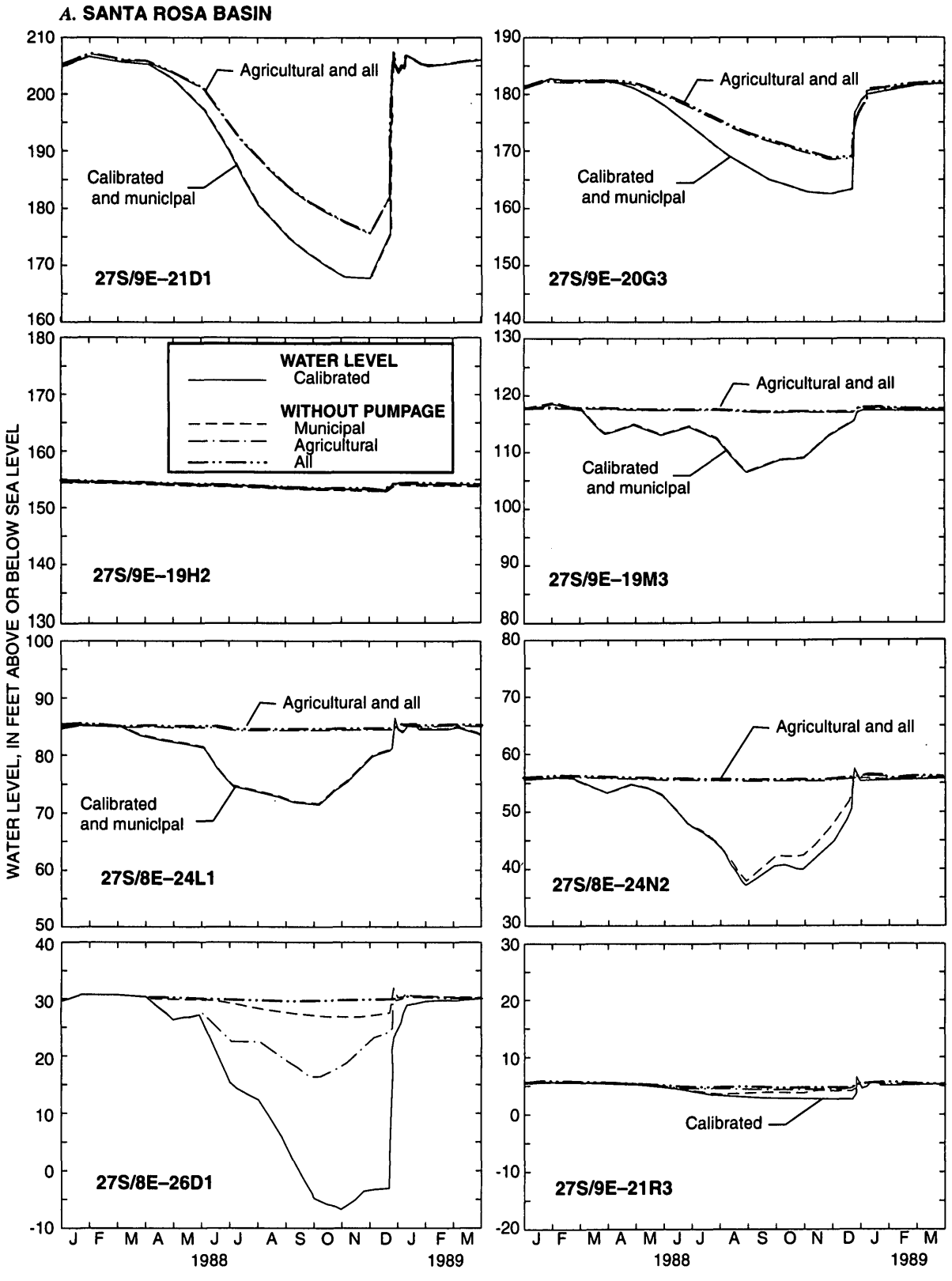

Figure 24. Relative effects of three types of pumpage in (*A*) the Santa Rosa and (*B*) the San Simeon ground-water basins, San Luis Obispo County, California.

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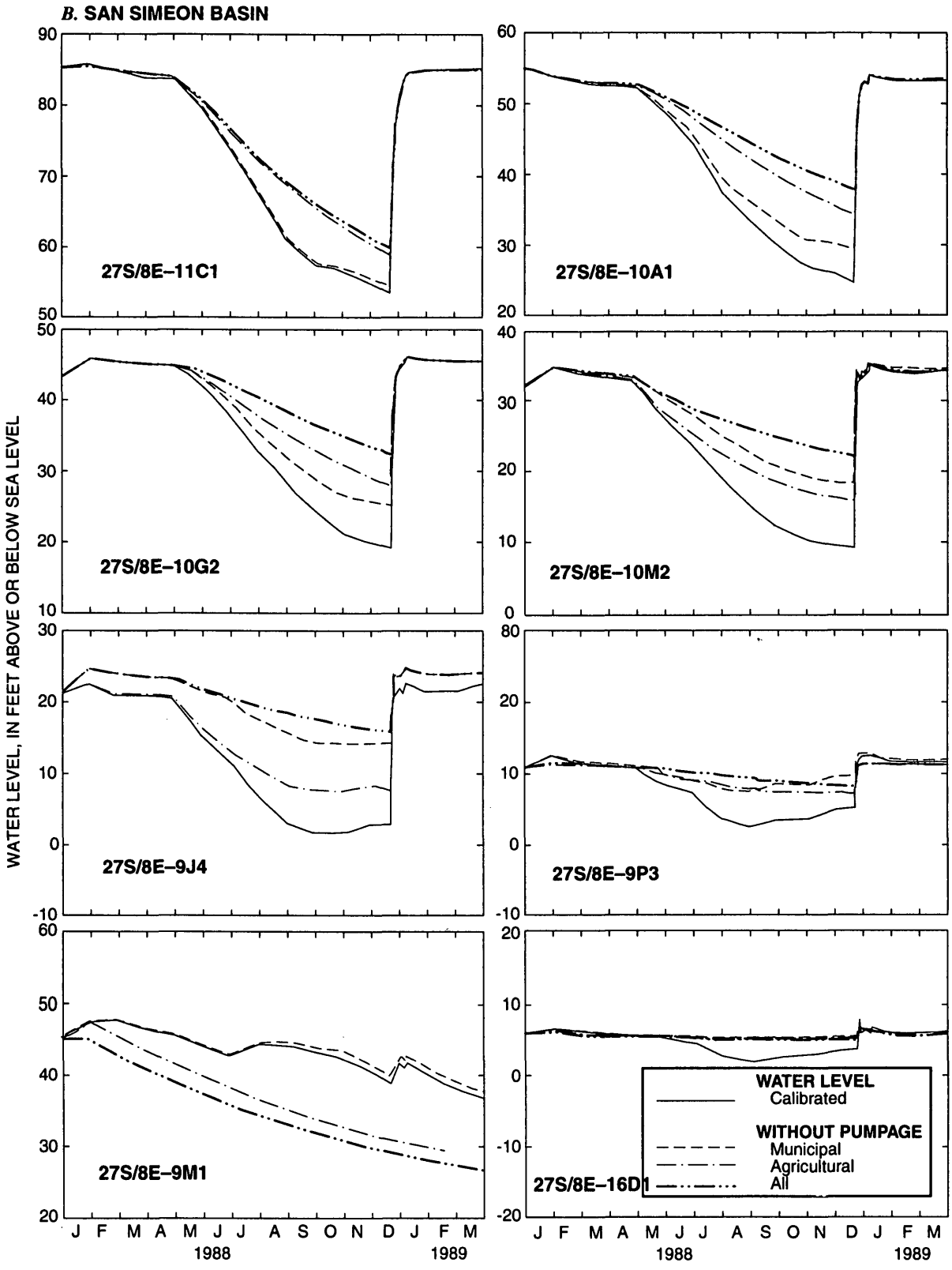

Figure 24. Relative effects of three types of pumpage in (*A*) the Santa Rosa and (*B*) the San Simeon ground-water basins, San Luis Obispo County, California—Continued.

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pumpage because the simulations did not count recharge from the CCSD wastewater sprayfield as a source of municipal pumpage. Although sprayfield recharge does offset the effects of municipal pumpage in the context of basinwide ground-water budgets, health regulations prohibit its use as a significant percentage of recharge for municipal pumpage.

Decreased ground-water outflow to the ocean supplied a relatively small percentage (1 to 3 percent) of all types of pumpage in the Santa Rosa Basin. The percentage was slightly greater (5 to 19 percent) in the San Simeon Basin because a larger percentage of ground-water outflow in that basin occurred as subsurface outflow rather than as seepage into the creek.

Decreases in phreatophyte transpiration supplied a larger percentage of pumpage in the Santa Rosa Basin than in the San Simeon Basin because of the larger area of phreatophytic vegetation. In all cases, however, this source of water supplied less than 12 percent of pumpage (table 9).

The amount of dry-season water-level decline caused by agricultural pumpage in the Santa Rosa Basin (in addition to drawdown from natural downvalley drainage) decreased from about 10 ft near well 27S/9E-21D1 to less than 2 ft at the subsurface flow obstruction near well 27S/9E-19H2. It increased again downstream to about 15 ft at well 27S/8E-24L1. Agricultural pumpage caused as much as 25 ft of dry-season water-level decline downstream of the high school even though there was little agricultural pumpage in that area. This drawdown resulted because agricultural pumpage in the upstream areas intercepted ground water that would have flowed downvalley. Most of this downvalley flow would have occurred as streamflow. In the simulation without agricultural pumpage, the trickle of base flow that emerges near well 27S/9E-19H2 flowed continuously to the ocean in all months except October when a short reach near well 27S/8E-27H1 went dry. In the calibration simulation, base flow was much smaller and the creek was dry between the high school and State Highway 1 from July through mid-December.

Agricultural pumpage caused as much as 10 ft of dry-season water-level decline in the San Simeon Basin. This amount decreased downstream from a maximum of 10 ft near well 27S/8E-10A1 to about 6 ft in the CCSD well field (27S/8E-9J4) and about 3 ft near the coast (27S/8E-16D1). Agricultural water use tends to elevate water levels in the Van Gordon Creek area (27S/8E-9M1), where irrigation water is supplied by off-site wells in the CCSD sprayfield. Agricultural pumpage did not significantly affect water levels in winter.

Municipal pumpage in the Santa Rosa Basin had no effect on water levels upstream of well 27S/8E -24L1, but contributed a maximum of about 33 ft of dry-season water-level decline near well 27S/8E-26D1. The drawdown decreased upstream to about 2 ft at well

Table 9. Quantities and sources of three types of ground-water pumpage in the Santa Rosa and the San Simeon ground-water basins, San Luis Obispo County, California, April 1988 through March 1989

Item	Santa Rosa Basin			San Simeon Basin		
	Municipal	Agricultural	All	Municipal	Agricultural	All
Pumpage (acre-feet)	254	893	1,159	556	451	1,013
Source (percent)[1]						
Increase in areal recharge	0	48	41	0	43	23
Increase in net recharge from creek	86	45	53	86	36	25
Decrease in recharge from reclaimed water	0	0	0	0	0	45
Decrease in outflow to ocean	3	1	1	12	19	5
Decrease in phreatophyte transpiration	11	6	5	2	2	2

[1]Source of given type of pumpage is indicated by the change in water budget with respect to a simulation without that pumpage.

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27S/8E-24N2 and decreased downstream to about 2 ft at well 27S/8E-21R3.

Municipal pumpage decreased dry-season water levels throughout the San Simeon Basin by quantities ranging from 1 ft at the upper end of the valley (27S/8E-11C1) to 7 ft in the CCSD well field (27S/8E -9J4). Unlike agricultural pumpage, municipal pumpage also affected winter water levels, at least in the well field. Municipal pumping rates that remained high in winter prevented ground-water levels from recovering completely. The water levels remained about 3 ft below the level of the creek throughout the winter of 1989.

A significant amount of dry-season water-level decline is not the result of pumpage but of natural drainage processes. Winter water levels at the upper ends of the valleys cannot be maintained without continued recharge from the creeks. As soon as the creeks dry up in summer, ground water in those areas drains downvalley. In the simulation with no pumpage, these natural dry-season water-level declines were between 21 and 25 ft, or about 75 percent as large as the declines that occurred with pumping in 1988 (fig. 24). In the Santa Rosa Basin, much of the water draining out of the upper end of the valley seeped into the creek and became available to offset dry-season declines in downvalley areas. Consequently, there was almost no dry-season water-level decline under predevelopment conditions downstream of about well 27S/9E-19H2. In the San Simeon Basin, there were natural dry-season water-level declines throughout the valley because water moved downvalley only as subsurface flow.

Occurrence and Effects of Drought

The water supply for the Cambria area is vulnerable to drought because the ground-water basins provide the only supply of water during the dry season and because ground-water storage capacity is small relative to the demand for water. The amount of usable ground-water storage capacity above sea level is about 3,800 acre-ft in the Santa Rosa Basin and 1,000 acre-ft in the San Simeon Basin. Total annual pumpage during 1988–89 was about 30 and 101 percent of the storage capacity in the two basins, respectively. Data for Pico Creek (Cleath, 1986) indicate that total annual pumpage was about 230 percent of storage.

For the purpose of water-supply evaluation, droughts were grouped into three categories: (1) a long dry season between two winters in which the basins are completely recharged, (2) a single winter during which the basins are not fully recharged, and (3) two or more successive winters of incomplete recharge.

Single Long Dry Season

In most years, the creeks stop flowing in summer. When flow stops, the quantity of water available until the following winter is limited to the quantity of ground water stored in the basins plus a slow but steady inflow of ground water from bedrock. The quantity of water in storage at the beginning of the dry season usually is about the same each year, but the length of the dry season is quite variable. If the dry season were exceptionally long and pumping continued unabated, wells could go dry or subsidence or seawater intrusion could occur before recharge begins the following winter. Partly for these reasons, there are legal limitations on annual and seasonal quantities of municipal pumpage for both basins.

The frequency distribution of the duration of the summer dry season was estimated from streamflow records for Santa Rosa Creek near Cambria and San Simeon Creek at Palmer Flats. A persistent trickle of summer base flow in Santa Rosa Creek resulted in a non-normal distribution of dry-season duration. This trickle, which is relatively insignificant from a water-supply standpoint, was omitted from the analysis by counting days in which streamflow was less than 0.5 ft^3/s as days of no flow. The resulting frequency distribution for 1959–89 could be adequately approximated by a normal distribution with a mean of 146 days and a standard deviation of 69 days. Normality was tested using the probability plot correlation coefficient test (Looney and Gulledge, 1985). The probability distribution indicated that the 100-year maximum dry-season duration (that is, the maximum dry-season duration likely to occur once in 100 years) is 307 days. For comparison, the longest dry season in the streamflow record for Santa Rosa Creek (289 days in 1977) has an estimated recurrence interval of about 52 years.

Summer base flow is less persistent in San Simeon Creek and was not omitted from the analysis. For the period of streamflow record (1971–89), the average duration of the dry season was normally distributed with a mean of 164 days and a standard deviation of 64 days. The 100-year dry-season duration is 312 days; the longest dry season on record for San Simeon Creek (269 days in 1977) has an estimated recurrence level of about 20 years.

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These estimates almost certainly underestimate the actual mean and 100-year dry-season durations because the periods of record for both stream-gaging stations were wetter than average. This is evident from the cumulative departure diagram for annual rainfall at the San Luis Obispo-Poly station (fig. 13). Average rainfall during the 120-year record was 21.79 in., whereas average rainfall during 1959–89 and 1971–89 was 23.56 and 24.55 in., respectively. Bianchi and Hanna (1988) developed an empirical equation relating the length of the dry season in San Simeon Creek to monthly rainfall in San Luis Obispo. Using 115 years of rainfall data for San Luis Obispo, they estimated that the long-term average duration of the dry season is 200 days, or 36 days longer than the estimate obtained directly from the streamflow data.

The probable duration of the dry season can be estimated as soon as it has begun, allowing water-conservation measures to be implemented if necessary. Figure 25 shows the relation between the duration of the dry season and the date streamflow ceases (or becomes less than 0.5 ft^3/s in the case of Santa Rosa Creek). The relation is not exact because of variability of the date streamflow resumes the following winter. Nevertheless, the relation can give a general indication of probable dry-season duration.

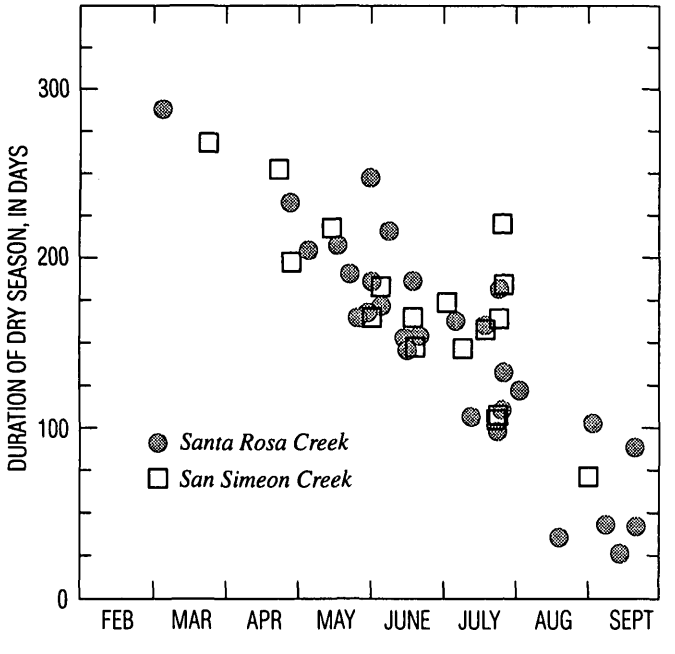

Figure 25. Relation of dry-season duration and date on which streamflow ceases in the Santa Rosa and the San Simeon ground-water basins, San Luis Obispo County, California.

The effect of a prolonged dry season was investigated using the ground-water-flow models. The duration of the summer dry season in the calibrated simulations for 1988–89 was increased to two longer durations by shifting the end of the preceding winter to earlier dates, 1 month at a time. In the Santa Rosa Basin, the duration was increased from 204 to 235 and 266 days, which correspond to estimated recurrence intervals of about 5, 10, and 24 years. In the San Simeon Basin, the duration was increased from 235 to 266 and 296 days, which correspond to estimated recurrence intervals of about 8, 18, and 52 years. Agricultural pumpage was recalculated for the longer dry season using the soil-moisture budget algorithm. Rainfall and ET_0 were adjusted to reflect dry conditions, but cropping patterns and planting dates were left unchanged. Gross pumpage for irrigation increased by about 170 and 43 acre-ft per additional month of dry season in the Santa Rosa and the San Simeon Basins, respectively. This rate of increase became smaller as the dry season became longer because the additional dry days occurred in late winter when the demand for irrigation water was relatively small. Municipal pumpage was assumed to be unaffected by the duration of the dry season because only a small percentage of it is was used for landscape irrigation in late winter.

Figure 26 shows hydrographs for selected wells in the Santa Rosa and the San Simeon Basins for three different dry-season durations. Increasing dry-season duration significantly lowered water levels at the upper ends of the valleys because there was more time for downvalley ground-water flow during the dry season. For example, the minimum water level at well 27S/9E -21D1 decreased about 5 ft for every additional month of dry season. Effects farther down the valley were smaller because the lack of recharge from rainfall and streamflow was partly offset by ground-water flow from farther up the valley. Also, much of the pumping at the lower ends of the valleys is for municipal purposes and does not increase under dry conditions to the extent that agricultural pumping does.

The cumulative dry-season storage deficit increased as the duration of the dry season increased. In the Santa Rosa Basin, the storage deficit increased by about 96 acre-ft for each additional dry-season month. In the San Simeon Basin, the increase was about 28 acre-ft/mo. The percentage increase in storage deficit generally was less than or equal to the percentage increase in dry-season duration.

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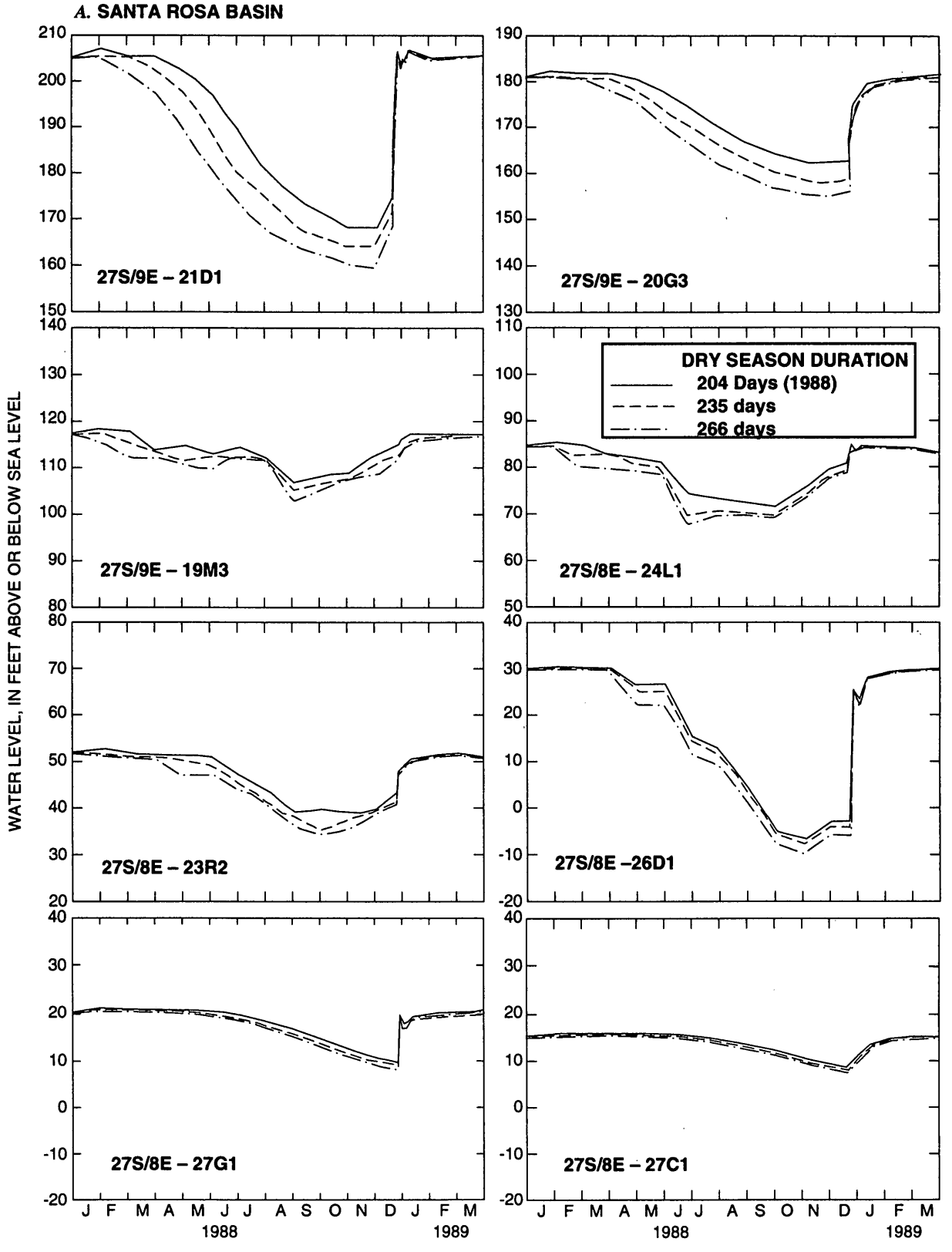

Figure 26. Effects of dry-season duration on simulated ground-water levels for the Santa Rosa and the San Simeon ground-water basins, San Luis Obispo County, California, 1988–89.

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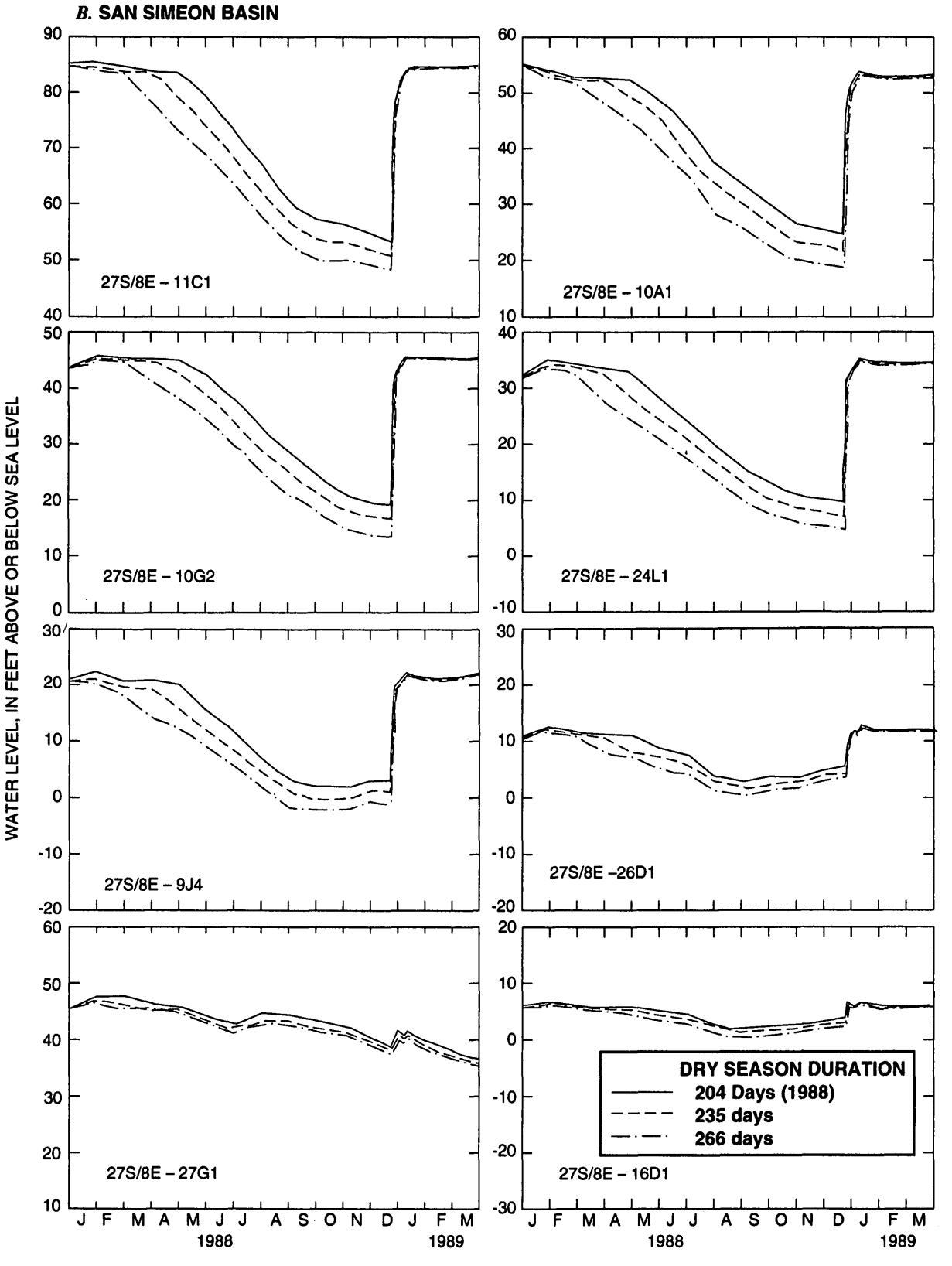

Figure 26. Effects of dry-season duration on simulated ground-water levels for the Santa Rosa and the San Simeon ground-water basins, San Luis Obispo County, California, 1988–89—Continued.

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Dry Wells

Some wells are likely to go dry during a long dry season. Wells at greatest risk of going dry are shallow wells and wells at the upper ends of the valleys. Well 27S/9E-21C1 in the Santa Rosa ground-water basin did go dry in mid-September 1988. Similarly, the pumping water level in irrigation well 27S/8E-11C1 in the San Simeon ground-water basin reached the pump intake in October 1988, forcing the farmer to switch to well 27S/8E-10A3. Simulated water levels are not accurate indicators of potential pumping difficulties because they represent static (nonpumping) water levels. Potential difficulties could be evaluated on a well-by-well basis by using the specific capacity of a given well to convert the static water level to a pumping water level. The pumping water level could then be compared with the depth of the pump intake and well screen. Pumping problems are most likely to result when pumping water levels reach the pump intake. Simulated water levels were at depths below the top of the casing perforations at many wells near the upper ends of the valleys in all simulations of long dry seasons. This occurred at wells as far downstream as well 27S/9E-20G3 in the Santa Rosa Basin even for the shortest simulated dry-season duration (calendar year 1988). In the San Simeon Basin, this occurred at wells as far downstream as well 27S/8E-10M2. However, the incremental water-level decline for each additional month of dry season is a small fraction of the total perforated interval of most wells.

Subsidence

Land subsidence and ground deformation occurred in Cambria in the summer of 1976 and could occur again if the minimum dry-season water level is close to or less than the record low level reached that year. A series of ground fractures developed on the north side of Santa Rosa Creek in the commercial district near Burton Avenue (fig. 2). The greatest amount of movement, which probably occurred between early August and mid-September 1976, caused breaks in utility pipelines and cracks as much as 4 in. wide in structures and road surfaces. Cleveland (1980) attributed the subsidence to a trend of increasing water use and below-average recharge in the early 1970's combined with the short-term effects of the drought of 1975–76. No subsidence has ever been reported in the San Simeon Basin.

Other factors might have contributed to the subsidence in 1976. Individual septic systems in Cambria were replaced with a central sewer system in late 1972, which decreased the quantity of local ground-water recharge. Minor amounts of ground settling were noticed in scattered locations each year between 1972 and 1975 (Cleveland, 1980). Some of this movement could have resulted from desaturation of surficial deposits. However, some of the movement also could have resulted from exceptionally low water levels in 1972 (27S/8E-26C5 in fig. 8).

Widespread subsidence in 1976 was more clearly associated with record low water levels. The effect of sewering on subsidence in 1976 might have been largely indirect. By decreasing the quantity of local recharge, sewering caused water levels to decrease faster in response to pumping than they would have otherwise.

Subsidence in alluvial ground-water basins usually is caused by low water levels that decrease the buoyant effect of hydrostatic pressure in the ground-water system. This increases the effective load of the overburden and causes a slight but largely permanent compaction in montmorillonitic clay strata (Lofgren, 1968). In August 1976, water levels in municipal well 27S/8E-26D1 and the now-abandoned well 27S/8E-26C3 reached record low levels of about 60 and 72 ft below land surface (14 and 20 ft below sea level), respectively. The low water levels coincided with the onset of ground deformation.

The potential for additional subsidence in Cambria owing to ground-water pumping can be estimated from studies of subsidence in other areas and from the relation between water levels and pumpage. Ground-water pumping in the San Joaquin and the Santa Clara Valleys in California has caused as much as 29 ft of subsidence over periods of several decades (Poland, 1969; Riley, 1969; and Bull and Poland, 1975). The amount of compaction of clay strata—which is about one-half the total alluvial thickness in these areas—was between 0.00001 and 0.00016 ft per foot of water-level decline per foot of clay thickness. Ground surveys in Cambria were begun too late to record the full amount of subsidence. As much as 0.14 ft of subsidence was measured between late September and December 1976. However, subsidence potential can be estimated by applying the compressibilities measured in other areas to the 140-foot-thick alluvial deposits in Cambria. Assuming 50 percent of the thickness is compressible clay, a 10-foot decrease in the record low water level in Cambria would cause between 0.007 and 0.110 ft of subsidence.

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Duration of stress is another factor in subsidence. Compaction can take years to equilibrate to a sudden increase in stress, and subsidence can continue even after water levels rise above their record low levels (Helm, 1978). Similarly, subsidence can resume when water levels are at or slightly above their record low levels if compaction had not fully equilibrated to the amount of stress during the previous period of low water levels. Thus, subsidence near well 27S/8E-26D1 could resume any time water levels are near or below the record low levels of 1976. In 1988, for example, the minimum water level in well 27S/8E -26D1 at the end of the dry season was 12 ft below sea level, which is only 2 ft higher than the minimum level in August 1976. Subsidence could have occurred in 1988, although none was reported.

Minimum water levels during the dry season are determined more by the cumulative quantity of dry-season pumpage than by the duration of the dry season. In 1976, the minimum water level in well 27S/8E-26D1 occurred in late August after a total of about 226 acre-ft of pumpage since the beginning of May. In 1988, the minimum water level did not occur until mid-December, after a total of 238 acre-ft of pumpage since the beginning of May. In both years, streamflow at the gaging station at State Highway 1 ceased in May and a rapid dry-season water-level decline began in June. Although the relation between cumulative pumpage and water-level decline seems similar for both years, other factors could cause changes or variations in the relation. For example, long-term changes could have resulted from the subsidence in 1976 and from decreases in water main leak rates. Subsidence causes an irreversible decrease in the storage capacity of the basin. As a result, less pumpage is needed to return water levels to their previous low levels. The municipal water system leaked about 20 percent less water in 1988 than in 1976 as a result of extensive pipe repairs in late 1970's. Some of the water that leaks from pipes returns to the ground-water basin and offsets pumping withdrawals. Thus, although the gross dry-season pumpages were similar in 1976 and 1978, net pumpages might have been different. Under a permit from the California State Water Resources Control Board (Decision 1624, April 1989), the CCSD is authorized to pump a maximum of 260 acre-ft of water from the Santa Rosa Basin between May 1 and October 31.

In the early 1970's (prior to the occurrence of subsidence in Cambria), the dry-season safe yield of the "downtown area" was assumed to equal 260 acre-ft, apparently for no other reason than that this was the quantity of dry-season pumpage in 1972 (Coastal Valley Engineering, Inc., 1976). Water-level declines in 1988 indicate that 260 acre-ft of pumpage during the dry season can bring water levels close to the threshold at which subsidence will resume. Simulation results indicate that under the pumping conditions that existed in 1988, the minimum dry-season water level in Cambria decreased by 1 to 2 ft for each additional month of dry-season duration.

Single Winter with Incomplete Recharge

If streamflow is insufficient during winter, ground-water recharge will be incomplete and water levels will not return to the levels of the preceding winter. As an extreme example, the hydrographs in figure 27 show simulated water levels for 1988–89 that resulted from omitting all streamflow and rainfall recharge during the winter of 1989. In the Santa Rosa Basin, water levels declined continuously during winter at wells upstream of well 27S/9E-19M3 and downstream of 27S/8E-27G1, but at wells in the intervening reach, water levels recovered as much as 25 ft. The recovery was a result of small storage coefficients, redistribution of water within the basin, and sufficient inflow from bedrock to cause a basinwide storage increase of 57 acre-ft. By the end of the second dry season, all wells upstream of well 27S/9E-20G3 were dry, and water levels in wells 27S/9E-20G3 and 27S/8E-26C5 were low enough to probably cause pumping difficulties.

Seawater intrusion did not occur during the second simulated dry season in the Santa Rosa Basin, but the rate of subsurface outflow to the ocean was only about one-third the rate during the first dry season. Subsidence probably occurred near wells 27S/8E -26C5 and 26D1, where simulated water levels at the end of the second dry season were 2 to 18 ft below the record low levels in 1976.

In the San Simeon Basin, effects were more severe. Water-level recovery was minimal during winter, and basinwide storage did not increase even though inflow from bedrock and recharge from the CCSD wastewater sprayfield were the same as in the calibration simulation. A water-level recovery of 1 to 2 ft in wells in the CCSD well field resulted from ground-water movement from other parts of the basin. One reason winter recovery was much less than in the Santa Rosa Basin is that municipal pumping rates do not

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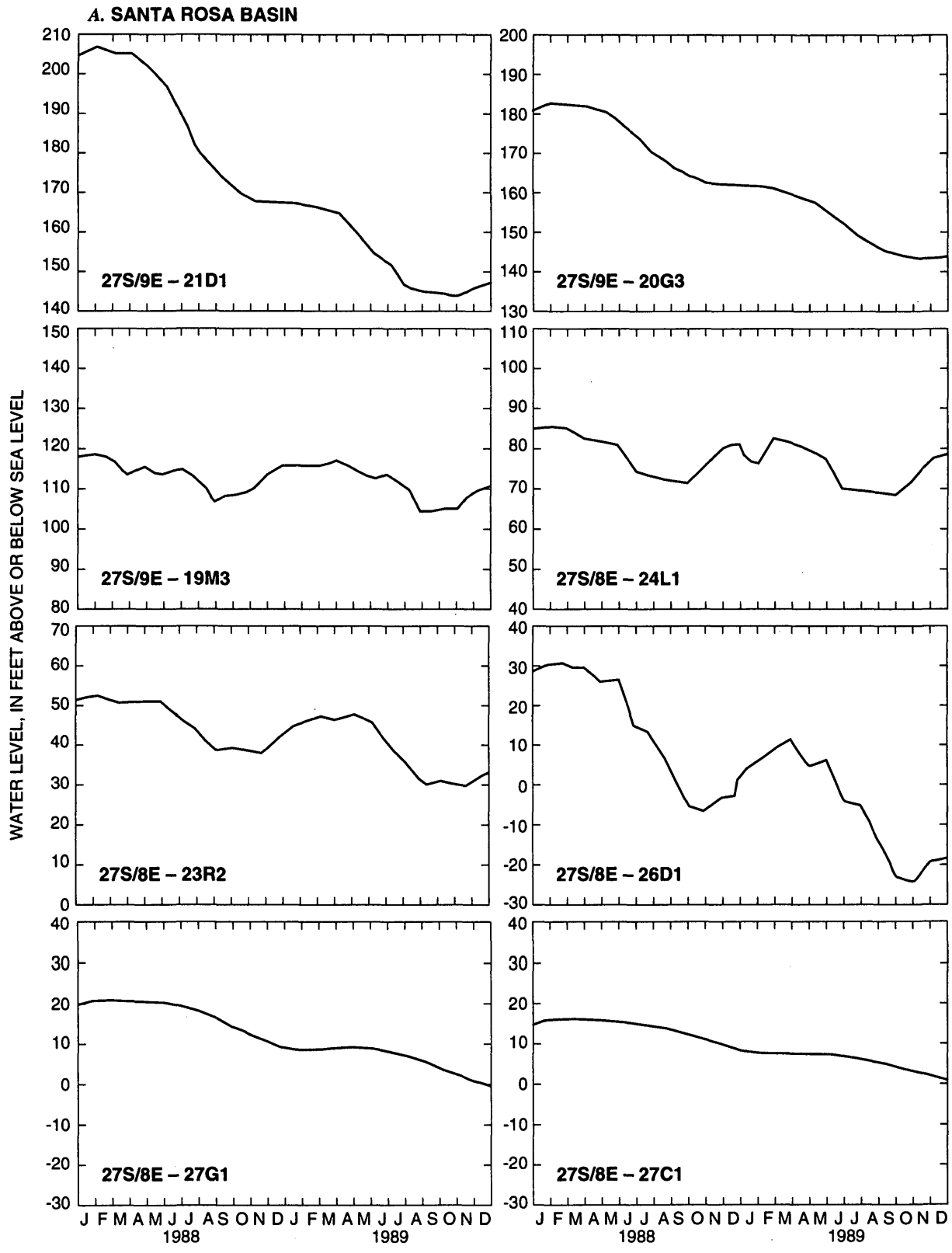

Figure 27. Simulated effects of a single winter without recharge on ground-water levels for 1988–89 for (*A*) the Santa Rosa and (*B*) the San Simeon ground-water basins, assuming normal pumping rates, and effects of selected decreases in agricultural pumping for the San Simeon Basin for 1989, San Luis Obispo County, California.

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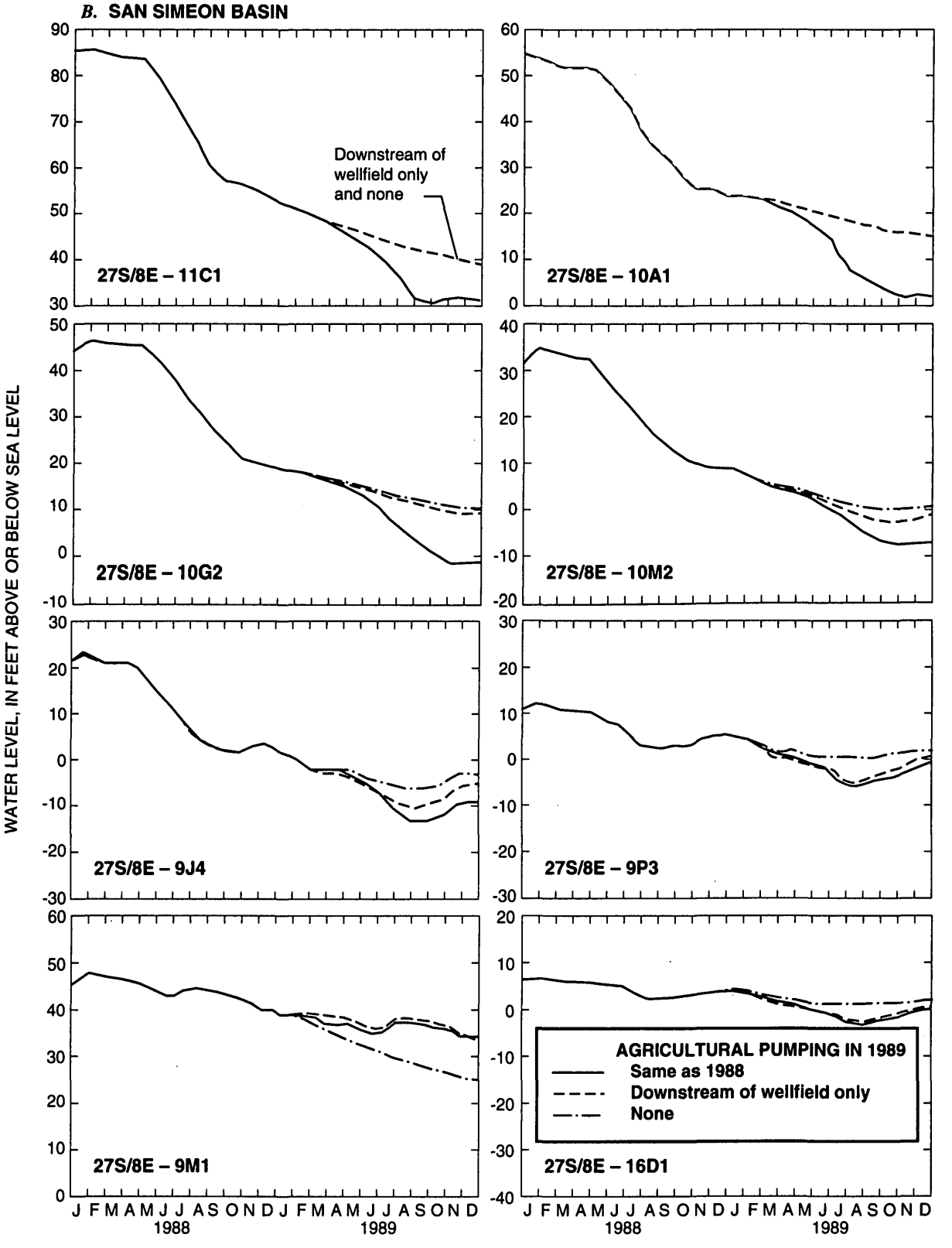

Figure 27. Simulated effects of a single winter without recharge on ground-water levels for 1988–89 for (*A*) the Santa Rosa and (*B*) the San Simeon ground-water basins, assuming normal pumping rates, and effects of selected decreases in agricultural pumping for the San Simeon Basin for 1989, San Luis Obispo County, California—Continued.

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decrease in winter as much as do agricultural pumping rates. Water-level declines during the second dry season were about the same as during the first dry season. Water levels in the CCSD well field and wastewater sprayfield declined to below sea level during the second dry season, resulting in 48 acre-ft of seawater intrusion. Static water levels were near or below the pump intake at all wells upstream of well 27S/8E-10F2. By the end of the second dry season, static water levels were below the tops of the perforated intervals at all wells between wells 27S/8E-10F2 and 9K3. These wells might have pumped air or experienced a decline in yield. Simulated conditions during the second dry season were somewhat more severe than those that would actually occur because simulated pumpage was not decreased as wells went dry. If pumpage had been discontinued at dry wells, water-level declines in the middle and lower parts of the valley would not have been as large, but crop losses caused by lack of irrigation water in the upper part of the valley probably would have been large.

Recharge of the ground-water basins will be incomplete if stream discharge during winter is less than the cumulative storage deficit of the preceding dry season. Even if total stream discharge exceeded the deficit, recharge could be incomplete if the daily distribution of streamflow were such that some of it flowed out to the ocean. Dry-season storage deficits have been increasing in recent years because of increases in dry-season pumpage. For the following discussion on stream recharge, the deficit is assumed to equal the deficit from April 1 through December 20, 1988. This deficit was 660 acre-ft in the Santa Rosa Basin and 500 acre-ft in the San Simeon Basin.

These deficits equal the minimum quantity of stream discharge needed for complete basin recharge and are the threshold at which detrimental effects of drought conditions will begin to appear. For quantities of discharge less than this, the severity of the effects increases until the extreme case of zero discharge is reached. These minimum quantities of stream discharge are small compared with the total annual discharge in most years. For the Santa Rosa and the San Simeon Basins, the quantities are only 12 and 5 percent of the long-term median discharge, respectively.

The critical management issue associated with dry winters is the probability of a winter in which streamflow is insufficient to recharge the ground-water basins completely. This occurred most recently during the winter of 1977. The probability of a winter with incomplete ground-water recharge was estimated from the distribution of annual stream discharge and the sequence of daily flows in each year. Using the relation between annual discharge and annual rainfall in San Luis Obispo (fig. 15), the probability of low flows was estimated from the probability of periods of low rainfall. The probability distribution of rainfall at San Luis Obispo for 1870–1989 is shown on a log-normal probability plot in figure 28. The linear pattern formed by the data indicates that annual rainfall is approximately log-normally distributed. The mean and standard deviation are 21.74 and 8.5 in., respectively. For comparison, a log-Pearson Type III distribution also was fit to the data, and the maximum difference

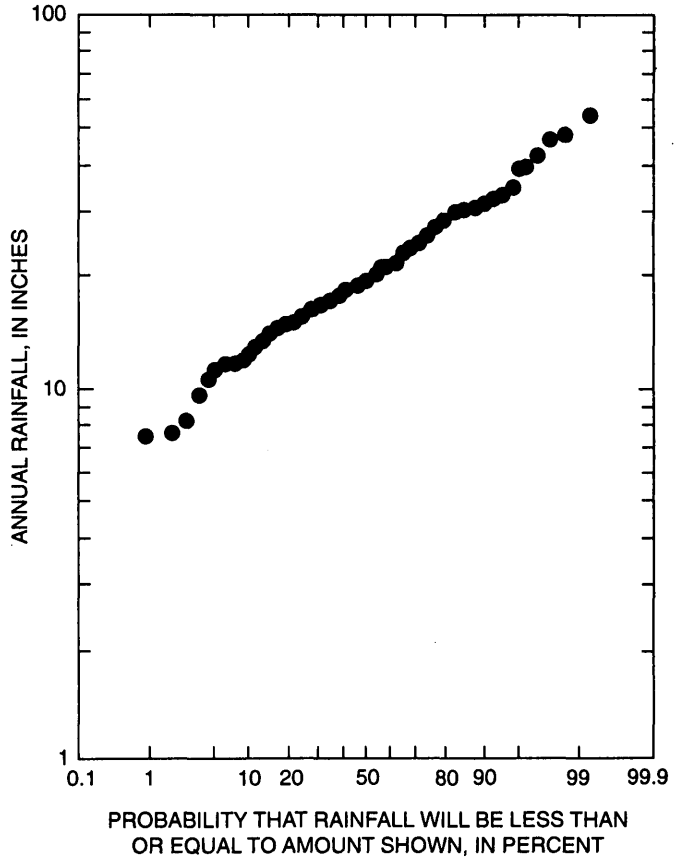

Figure 28. Probability distribution of annual rainfall at the San Luis Obispo-Poly station, San Luis Obispo County, California, 1870–1989.

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between the two distributions is about 0.2 in. of rainfall for probabilities in the range 0.01 to 0.99. The log-Pearson Type III distribution is widely used for low flows (Tasker, 1987).

Table 10 shows the recurrence intervals of selected low annual rainfall and stream discharge. The recurrence intervals were calculated using the fitted log-Pearson Type III distribution. Back-transformation of the logarithms to inches of rainfall was done using frequency factors, as explained by Haan (1977). A year with less than the minimum amount of stream discharge necessary to completely recharge the ground-water basin is likely to occur once in 18 years in the Santa Rosa Basin and once in 25 years in the San Simeon Basin. A winter as dry 1976 or 1977, when basin recharge did appear to be incomplete, is likely to occur once in about 25 to 26 years.

The recurrence intervals and stream discharges shown in the table are only approximate because large uncertainties result from scatter in the data. The log-Pearson Type III distribution does not fit the data perfectly. The 95-percent confidence interval for recurrence intervals between 5 and 500 years corresponds to about ±1 in. of rainfall. This in turn corresponds to an uncertainty in annual stream discharge of ±560 acre-ft for Santa Rosa Creek and ±1,100 acre-ft for San Simeon Creek. In terms of recurrence intervals, the 95-percent confidence interval for a winter with incomplete recharge is about +18 years and about −9 years. The uncertainty in the stream discharge is even greater if uncertainties inherent in the regression equations are included. For example, the uncertainties in the expected quantity of stream discharge associated with a 20-year period of rainfall

Table 10. Recurrence intervals of low annual rainfall at San Luis Obispo and stream discharge at upstream gaging stations on Santa Rosa and San Simeon Creeks, San Luis Obispo County, California

[In each row, the underlined item is measured or assumed, and the remaining items are calculated from the rainfall probability distribution (fig. 28) and the rainfall-discharge regressions (fig. 15). na, not applicable]

Item	Recurrence interval (years)	Annual rainfall at San Luis Obispo (inches)	Annual discharge at upstream gaging station (acre-feet)	
			Santa Rosa Creek	San Simeon Creek
Minimum amount likely to occur once in				
100 years	100	8.20	0	0
50 years	50	9.15	0	0
20 years	20	10.80	580	1,040
10 years	10	12.41	1,490	2,810
Zero discharge in				
Santa Rosa Creek	32	9.78	0	0
San Simeon Creek	31	9.85	40	0
Minimum discharge for complete basin recharge in[1]				
Santa Rosa basin	18	10.95	660	1,200
San Simeon basin	25	10.31	300	500
Minimum recorded stream discharge				
Santa Rosa (1977)	26	10.21	240	na
San Simeon (1976)	25	10.29	na	480

[1]Assuming dry-season ground-water storage deficits equal to those in 1988.

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become ±1,620 acre-ft for Santa Rosa Creek and 1,880 acre-ft for San Simeon Creek. These large uncertainties result from variations in the data not accounted for by the log-linear model. Nevertheless, the data do not show systematic departures from the assumed distribution and calculated regression lines. For the purpose of water-supply planning, the relations between stream discharge and recurrence interval indicated in table 10 should be considered most likely rather than worst case. Even allowing for uncertainty, the recurrence interval of incomplete recharge is clearly short enough to warrant consideration during water-supply planning.

The recurrence interval for a year with zero discharge is 32 years for Santa Rosa Creek and 31 years for San Simeon Creek (table 10). The linear regressions indicate that discharge is zero in Santa Rosa Creek when annual rainfall in San Luis Obispo is less than 9.78 in. (9.85 in. for San Simeon Creek). Since 1870, rainfall was less than these threshold amounts in 1877, 1898, 1913, and 1924. These were the 4 driest years on record, with rainfall ranging from 7.33 in. in 1898 to 9.52 in. in 1913. For comparison, 1977 was the seventh driest year on record, with 11.53 in. of rainfall. The recurrence interval for the amount of rainfall in 1977 is about 15 years. A longer recurrence interval is indicated in table 10 because the linear regressions predicted that a smaller amount of rainfall would be associated with the measured stream discharges in 1976 and 1977.

Tree-ring data indicate that climatic conditions during the period of record for rainfall for 1870–1989 were similar to those during the preceding several centuries. Growth rings of trees along the central coast of California have been used to estimate rainfall since about 1593 (Michaelson and others, 1987). These data include individual years of more extreme climatic conditions than have occurred during the period of record for rainfall measurements in San Luis Obispo. In the extended record, 1898 is only the third driest year. Furthermore, climatic variability seems to be about as great in recent years as it has been in general throughout the last 400 years. The tree-ring data give no indication that extremely dry years will be any less likely to occur in the future.

Some of the variability in the relation between annual rainfall and annual stream discharge results from different temporal patterns of rainfall within each year. A small number of large storms will generate larger peak flows and greater total discharge than a large number of small storms. Peak flows often exceed the rate at which water can percolate through the creekbed and become ground-water recharge; thus, even in a year when total stream discharge exceeds the dry-season storage deficit, recharge can be incomplete if much of the discharge is during brief periods of peak flows. Test simulations indicated that daily mean flows of as much as 35 ft^3/s in Santa Rosa Creek and 50 ft^3/s in San Simeon Creek could be completely captured as recharge on the first day of the flow season.

The maximum streamflow that can be completely captured as ground-water recharge decreases as the basin gradually fills during the winter. The maximum streamflow (expressed as daily mean flow) during a low-flow year is roughly proportional to total annual discharge. Figure 29 shows the relation for annual discharges of less than 5,000 acre-ft. The relation indicates that in a year with the minimum discharge needed for complete basin recharge (about 662 acre-ft for Santa Rosa Creek and 503 acre-ft for San Simeon Creek), the maximum daily mean flow for any day during the flow season is likely to be between 20 and 80 ft^3/s. This means that even if total annual discharge is low, it is possible that some of the stream discharge will flow out to the ocean and not be captured as recharge. In 1976, for example, annual discharge at the upstream gaging station on Santa Rosa Creek was 323 acre-ft. Discharge at the downstream gaging station

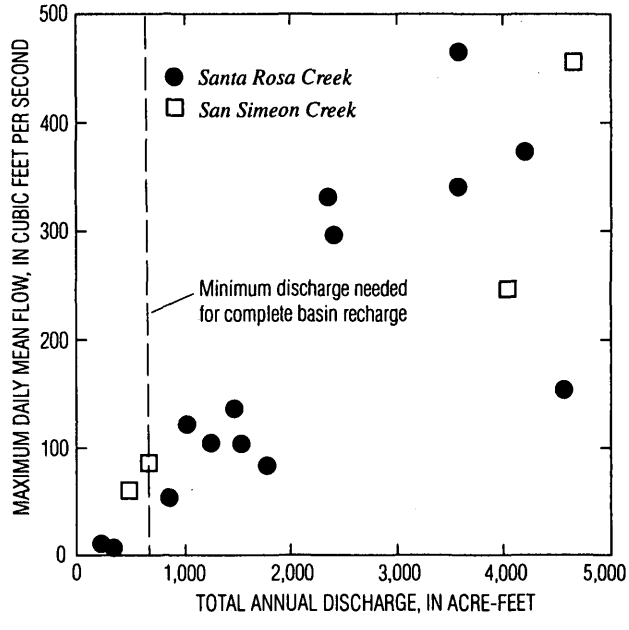

Figure 29. Relation of maximum daily mean flow and annual discharge in Santa Rosa and San Simeon Creeks, San Luis Obispo County, California.

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was about one-half that amount, although much of the flow probably was reemerging base flow derived from ground water in the basin rather than through flow of water from the upstream gaging station. In 1977, there was no flow at the downstream gaging station even though discharge at the upstream gaging station was only 25 percent less than in 1976. Because of the variability in the daily sequence of streamflow, annual stream discharge is a good but not perfect indicator of ground-water recharge in dry years.

Successive Winters with Incomplete Recharge

Given that the consequences of even a single winter with incomplete recharge can be fairly severe, the consequences of two successive winters with incomplete recharge could be devastating. The likelihood of this occurrence would be an important factor in designing water storage facilities. Annual stream discharge was tested for serial correlation to determine whether amounts in 1 year are related to amounts in the following year. The 1-year serial correlation coefficients of annual discharge at the upstream gaging stations on Santa Rosa and San Simeon Creeks are less than 0.07, which is not significant according to the a test developed by Anderson (1962). This indicates that the probability of an exceptionally dry year can be assumed to be the same each year and to be independent of streamflow during the previous year.

The periods of record for streamflow in Santa Rosa and San Simeon Creeks are both fairly short for accurate estimation of serial correlation. However, the 120-year record of annual rainfall at San Luis Obispo also does not indicate significant serial correlation. Consequently, the probability of 2 successive years of incomplete recharge is the product of their individual probabilities, or about 0.0028 for Santa Rosa Creek and 0.0014 for San Simeon Creek. These probabilities correspond to recurrence intervals of about 360 and 730 years, respectively. Similarly, the recurrence intervals of 2 successive years of zero discharge are about 1,370 and 1,225 years.

The 400-year tree-ring record analyzed by Michaelson and others (1987) shows a small amount of serial correlation, even after correcting for a large correlation effect related to tree-growth processes. They defined an extremely dry year as having a probability of 0.1 and calculated that the probability of 2 extremely dry years in a row is 0.017. This probability is 1.7 times greater than if there were no serial correlation. If annual stream discharge exhibited the same degree of serial correlation as extremely dry years in the tree-ring record, the recurrence interval for 2 successive years with incomplete recharge would be about 210 years for Santa Rosa Creek and about 430 years for San Simeon Creek.

The driest 2-year drought in the streamflow record was in 1976–77. Average annual rainfall at San Luis Obispo for those 2 years was 13.61 in., which was the sixth driest 2-year period in rainfall record. The driest 2-year period in rainfall record was in 1898–99, which had an average annual rainfall of 12.23 in. This average is greater than the amount of rainfall in the 11 driest single years. Basin recharge would have been complete in at least 1 year of every 2-year drought since 1870. Similarly, 1987–90 was the sixth driest 4-year period since 1870, with an average rainfall of 16.16 in. In summary, recent multiple-year droughts have not been particularly severe, and 2 or more consecutive years of incomplete basin recharge are not likely to occur more often than once in 100 years or more.

Evaluation of Water-Resources Management Alternatives

To help resolve concerns and questions expressed by citizens and public agencies responsible for managing local water resources, ground-water-flow models were used to evaluate the effects of four water-resources management alternatives. The first simulation was of fully irrigated conditions, which could occur as the combined result of management decisions made by individual farmers. The final three simulations explored alternatives that could be pursued by CCSD to augment the municipal water supply under normal or drought conditions.

Increased Agricultural Water Use

The quantity of water available for municipal use could decrease if there were an increase in agricultural water use. Increased agricultural pumping could result from an increase in irrigated area, an increase in cropping intensity, or a conversion to crops with greater irrigation requirements. Hypothetical water-intensive cropping patterns were developed for both basins by modifying the actual cropping patterns of 1988–89. Irrigated crops were substituted for nonirrigated ones

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and extended fallow periods were filled with additional irrigated crops. Numerous fields throughout both basins were affected by these changes. The number and size of fields were not changed. Many of the irrigated crops presently grown already have moderate or high water requirements, and this crop mix was assumed to continue. Short fallow periods were retained in the hypothetical data set. Overall, the hypothetical cropping pattern and its irrigation requirements represent a high but plausible agricultural water demand.

Agricultural pumping requirements for the hypothetical cropping patterns were estimated using the soil-moisture budget algorithm. These estimates were greater than actual pumpage during 1988–89 by 310 acre-ft (35 percent) in the Santa Rosa Basin and by 120 acre-ft (26 percent) in the San Simeon Basin. The hypothetical pumping rates were substituted into the calibrated simulations for the 1988–89 period by increasing the pumpage at existing wells serving the fields where irrigation demand increases. Municipal pumpage was not changed. In both basins, about 37 percent of the pumpage increase was offset by irrigation-return flow. In the Santa Rosa Basin, almost all the remainder was balanced by an increase in net seepage from the creek. In the San Simeon Basin, the remainder was balanced by increased rainfall recharge, increased net seepage from the creek, and decreased underflow to the ocean. Net storage also increased slightly because of additional irrigation-return flow in the Van Gordon Creek area. Overall, increased agricultural pumpage increased the cumulative dry-season storage deficit and consequently decreased the recurrence interval of a year with incomplete recharge (from 18 to 16 years in the Santa Rosa Basin). No seawater intrusion occurred and stream discharge was sufficient to recharge the basins fully.

Increased agricultural pumping generally increased dry-season water-level declines as shown in figures 30 and 31. The amount varied locally, depending on the amount of pumpage increase at each irrigation well. In the Santa Rosa Basin, dry-season water-level declines increased as much as 10 ft near wells 27S/9E-19M3 and 27S/8E-26D1. The latter well is a municipal well, and the increased water-level decline was largely the result of irrigation at a nearby 33-acre field that was nonirrigated during 1988–89. This well is in the area where subsidence occurred in 1976. In this simulation, the water level at the end of the dry season (18 ft below sea level) was 4 ft lower than the minimum water level in 1976. This low level could result in a small amount of renewed subsidence.

In the San Simeon Basin, the increase in dry-season water-level declines was less than 3 ft in all areas along San Simeon Creek. Water levels were higher by as much as 7 ft along Van Gordon Creek.

Additional Municipal Well in the Santa Rosa Basin

During 1988–89, ground-water pumping was minimal downstream of well 27S/8E-26D1 in the lower part of the Santa Rosa Basin. Although water levels near the well declined to below sea level in 1988, water levels between the well and the coast remained above sea level. One possibility for increasing the municipal water supply would be to install an additional municipal well between well 27S/8E-26D1 and the coast. The effects of this alternative were explored by adding a new well at the present location of well 27S/8E-27G1 (fig. 2). The well arbitrarily was assumed to produce 100 acre-ft/yr, which represents a 12-percent increase in total municipal pumpage. The monthly distribution of this pumpage was assumed to be the same as the monthly distribution of municipal water use and ranged from 6.1 acre-ft in February to 11.0 acre-ft in July and August. All other model input was the same as the input for the calibrated simulation for 1988–89.

The simulated water budget indicated that 90 percent of the additional pumpage was supplied by increased net seepage from Santa Rosa Creek. The remainder was supplied equally by decreased underflow to the ocean and decreased phreatophyte transpiration. No seawater intrusion occurred. The effects of the additional well on ground-water levels are indicated by the hydrographs in figure 30. Water levels upstream of the high school (well 27S/8E-23R2) were unaffected. The minimum dry-season water level near the new well was lower by 13 ft but was above sea level between the well and the coast. The minimum dry-season water level at municipal well 27S/8E-26D1 was lower by 3 ft and was 1 ft below the historical minimum water level. A small amount of renewed subsidence could result from these low levels.

Redistribution of Treated Municipal Wastewater

If municipal wastewater were treated to higher standards, it could be used for artificial ground-water recharge in areas upgradient of the municipal wells. This would increase the quantity of water available for

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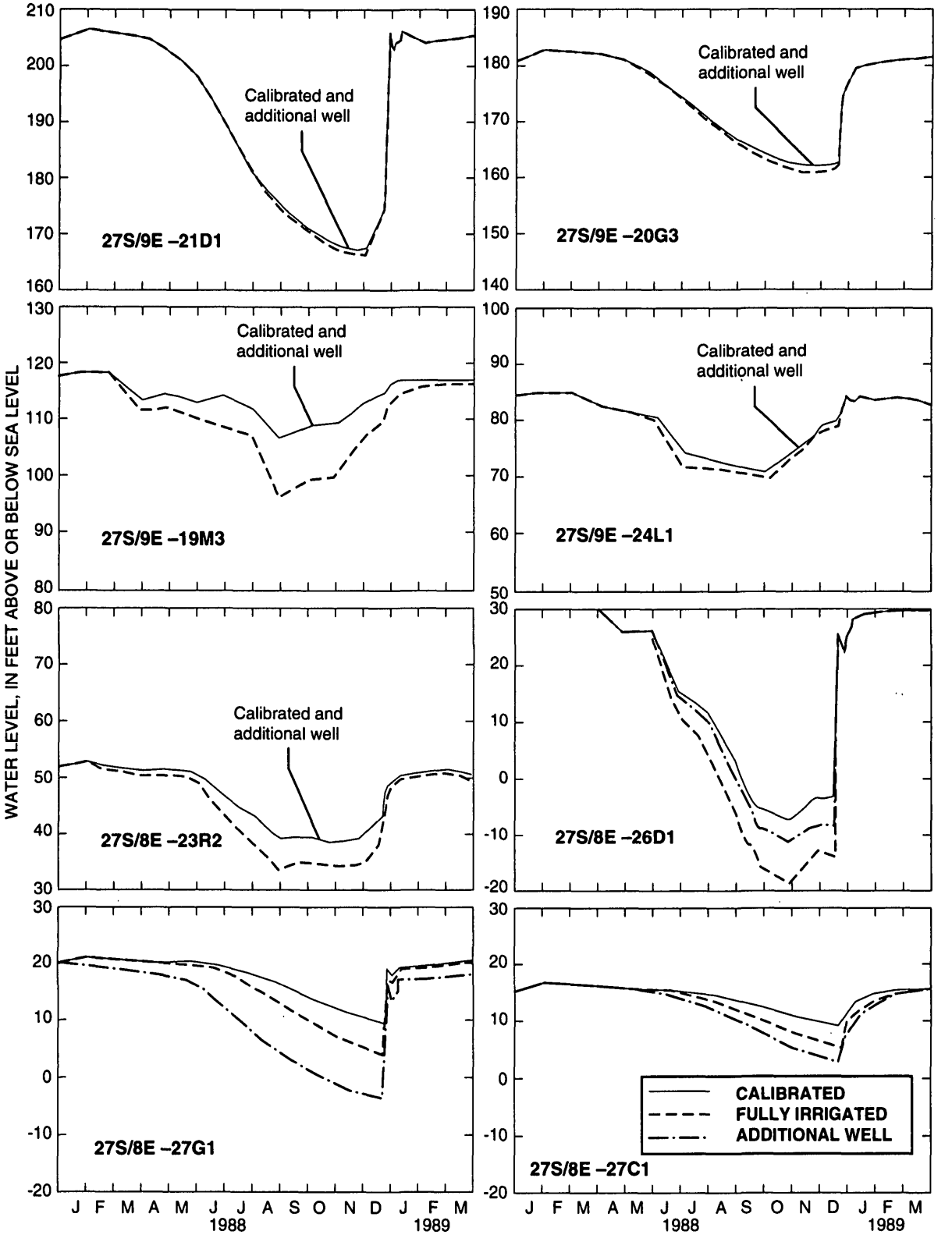

Figure 30. Effects of increased agricultural pumpage and pumpage from an additional municipal well on water levels in the Santa Rosa ground-water basin, San Luis Obispo County, California.

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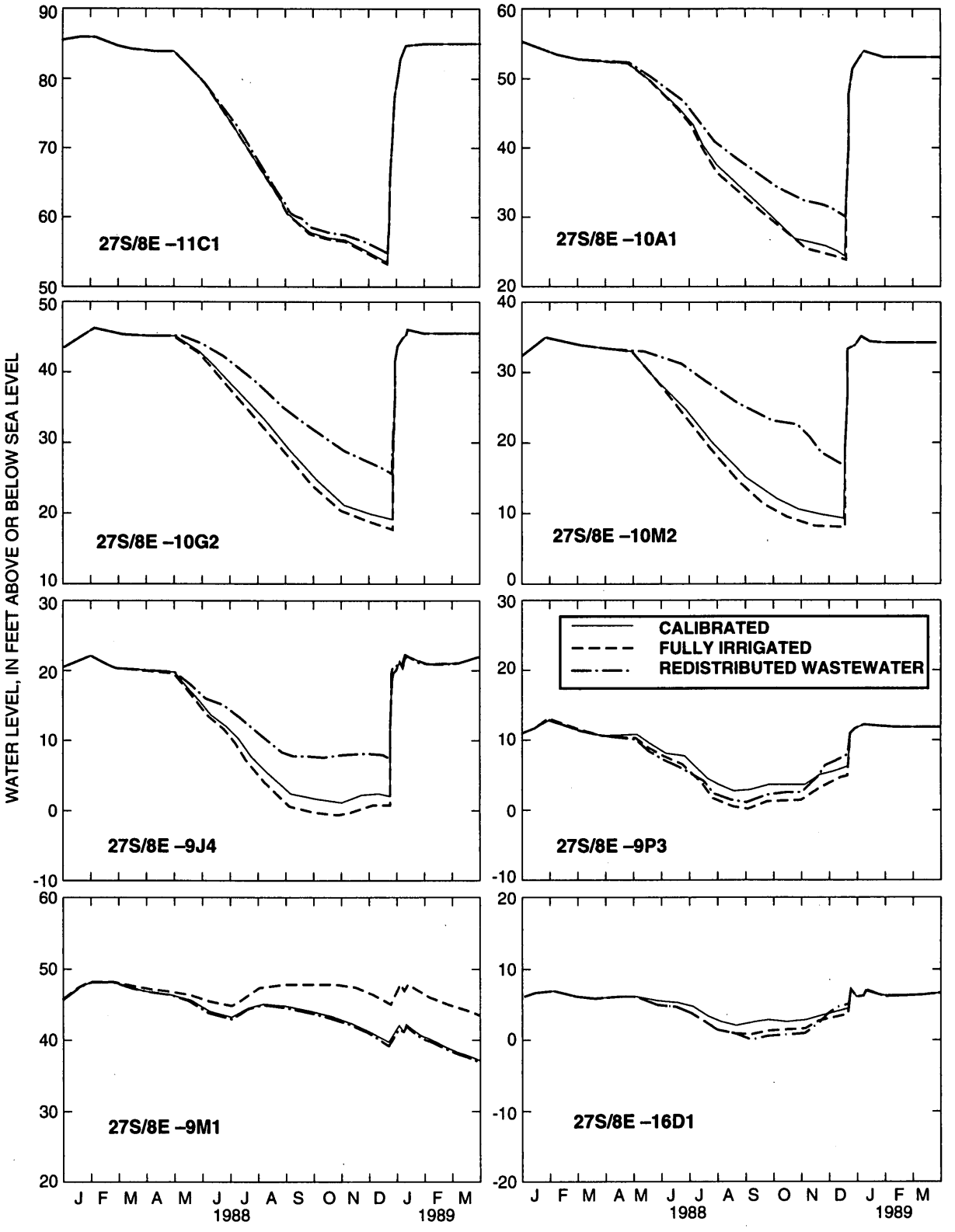

Figure 31. Effects of increased agricultural pumpage and redistributed wastewater recharge on water levels in the San Simeon ground-water basin, San Luis Obispo County, California.

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municipal use during the dry season. A project has been proposed to pump ground water from the CCSD wastewater sprayfield, treat it, and deliver it to percolation ponds upstream of the CCSD well field (Steven Swanback, Carollo Engineers, written commun., September 1990). Possible locations for two off-channel percolation ponds with a combined area of 0.80 acre are shown in figure 2. A total of 270 acre-ft of ground water would be transferred at a uniform rate over a 6-month period during the dry season.

The effects of this alternative were simulated by including the proposed wells and percolation ponds in the calibrated simulation for 1988–89 and by assuming that water was transferred during the months of May through October 1988. Pumpage from the sprayfield was assumed to occur at wells 27S/8E-9N2 and 9P2. The ponds were simulated as if they were recharge wells injecting specified quantities of water into the ground-water basins. The transfer operation caused a decrease of 74 acre-ft/yr (23 percent) in ground-water outflow to the ocean, which was largely offset by a decrease of 70 acre-ft/yr (13 percent) in net seepage from the creek. However, simulated water levels in the western part of the sprayfield that declined slightly below sea level during August resulted in a small amount of seawater intrusion (2 acre-ft) during that month. In a second simulation, pumpage in the sprayfield was shifted slightly farther inland, near wells 27S/8E-9N4 and 9P3. Results were similar except that seawater intrusion did not occur.

The effect of the transfer on water levels in the San Simeon ground-water basin is shown in figure 31. Dry-season water-level declines were smaller at all wells upstream of the CCSD wastewater sprayfield. The change in cumulative decline decreased from 12 ft at well 27S/8E-10M2 (located between the two percolation ponds) to about 1 ft at the upper end of the valley (well 27S/8E-11C1). Percolation from the ponds did not create a significant water-level mound even in the first month of the dry season (May 1988). The general water-level gradient was continuously downvalley through the pond area in all months, and there was no emergent seepage into the creek near the ponds. The model grid is too coarse to determine whether water-logged soils or a small water-table mound might occur in the immediate vicinity of the percolation ponds.

Overall, the transfer of 270 acre-ft of ground water from the sprayfield area to the percolation ponds significantly decreased the amount of dry-season water-level decline upstream of the sprayfield without exceeding the capacity of the aquifer to accept or transmit the infiltrated water. A small amount of seawater intrusion occurred when transfer wells were assumed to be located near the western end of the sprayfield.

Water Marketing

The effects of a dry winter on municipal water supply during the following dry season could be lessened if farmers agreed to decrease their pumpage that year by use of a water-marketing agreement. Two simulations representing different arbitrary amounts of farmer participation were made for the San Simeon Basin. The reference simulation was a 2-year simulation of calendar years 1988 and 1989, assuming no rainfall or streamflow recharge during the winter of 1989 and no change in water use from 1988 to 1989. Water budgets and water levels for this simulation were previously described in the section on droughts.

To simulate the first level of farmer participation, agricultural pumpage was omitted for wells upstream of the CCSD well field from February through December 1989, and fields in that area were assumed to lie fallow. Agricultural pumpage in the sprayfield was assumed to be the same as in 1988. The total decrease in agricultural pumpage during 1989 was 265 acre-ft. Water levels resulting from this simulation are shown in figure 27. The largest changes were near the wells where pumping was omitted. Dry-season water-level declines were smaller by as much as 12 ft near well 27S/8E-10A1 (fig. 27*B*). This effect decreases downstream to a change of about 3 ft at the CCSD well field (27S/8E-9J4). Water levels in the CCSD wastewater sprayfield (27S/8E-9P3 and 16D1) were higher by as much as 1 ft but were still below sea level for several months during 1989. The decrease in agricultural pumping resulted in a decrease of only 14 acre-ft (29 percent) in the amount of seawater intrusion.

To simulate the second level of farmer participation, agricultural pumping during 1989 also was omitted for wells in the sprayfield area, where two wells (27S/8E-9N4 and -9P2) commonly are used to irrigate fields farther north along Van Gordon Creek. The additional decrease in agricultural pumpage during 1989 was 206 acre-ft. The resulting water levels are shown in figure 27. The additional decrease in

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pumpage had minimal effects upstream of the CCSD wastewater sprayfield. In the sprayfield area, however, it elevated summer water levels enough to keep them above sea level and to prevent seawater intrusion.

These simulations show that transfer of water from agricultural to municipal use by means of a water-marketing agreement could allow normal municipal pumping in the San Simeon Basin during an extremely dry year without causing seawater intrusion. The simulations also demonstrated that pumpage decreases near the coast are more effective than pumpage decreases farther inland for preventing seawater intrusion.

SUMMARY

Thin, narrow ground-water basins underlie the final 3 to 5 mi of Santa Rosa and San Simeon Creeks before the creeks reach the Pacific Ocean. The creeks are near the town of Cambria in San Luis Obispo County. The basin fill consists of unconsolidated alluvial and stream-terrace deposits. The bottoms and sides of the basins are bounded by bedrock consisting primarily of the Franciscan Complex and a Cretaceous marine sandstone. Although some ground water is stored in bedrock and transmitted through its fractures, bedrock is much less porous and permeable than the basin fill.

Basin-fill deposits are heterogeneous, with grain sizes ranging from clay to gravel. Individual layers are discontinuous, although continuity generally is greatest in the direction parallel to the valley axis. A continuous clay layer underlain by sand and gravel might exist in the Santa Rosa Basin between Coast Union High School and a point about 1 mi downstream.

Hydraulic characteristics of the basin fill were measured or estimated by several methods and were highly variable. Drawdown tests and streamflow-response tests provided estimates of transmissivity ranging from 718 to 44,200 ft^2/d and estimates of storage coefficient ranging from 0.0022 to 0.0400. Calibration of ground-water-flow models yielded estimates of hydraulic conductivity ranging from 1.6 to 400 ft/d and estimates of storage coefficient ranging from 0.045 to 0.10. The calibrated storage coefficients are more accurate for long-term storage responses (days to years) than for short-term responses. Test results and model results indicated that hydraulic conductivity generally is greatest parallel to the valley axis and that hydraulic conductivity is greater and more uniform in the San Simeon Basin than in the Santa Rosa Basin. Zones of extremely low hydraulic conductivity in the Santa Rosa Basin were used to simulate areas where subsurface flow obstructions block the normal downvalley flow of ground water and force it to emerge as surface flow in the creek. The obstructions probably are caused by buried bedrock ridges that decrease the cross-sectional area of the basin.

Ground-water levels in most parts of the basins follow a seasonal pattern of gradual decline during the summer dry season followed by rapid recovery when the creeks start flowing in winter. In most years, the basins are fully recharged within a few weeks following the onset of streamflow, and additional recharge is rejected. In exceptionally dry years, stream discharge is too small to recharge the basins fully. The most significant long-term trend in water levels has been a gradual increase in the amount of dry-season water-level decline in the San Simeon Basin. This change is the result of increases in municipal and agricultural pumpage during the dry season. Large water-level declines during longer-than-average dry seasons have caused pumping difficulties in wells at the upper ends of the basins and probably were the principal cause of subsidence near Burton Avenue in the Santa Rosa Basin.

Water-quality samples collected for this study indicated that water in San Simeon Creek is of higher quality than water in Santa Rosa and Perry Creeks. Hardness and concentrations of sodium, chloride, dissolved solids were lowest in San Simeon Creek. Connate seawater released from marine sediments decreases the quality of water in Perry Creek. The effect is smaller but measurable in Santa Rosa Creek downstream of the confluence with Perry Creek.

Similar water-quality patterns exist in ground water. Data from samples collected for this study were combined with historical data to identify five subareas of uniform water quality: the Perry Creek area and the upper and lower parts of the Santa Rosa and the San Simeon Basins. Again, concentrations of most ions were lowest in the upper San Simeon Basin. Salinity is higher in the lower basins than in the upper basins. Salinity levels were highest (1,240 to 1,520 mg/L of dissolved solids) in deep observation wells installed near the coast for this study. Salinity in the lower basins is almost certainly derived primarily from the ocean rather than from an onshore source. However, overdraft probably is not the cause of the saline water in the

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observation wells. In the San Simeon Basin, the saline water seems to be associated with a stable saltwater wedge that forms naturally at the base of the basin near the coast. In the Santa Rosa Basin, the observation well is too far inland and its water level is too high for the brackish water to reasonably be attributed to a natural saltwater wedge or to ground-water overdraft. The cause of the high salinity in that well is not precisely known, but probably is related to historical changes in sea level. Brief occurrences of seawater intrusion previously have been measured in the Santa Rosa and the Pico Basins. In the latter case, the intrusion almost certainly was caused by ground-water overdraft.

Salinity, hardness, and high concentrations of iron and manganese limit the use of ground water in parts of the basins. The concentration of dissolved solids in the aforementioned observation wells exceeded the maximum concentration recommended for drinking water. Concentrations of iron and manganese exceed the drinking-water standards. Available data indicate no gradual, long-term changes in ground-water quality.

Major components of the hydrologic system were investigated to develop accurate ground-water budgets. Budget items were estimated by analysis of new and existing field data. In some cases, estimates were revised during the calibration of digital ground-water-flow models developed for each basin. The three-dimensional, finite-element models each contained several hundred nodes and elements. The models were calibrated to match measured water levels and streamflow for April 1988 through March 1989. The models accounted for anisotropy in aquifer characteristics and mass balance between streamflow and ground-water flow.

Average annual rainfall increases from about 20 in. at the coast to about 26 in. at the inland ends of the ground-water basins and more than 40 in. at the headwaters of the creek drainage areas. Rainfall in 1988 and 1989 was about 71 and 62 percent of the long-term average, respectively.

Streamflow at the upper ends of the ground-water basins has been measured since 1959 on Santa Rosa Creek and since 1971 on San Simeon Creek. Both of these periods of record are wetter than average, as indicated by cumulative departures of annual rainfall in San Luis Obispo during 1870–1989. Annual discharge in Santa Rosa and San Simeon Creeks was related to annual rainfall in San Luis Obispo using ordinary least-squares regression. These relations were used to estimate long-term mean and median discharge in the two creeks. Mean annual discharge in Santa Rosa and San Simeon Creeks is 6,800 and 13,100 acre-ft, respectively. Median annual discharges are 5,700 and 10,900 acre-ft, respectively. Two years of discharge data for Perry Creek indicated that daily mean flow is on average only 18 percent as large as flow in Santa Rosa Creek. Although Santa Rosa and San Simeon Creeks usually dry up in summer, base flow is more persistent in Santa Rosa Creek.

Santa Rosa and San Simeon Creeks gain and lose water as they flow across the ground-water basins. In winter, seepage from the creeks provides the largest source of ground-water recharge. Net seepage loss rates of 20 to 40 ft^3/s between the upstream and downstream gaging stations are common during the first few weeks of streamflow. As ground-water levels rise, these rates decrease and eventually approach zero. In summer, ground water emerges into Santa Rosa Creek near well 27S/9E-19H2 and creates surface flow of several cubic feet per second along about a 2-mile reach of the creek. Both creeks gain a small quantity of water near the coast. The best estimates of annual net ground-water recharge from the creeks were obtained from the ground-water-flow models. These estimates indicated that net recharge during 1988–89 was about 470 and 540 acre-ft in the Santa Rosa and the San Simeon Basins, respectively.

Areal recharge was estimated using a soil-moisture budget algorithm that balanced daily rainfall, irrigation, runoff, evaporation, transpiration, deep percolation, and storage change in the soil zone. The algorithm was applied to 119 zones of uniform vegetation overlying the ground-water basins. Local reference evapotranspiration was estimated by comparing short-term field measurements with longer term records from other coastal stations. Both Penman and eddy-correlation methods were used. Annual reference evapotranspiration in Cambria averages about 38 in. and was several inches above average in 1988. Local temperature data confirmed that coastal fog results in lower evapotranspiration rates at the coast than at locations a few miles inland. Root depths and monthly crop coefficients were estimated for each crop and vegetation type. Areal recharge to the ground-water basins was assumed to occur whenever the cumulative amount of soil moisture exceeded the field capacity of the root zone. Areal recharge from rainfall and irrigation-return flow for April 1988 through

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March 1989 totaled 460 acre-ft in the Santa Rosa Basin and 220 acre-ft in the San Simeon Basin.

Transpiration by phreatophytes is strongly affected by ground-water levels, and estimates of transpiration rates were obtained from the ground-water models. Transpiration by phreatophytes during 1988–89 was about 160 and 30 acre-ft in the Santa Rosa and the San Simeon Basins, respectively.

Agricultural pumpage and irrigation efficiency were estimated by comparing crop water demand estimated by the soil-moisture budget algorithm with measured electricity consumption by irrigation wells. Electricity consumption was converted to pumpage estimates by means of well efficiency tests. Calculated irrigation efficiencies ranged from 53 to 80 percent, with a median value of 66 percent. Agricultural pumpage from April 1988 through March 1989 was 890 acre-ft in the Santa Rosa Basin and 450 acre-ft in the San Simeon Basin.

Municipal pumpage has increased dramatically in recent decades, from 130 acre-ft in 1956 to 820 acre-ft in 1988. Curve separation of monthly municipal water use indicates that about 83 percent of the annual total is used indoors. Net unaccounted-for losses from water and sewer pipes during 1988 were less than 10 percent.

The quantity of subsurface inflow entering the ground-water basins from adjacent bedrock areas was initially estimated using soil-moisture budgets. These estimates were highly uncertain, however, and were later revised during calibration of the ground-water models. The revised estimates were 370 and 150 acre-ft/yr for the Santa Rosa and the San Simeon Basins, respectively. These rates probably do not fluctuate much seasonally or annually.

Subsurface outflow from the ground-water basins to the ocean was difficult to estimate because ground water also can reach the ocean by seeping into the lower reaches of the creeks. Calibration of the ground-water models indicated that the proportion of total outflow that occurs as subsurface outflow is larger in the San Simeon Basin than in the Santa Rosa Basin. Subsurface outflow during 1988–89 was about 60 and 320 acre-ft/yr in the Santa Rosa and the San Simeon Basins, respectively.

Net ground-water storage changes from year to year are negligible in all but extremely dry years because the creeks usually replenish the water withdrawn during the dry season.

The accuracy of the calibrated models is good, although the data used for calibration were limited to relatively dry climatic conditions and to locations near the center of the valleys. The principal limitations of the model are its inability to simulate flow in the vertical direction, its omission of effects related to the saltwater wedge near the coast, and its inability to simulate pumping water levels in wells.

The models were used to simulate the effects of pumpage, drought, and several water-resources management alternatives. The effects of pumpage were investigated in a series of simulations in which all pumpage or either agricultural or municipal pumpage were eliminated. Agricultural pumpage increases dry-season water-level declines everywhere except in the Van Gordon Creek area. In the San Simeon Basin, the effect decreases uniformly downstream from a maximum of about 10 ft. The effect is more variable (from less than 2 to 25 ft) in the Santa Rosa Basin because agricultural pumpage interacts with baseflow in the creek.

Municipal pumpage affects water levels throughout the San Simeon Basin, with effects ranging from 1 ft at the upper end of the valley to 7 ft at the CCSD well field. Municipal pumpage does not affect water levels in the upper one-half of the Santa Rosa Basin but contributes up to 33 ft of dry-season water-level decline near well 27S/8E-26D1. Even with no pumpage at all, large dry-season water-level declines occur at the upper ends of the valleys because ground water naturally drains from those areas to downvalley areas. In years with long dry seasons (such as 1988), these natural dry-season water-level declines are about 75 percent as large as declines that occur with pumping.

Three types of drought were investigated: a long dry season, a winter with incomplete basin recharge, and two successive winters with incomplete recharge. Statistical analysis of streamflow records indicated that the average duration of the dry season is about 146 days in the Santa Rosa Basin and 164 days in the San Simeon Basin. However, the streamflow record is short and spans a relatively wet period. Longer estimates of dry-season duration result if streamflow data are adjusted according to long-term rainfall patterns. Simulations of progressively longer dry seasons (up to 266 days for Santa Rosa Creek and 296 days for San Simeon Creek) indicated that with present (1988) agricultural and municipal pumping rates, dry-season water-level declines increase as much as 5 ft and

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dry-season storage deficits increase as much as 96 acre-ft for every additional month of dry season. These rates decrease slightly as the duration of the dry season increases. The effects on water levels are greatest near the upper ends of the basins and can cause some wells to go dry, as happened in 1988. Incremental water-level declines are not large near the coast, and seawater intrusion did not occur in any of the simulations. However, water levels decline almost to the threshold at which some subsidence could occur in the Santa Rosa Basin even during dry seasons with a recurrence interval of only 5 years.

If insufficient streamflow occurs during winter, ground-water basins will not be fully recharged. The minimum amount of stream discharge required to completely recharge the basins equals the storage deficit accumulated during the preceding dry season. In 1988, this deficit was about 660 and 500 acre-ft in the Santa Rosa and the San Simeon Basins, respectively. The likelihood that stream discharge would be less than these amounts was estimated from the probability distribution of annual rainfall and the regression equations relating annual stream discharge to annual rainfall. This procedure indicated that the recurrence interval of a year with incomplete recharge is about 18 years in the Santa Rosa Basin and 25 years in the San Simeon Basin. The recurrence interval of a winter with no streamflow at all is about 32 years for both basins. There is considerable uncertainty in these estimates, but the recurrence intervals are short enough to warrant consideration during water-supply planning.

The ground-water models were used to investigate the effects of a winter without streamflow or rainfall recharge. In the simulations, numerous wells in both basins went dry by the end of the subsequent dry season; subsidence occurred in the Santa Rosa Basin, and seawater intrusion occurred in the San Simeon Basin. These simulations probably overestimate the water-level declines because pumping was maintained at 1988 rates and was not decreased as wells went dry.

The probability of the third type of drought—two successive winters of incomplete recharge—was estimated from rainfall and tree-ring data. Records of rainfall (120 years) and tree growth rings (about 400 years) showed little or no serial correlation from year to year. Two successive years of incomplete recharge are therefore likely to occur only once in 360 years or more. Even allowing for a small amount of serial correlation, the recurrence interval probably is greater than 100 years.

The first water-resources management alternative explored with the ground-water models was the possibility of increased agricultural pumpage. Cropping patterns representing reasonable but fully irrigated conditions were devised. The corresponding increases in agricultural pumpage was 310 and 120 acre-ft (35 and 26 percent) in the Santa Rosa and the San Simeon Basins, respectively. The effect of the increase on pumpage was to increase simulated dry-season water-level declines by less than 3 ft in the San Simeon Basin and by as much as 10 ft in the Santa Rosa Basin. In the simulation, no wells went dry, but a small amount of subsidence could have occurred in the Santa Rosa Basin. The larger dry-season storage deficits in this simulation would increase the likelihood of incomplete recharge in winter.

The second alternative considered was the addition of a new municipal well near well 27S/8E -27G1. A well pumping 100 acre-ft/yr was added to the calibration simulation for this location. Pumpage from an additional well pumping 100 acre-ft/yr would increase the municipal water supply by 12 percent. The resulting minimum dry-season water level in that area was lower by about 13 ft. This level is very close to the level at which subsidence could resume. Simulated water levels between the new well and the coast remained above sea level, and there was no seawater intrusion.

The third simulated alternative was a redistribution of treated municipal wastewater in the San Simeon Basin. In this simulation, 270 acre-ft of ground water was pumped during the dry season from wells in the CCSD wastewater sprayfield. After treatment, the water was recharged to the ground-water basin by means of two percolation ponds located upstream of the CCSD well field. Results indicated that dry-season water-level declines upstream of the well field were smaller by as much as 12 ft. A small amount of seawater intrusion occurred when the extraction wells were assumed to be located toward the western end of the sprayfield, but none occurred when their locations were farther inland. There was no evidence of water-table mounding or emerging streamflow near the percolation ponds.

The final alternative was a hypothetical water-marketing agreement that would decrease agricultural water use in order to maintain municipal water use in the event of a winter with no recharge from streamflow or rainfall. The effects of omitting agricultural pumpage upstream and downstream of the CCSD well

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field were evaluated separately. Seawater intrusion decreased by only 29 percent when pumpage was omitted upstream of the well field. In contrast, seawater intrusion was completely eliminated when pumpage also was omitted downstream of the well field, even though the incremental pumpage change was smaller.

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G

APPENDIX G

STATE WATER RESOURCES CONTROL BOARD WATER RIGHTS LICENSE

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CALIFORNIA
Water Boards

GAVIN NEWSOM
GOVERNOR

JARED BLUMENFELD
SECRETARY FOR
ENVIRONMENTAL PROTECTION

State Water Resources Control Board

MAR 1 4 2019

In Reply Refer to:
SMC:25002 & 28158

Cambria Community Services District
P.O. Box 65
Cambria, CA 93428-0065

Ladies & Gentlemen:

ISSUANCE OF WATER RIGHT LICENSES 13916 AND 13917 (APPLICATIONS 25002 AND 28158) TO APPROPRIATE WATER FROM SAN LUIS CREEK AND SAN SIMEON CREEK UNDERFLOWS IN SAN LUIS OBISPO COUNTY

The purpose of this letter is to inform you that the State Water Resources Control Board (State Water Board) has issued the enclosed water right licenses. You should carefully read the water right license to ensure that you understand and comply with any requirements for diversion and beneficial use of water.

The State Water Board maintains the electronic Water Rights Information Management System (eWRIMS), a computer database where you may view the current information related to your water rights. The database can be accessed at the following website:

http://www.waterboards.ca.gov/ewrims

If you have any questions, please contact me at scott.mcfarland@waterboards.ca.gov or (916) 341-5390. Written correspondence or inquiries should be addressed as follows: State Water Resources Control Board, Division of Water Rights, Attn: Scott McFarland, P.O. Box 2000, Sacramento, CA, 95812-2000.

Sincerely,

Scott McFarland, P.E.
Senior Water Resource Control Engineer
Petition and Licensing Unit
Division of Water Rights

Enclosures: 1) Licenses
2) Maps

cc: See next page.

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MAR 1 4 2019

cc (w/o enclosures): Annette Tenneboe
Central Region
California Department of Fish and Wildlife
1234 E. Shaw Ave.
Fresno, CA 93710

cc (w/enclosures): Cambria Community Services District
P.O. Box 65
Cambria, CA 93428-0065

ec (w/enclosures): Annette Tenneboe
Central Region Region
California Department of Fish and Wildlife
Annette.tenneboe@wildlife.ca.gov

Sean Wendell
Water Branch
California Department of Fish and Wildlife
Sean.wendell@wildlife.ca.gov

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STATE OF CALIFORNIA
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
STATE WATER RESOURCES CONTROL BOARD

DIVISION OF WATER RIGHTS

RIGHT TO DIVERT AND USE WATER

APPLICATION 25002 PERMIT 17287 LICENSE 13916

Right Holder: Cambria Community Services District
P.O. Box 65
Cambria, CA 93428-0065

The State Water Resources Control Board (State Water Board) authorizes the diversion and use of water by the right holder in accordance with the limitations and conditions herein SUBJECT TO PRIOR RIGHTS. The priority of this right dates from **February 23, 1976**. This right is issued in accordance with the State Water Board delegation of authority to the Deputy Director for Water Rights (Resolution 2012-0029) and the Deputy Director for Water Rights redelegation of authority dated October 19, 2017. This right supersedes any previously issued right on **Application 25002**. The right holder has made proof, to the satisfaction of the State Water Board, of the quantities of water put to beneficial use during the authorized development schedule.

Right holder is hereby granted a right to divert and use water as follows. No water shall be diverted or used under this water right unless right holder is in compliance with the terms and conditions herein:

1. Source of water: **San Simeon Creek Underflow**

tributary to: **Pacific Ocean**

within the County of **San Luis Obispo**

2. Location of points of diversion

By California Coordinate System of 1983 in Zone 5	40-acre subdivision of public land survey or projection thereof	Section (Projected)*	Township	Range	Base and Meridian
Well SS1 **(1) North 2,419,152 feet and East 5,637,517 feet**	**NE¼ of SE¼**	**9***	**27S**	**8E**	**MD**
Well SS2 **(2) North 2,419,397 feet and East 5,637,463 feet**	**NW¼ of SE¼**				
Well SS3 **(3) North 2,419,439 feet and East 5,636,957 feet**	**NW¼ of SE¼**				

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3. Purpose of use	4. Place of use		
	Townships	Range	Base and Meridian
Municipal	**27S & 28S**	**8E**	**MD**
	Within the Cambria Community Services District as shown on map.		

The place of use is shown on map filed on February 4, 1976 with the State Water Board.

5. The water appropriated under this right shall be limited to the quantity which can be beneficially used and shall not exceed **1.43 cubic feet per second** by direct diversion to be diverted from January 1 to December 31 of each year. The maximum amount diverted under this right shall not exceed **799 acre-feet per year.** The maximum amount diverted under this right shall not exceed 370 acre-feet between the date that surface flow ceases at Palmer Flats (where San Simeon Creek Road crosses San Simeon Creek - CCS83, Zone 5, N. 2,421,503 ft. and E. 5,643,001 ft.) and October 31 of each year. As used in this right, "the date when surface flow ceases" refers to the date of cessation of seasonal run-off during the winter or spring months. Any question regarding the date of cessation of seasonal run-off in a particular year shall be resolved by the Deputy Director for the Division of Water Rights upon request of any legal user of water from San Simeon Creek. Licensee shall monitor and document the day water ceases to flow in San Simeon Creek at the above referenced location and report that date to the Division of Water Rights in the annual report of licensee. Any water supplied for satisfaction of riparian rights on San Simeon Creek shall not be considered as water appropriated under this license.

(0000005A)

6. The equivalent of such continuous flow allowance for any 30-day period may be diverted in a shorter time provided there is no interference with other rights and instream beneficial uses and provided further that all terms or conditions protecting instream beneficial uses are observed.

(0000027)

7. No water shall be diverted under this right unless right holder is operating in accordance with a compliance plan, satisfactory to the Deputy Director for Water Rights. Said compliance plan shall specify how right holder will comply with the terms and conditions of this right. Right holder shall comply with all reporting requirements in accordance with the schedule contained in the compliance plan.

(0000070)

8. Right holder shall comply with the measuring and monitoring requirements as specified in the terms of this right or any reporting requirements by statute, order, policy, regulation, decision, judgment or probationary designation. The more stringent requirement shall control in each instance where there is a conflict or inconsistency between the requirements. Right holder shall comply with the measuring and monitoring requirements of chapter 2.8, title 23, California Code of Regulations.

(000000R)

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9. No water shall be diverted or used under this right for commercial and applicable personal medical use cannabis cultivation unless the water right holder is in compliance with all applicable conditions, including the numeric and narrative instream flow requirements, of the current version of the State Water Board's *Cannabis Cultivation Policy – Principles and Guidelines for Cannabis Cultivation,* which is available online at: https://www.waterboards.ca.gov/water_issues/programs/cannabis/docs/policy.pdf

(0000120)

10. Licensee shall maintain water levels in the lower basin to sustain stream flow to the lagoon at the mouth of San Simeon Creek to maintain fish and wildlife habitat.

(0500014)

11. Licensee shall provide and operate as necessary, irrigation facilities to maintain riparian vegetation within the district owned properties.

(0500040)

12. This water right is specifically subject to the diversion of water by Jon Pedotti, Willis Warren, Susan Keller, and Clyde Warren and their successors in interest under valid claim of riparian right in accordance with the following conditions:

    a. At such time as licensee is diverting water authorized under this water right and the water level in well 9K1 reaches a depth which renders the well unusable, licensee shall deliver water from its point of diversion to the riparian place of use served by well 9K1 in amounts necessary to meet the reasonable riparian needs of Warren and his successors in interest.

    b. At such time as licensee is diverting water authorized under this water right and the water in any replacement well for well 10F1 reaches a depth which renders the well unusable, licensee shall, at its option, take one or more of the following actions to supply water to the riparian place of use served by well 10F1 in amounts to meet the reasonable riparian needs of Warren and his successors in interest:

        (1) Make improvements to well 10F1 or its replacement well;
        (2) Install a new well;
        (3) Deliver water from licensee's point of diversion to the riparian place of use served by well 10F1.

    c. At such time as licensee is diverting water authorized under this water right and the water level in well 10G1 reaches a depth which renders the well unusable, licensee shall, at its option, take one or more of the following actions to supply water to the riparian place of use served by well 10G1 in the amounts necessary to meet the reasonable riparian needs of Pedotti and his successors in interest:

        (1) Install a new well;
        (2) Deliver water from licensee's point of diversion to the riparian place of use served by well 10G1.

        This requirement shall apply only in the event that the owner of the well 10G1 has cleaned the well perforations using an acid wash and has lowered the level of the pump intake to as near the bottom of the well as feasible.

    d. At such time as licensee is diverting water authorized under this water right and the water level in well 11C1 reaches a depth which renders the well unusable, licensee shall, at its option, take one or more of the following actions to supply water to the riparian place of use served by well 11C1

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in the amounts necessary to meet the reasonable riparian needs of Pedotti and his successors in interest:

(1) Make improvements to well 11C1;
(2) Install a new well;
(3) Deliver water from licensee's point of diversion to the riparian place of use served by well 11C1;
(4) Such other action as is mutually agreeable to the licensee and Pedotti or his successors in interest.

(0300054)

13. The State Water Board reserves continuing authority in the public interest to modify the terms and conditions of this license, including imposition of requirements to alter project facilities or operations and to modify instream flow releases, in the event of unforeseen adverse impacts to fish or wildlife. State Water Board action will be taken only after notice to interested parties and opportunity for hearing.

(000M001)

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THIS RIGHT IS ALSO SUBJECT TO THE FOLLOWING TERMS AND CONDITIONS:

A. Right holder is on notice that: (1) failure to timely commence or complete construction work or beneficial use of water with due diligence, (2) cessation or partial cessation of beneficial use of water, or (3) failure to observe any of the terms or conditions of this right, may be cause for the State Water Board to consider revocation (including partial revocation) of this right. (Cal. Code Regs., tit. 23, § 850.)

(0000016)

B. Right holder is on notice that when the State Water Board determines that any person is violating, or threatening to violate, any term or condition of a right, the State Water Board may issue an order to that person to cease and desist from that violation. (Wat. Code, § 1831.) Civil liability may be imposed administratively by the State Water Board pursuant to Wat. Code, § 1055, or may be imposed by the superior court. The Attorney General, upon the request of the board, shall petition the superior court to impose, assess, and recover those sums. (Wat. Code, § 1846.)

(0000017)

C. Right holder is not authorized to make any modifications to the location of diversion facilities, place of use or purposes of use, or make other changes to the project that do not conform with the terms and conditions of this right, prior to submitting a change petition and obtaining approval of the State Water Board.

(0000018)

D. Right holder shall measure the amount of water beneficially used under this right using devices and/or methods satisfactory to the Deputy Director for Water Rights.

In order to demonstrate compliance with the beneficial use monitoring requirements of this right, right holder shall provide evidence that the devices and/or methods are functioning properly, in a manner satisfactory to the Deputy Director of Water Rights, within thirty days of first use of the device and/or method, with the reports required by chapter 2.7, title 23, California Code of Regulations, and whenever requested by the Division of Water Rights.

(0000015)

E. Right holder shall comply with the reporting requirements as specified in the terms of this right or any reporting requirements by statute, order, policy, regulation, decision, judgment or probationary designation. The more stringent requirement shall control in each instance where there is conflict or inconsistency between the requirements.

Right holder shall comply with the reporting requirements of chapter 2.7, title 23, California Code of Regulations.

Right holder shall promptly submit any reports, data, or other information that may reasonably be required by the State Water Board, including but not limited to documentation of water diversion and beneficial use under this right.

(0000010)

F. Right holder shall grant, or secure authorization through right holder's right of access to property owned by another party, the staff of the State Water Board, and any other authorized representatives of the State Water Board the following:

1. Entry upon property where water is being diverted, stored or used under a right issued by the State Water Board or where monitoring, samples and/or records must be collected under the conditions of this right;

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2. Access to copy any records at reasonable times that are kept under the terms and conditions of a right or other order issued by State Water Board;

3. Access to inspect at reasonable times any project covered by a right issued by the State Water Board, equipment (including monitoring and control equipment), practices, or operations regulated by or required under this right; and,

4. Access to photograph, sample, measure, and monitor at reasonable times for the purpose of ensuring compliance with a right or other order issued by State Water Board, or as otherwise authorized by the Water Code.

(0000011)

G. This right shall not be construed as conferring right of access to any lands or facilities not owned by right holder.

(0000022)

H. All rights are issued subject to available flows. Inasmuch as the source contains treated wastewater, imported water from another stream system, or return flow from other projects, there is no guarantee that such supply will continue.

(0000025)

I. This right does not authorize diversion of water dedicated by other right holders under a senior right for purposes of preserving or enhancing wetlands, habitat, fish and wildlife resources, or recreation in, or on, the water. (Wat. Code, § 1707.) The Division of Water Rights maintains information about these dedications. It is right holders' responsibility to be aware of any dedications that may preclude diversion under this right.

(0000212)

J. No water shall be diverted or used under this right, and no construction related to such diversion shall commence, unless right holder has obtained and is in compliance with all necessary permits or other approvals required by other agencies. If an amended right is issued, no new facilities shall be utilized, nor shall the amount of water diverted or used increase beyond the maximum amount diverted or used during the previously authorized development schedule, unless right holder has obtained and is in compliance with all necessary requirements, including but not limited to the permits and approvals listed in this term.

If construction or rehabilitation work is required for the diversion works covered by this right, right holder shall prepare and submit to the Division of Water Rights a list of, or provide information that shows proof of attempts to solicit information regarding the need for, permits or approvals that may be required for the project. At a minimum, right holder shall provide a list or other information pertaining to whether any of the following permits or approvals are required: (1) lake or streambed alteration agreement with the Department of Fish and Wildlife (Fish & G. Code, § 1600 et seq.); (2) Department of Water Resources, Division of Safety of Dams approval (Wat. Code, § 6002); (3) Regional Water Quality Control Board Waste Discharge Requirements (Wat. Code, § 13260 et seq.); (4) U.S. Army Corps of Engineers Clean Water Act section 404 permit (33 U.S.C. § 1344); and (5) local grading permits.

Right holder shall, within 30 days of issuance of any permits, approvals or waivers, transmit copies to the Division of Water Rights.

(0000203)

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K. Urban water suppliers must comply with the Urban Water Management Planning Act (Wat. Code, § 10610 et seq.). An "urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually.

Agricultural water users and suppliers must comply with the Agricultural Water Management Planning Act (Act) (Water Code, § 10800 et seq.). Agricultural water users applying for a permit from the State Water Board are required to develop and implement water conservation plans in accordance with the Act. An "agricultural water supplier" means a supplier, either publicly or privately owned, providing water to 10,000 or more irrigated acres, excluding recycled water. An agricultural water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers.

(0000029D)

L. Pursuant to Water Code sections 100 and 275 and the common law public trust doctrine, all rights and privileges under this right, including method of diversion, method of use, and quantity of water diverted, are subject to the continuing authority of the State Water Board in accordance with law and in the interest of the public welfare to protect public trust uses and to prevent waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion of said water.

The continuing authority of the State Water Board may be exercised by imposing specific requirements over and above those contained in this right with a view to eliminating waste of water and to meeting the reasonable water requirements of right holder without unreasonable draft on the source. Right holder may be required to implement a water conservation plan, features of which may include but not necessarily be limited to (1) reusing or reclaiming the water allocated; (2) using water reclaimed by another entity instead of all or part of the water allocated; (3) restricting diversions so as to eliminate agricultural tailwater or to reduce return flow; (4) suppressing evaporation losses from water surfaces; (5) controlling phreatophytic growth; and (6) installing, maintaining, and operating efficient water measuring devices to assure compliance with the quantity limitations of this right and to determine accurately water use as against reasonable water requirements for the authorized project. No action will be taken pursuant to this paragraph unless the State Water Board determines, after notice to affected parties and opportunity for hearing, that such specific requirements are physically and financially feasible and are appropriate to the particular situation.

The continuing authority of the State Water Board also may be exercised by imposing further limitations on the diversion and use of water by right holder in order to protect public trust uses. No action will be taken pursuant to this paragraph unless the State Water Board determines, after notice to affected parties and opportunity for hearing, that such action is consistent with California Constitution, article X, section 2; is consistent with the public interest; and is necessary to preserve or restore the uses protected by the public trust.

(0000012)

M. The quantity of water diverted under this right is subject to modification by the State Water Board if, after notice to right holder and an opportunity for hearing, the State Water Board finds that such modification is necessary to meet water quality objectives in water quality control plans which have been or hereafter may be established or modified pursuant to Division 7 of the Water Code. No action will be taken pursuant to this paragraph unless the State Water Board finds that (1) adequate waste discharge requirements have been prescribed and are in effect with respect to all waste discharges which have any substantial effect upon water quality in the area involved, and (2) the water quality objectives cannot be achieved solely through the control of waste discharges.

(0000013)

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N. This right does not authorize any act which results in the taking of a candidate, threatened or endangered species or any act which is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish & G. Code, § 2050 et seq.) or the federal Endangered Species Act (16 U.S.C. § 1531 et seq.). If a "take" will result from any act authorized under this right, right holder shall obtain any required authorization for an incidental take prior to construction or operation of the project. Right holder shall be responsible for meeting all requirements of the applicable Endangered Species Act for the project authorized under this right.

(0000014)

Docusign Envelope ID: CD1B5FD8-CD5C-8D03-8169-6EA25443FA19

This right is issued and right holder takes it subject to the following provisions of the Water Code:

Section 1392. Every permittee, if he accepts a permit, does so under the conditions precedent that no value whatsoever in excess of the actual amount paid to the State therefor shall at any time be assigned to or claimed for any permit granted or issued under the provisions of this division (of the Water Code), or for any rights granted or acquired under the provisions of this division (of the Water Code), in respect to the regulation by any competent public authority of the services or the price of the services to be rendered by any permittee or by the holder of any rights granted or acquired under the provisions of this division (of the Water Code) or in respect to any valuation for purposes of sale to or purchase, whether through condemnation proceedings or otherwise, by the State or any city, city and county, municipal water district, irrigation district, lighting district, or any political subdivision of the State, of the rights and property of any permittee, or the possessor of any rights granted, issued, or acquired under the provisions of this division (of the Water Code).

Section 1627. A license shall be effective for such time as the water actually appropriated under it is used for a useful and beneficial purpose in conformity with this division (of the Water Code) but no longer.

Section 1629. Every licensee, if he accepts a license, does so under the conditions precedent that no value whatsoever in excess of the actual amount paid to the State therefore shall at any time be assigned to or claimed for any license granted or issued under the provisions of this division (of the Water Code), or for any rights granted or acquired under the provisions of this division (of the Water Code), in respect to the regulation by any competent public authority of the services or the price of the services to be rendered by any licensee or by the holder of any rights granted or acquired under the provisions of this division (of the Water Code) or in respect to any valuation for purposes of sale to or purchase, whether through condemnation proceedings or otherwise, by the State or any city, city and county, municipal water district, irrigation district, lighting district, or any political subdivision of the State, of the rights and property of any licensee, or the possessor of any rights granted, issued, or acquired under the provisions of this division (of the Water Code).

Section 1630. At any time after the expiration of twenty years after the granting of a license, the State or any city, city and county, municipal water district, irrigation district, lighting district, or any political subdivision of the State shall have the right to purchase the works and property occupied and used under the license and the works built or constructed for the enjoyment of the rights granted under the license.

Section 1631. In the event that the State, or any city, city and county, municipal water district, irrigation district, lighting district, or political subdivision of the State so desiring to purchase and the owner of the works and property cannot agree upon the purchase price, the price shall be determined in such manner as is now or may hereafter be provided by law for determining the value of property taken in eminent domain proceedings.

STATE WATER RESOURCES CONTROL BOARD

Scott McFarland, for

Erik Ekdahl, Deputy Director
Division of Water Rights

Dated: MAR 14 2019

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STATE OF CALIFORNIA
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
STATE WATER RESOURCES CONTROL BOARD

DIVISION OF WATER RIGHTS

RIGHT TO DIVERT AND USE WATER

APPLICATION 28158 PERMIT 20387 LICENSE 13917

Right Holder: Cambria Community Services District
P.O. Box 65
Cambria, CA 93428-0065

The State Water Resources Control Board (State Water Board) authorizes the diversion and use of water by the right holder in accordance with the limitations and conditions herein SUBJECT TO PRIOR RIGHTS. The priority of this right dates from **June 8, 1984**. This right is issued in accordance with the State Water Board delegation of authority to the Deputy Director for Water Rights (Resolution 2012-0029) and the Deputy Director for Water Rights redelegation of authority dated October 19, 2017. This right supersedes any previously issued right on **Application 28158**. The right holder has made proof, to the satisfaction of the State Water Board, of the quantities of water put to beneficial use during the authorized development schedule.

Right holder is hereby granted a right to divert and use water as follows. No water shall be diverted or used under this water right unless right holder is in compliance with the terms and conditions herein:

1. Source of water: **Santa Rosa Creek Underflow**

tributary to: **Pacific Ocean**

within the County of **San Luis Obispo**

2. Location of points of diversion

By California Coordinate System of 1983 in Zone 5	40-acre subdivision of public land survey or projection thereof	Section (Projected)*	Township	Range	Base and Meridian
Well SR1 **(1) North 2,405,136 feet and East 5,644,286 feet**	**SW¼ of NW¼**	**26***			
Well SR3 **(2) North 2,405,741 feet and East 5,645,624 feet**	**NW¼ of NW¼**	**26***	**27S**	**8E**	**MD**
Well SR4 **(3) North 2,407,057 feet and East 5,648,418 feet**	**SE¼ of SE¼**	**23***			

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3. Purpose of use	4. Place of use		
	Townships	Range	Base and Meridian
Municipal	**27S & 28S**	**8E**	**MD**
	Within the Cambria Community Services District as shown on map.		

The place of use is shown on map filed on February 4, 1976 with the State Water Board.

5. The water appropriated under this right shall be limited to the quantity which can be beneficially used and shall not exceed **0.59 cubic foot per second** by direct diversion to be diverted from January 1 to December 31 of each year. The maximum amount diverted under this right shall not exceed **218 acre-feet per year.** The maximum amount diverted under this right shall not exceed **155.3 acre-feet** from May 1 through October 31 of each year nor shall it exceed 218 acre-feet per calendar year.

(0000005A)

6. The equivalent of such continuous flow allowance for any 30-day period may be diverted in a shorter time provided there is no interference with other rights and instream beneficial uses and provided further that all terms or conditions protecting instream beneficial uses are observed.

(0000027)

7. No water shall be diverted under this right unless right holder is operating in accordance with a compliance plan, satisfactory to the Deputy Director for Water Rights. Said compliance plan shall specify how right holder will comply with the terms and conditions of this right. Right holder shall comply with all reporting requirements in accordance with the schedule contained in the compliance plan.

(0000070)

8. During the season specified in this license, the total amount and rate of water diverted and used under this license and the licensee's claimed existing right for the place of use specified in this license shall not exceed the amount and rate of diversion and use, respectively, specified in this license. If the licensee's claimed existing right is quantified at some later date as a result of an adjudication or other legally binding proceeding, the amount and rate of diversion and use allowed under this license shall be the net of the face value of this license less the amounts of water available under the claimed existing right.

   Licensee shall forfeit all rights under this license if the licensee transfers all or any part of the claimed existing right for the place of use covered by this license to another place of use without the prior approval of the State Water Board.

   Licensee shall take and use water under the existing right claimed by the licensee only in accordance with law.

(0000021)

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9. For the protection of water quality from increased salinity due to sea water intrusion in the lower subbasin of Santa Rosa Creek and for the protection of instream resources, licensee shall:

   (a) Maintain monitoring wells WBE and WBW in the vicinity of well 21R3. If the well(s) need to be replaced, the location of the new well(s) shall be approved by the Deputy Director of the Division of Water Rights.

   (b) Follow water sampling protocol, as approved by the Deputy Director of the Division of Water Rights and have the water samples analyzed for electrical conductivity and chloride content in a laboratory certified by the State of California.

   (c) Measure the water level in monitoring wells WBE and WBW, or the equivalent, and cease diversions under this water right if the water level in the monitoring wells falls below 3.00 feet above mean sea level. The Deputy Director of the Division of Water Rights is authorized to adjust the water elevation requirement on the monitoring wells, if appropriate, based upon review of the hydrological analysis to be submitted by the licensee. Any such hydrologic analysis shall consider the depth of the bedrock in the monitoring well and shall determine the fresh water elevation needed to prevent seawater intrusion. Any action by the Deputy Director of the Division of Water Rights to lower the monitoring well water elevation requirements must be accompanied by a finding that the licensee as consulted with the California Department of Fish and Wildlife regarding the tidewater goby (Eucyclogobius newberryi) and that lowering the monitoring well water elevation requirement would be in compliance with applicable provisions of state and federal law.

   (0400500)
   (0110500)

10. To prevent any significant ground deformation in the lower subbasin of Sant Rosa Creek from occurring due to diversions of water under this water right, licensee shall:

   (a) Adhere to the Ground Deformation Monitoring Plan approved by the Deputy Director of the Division of Water Rights on February 11, 1991.

   (b) Monitor for vertical ground deformation on a weekly basis when the static water level in well SR1 or SR3 falls below 15 feet below mean sea level.

   (c) Cease diversion under this water right when the vertical ground deformation exceeds the limit established in the approved ground deformation monitoring program.

   (d) Prior to making any changes in the approved ground deformation program, licensee must get prior approval by the Deputy Director of the Division of Water Rights.

   (0400500)
   (0490500)

11. This water right is specifically subject to the diversion of water from the lower subbasin wells of Lloyd and Faye Junge, Joyce Bretz and Tony Williams, Bruce Black, and Rancho Pacifica and their successors in interest under valid claim of riparian right.

   At such time as licensee is diverting water authorized under this water right and the water level in the Junge, Bretz, Williams, Black, or Rancho Pacifica wells reaches a depth which renders the well unusable, licensee shall:

   (a) Deliver water from its point of diversion to the riparian place of use served by the well, or;

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(b) Take other action to provide an alternate supply of water as is mutually agreeable to the licensee and Junge, Bretz and Williams, Black, and Rancho Pacifica or their successors in interest.

Any water supplied for satisfaction of riparian rights shall not be considered as water appropriated under this water right.

In the event that licensee opts to deliver water to the riparian place of use of any of the above wells, the riparian diverter shall be liable for the estimated costs which the riparian would have incurred to pump water from the affected well. In the absence of an agreement between the parties relative to pumping costs, the costs shall be based on the average amount per acre-foot for pumping water from the affected well during the month in question over the prior three years. Licensee shall pay the cost of installing and maintaining any water conveyance facilities needed to deliver water to the riparian point of diversion or place of use.

(0280800)

12. For the maintenance of riparian vegetation, fish and aquatic resources, licensee shall use the Santa Rosa Gaging Station operated by San Luis Obispo Flood Control (County Station 716) near the intersection of Santa Rosa Creek and Main Street to monitor stream flow in Santa Rosa Creek. Licensee shall limit diversion to:

    (a) A maximum of 2.0 acre-feet per day from November 1 through April 30 when the average daily flow at County Station 716 is between 3.5 and 11.0 cubic feet per second;
    (b) A maximum of 1.4 acre-feet per day from November 1 through April 30 when the average daily flow at County Station 716 is less than 3.5 cubic feet per second.

    If County Station 716 ceases operation or licensee can no longer obtain adequate data to determine average daily stream flow at this location, licensee is limited to a maximum daily diversion of 1.4 acre-feet per day between November 1 and April 30 under this water right.

    (0140500)
    (0100500)

13. Right holder shall comply with the measuring and monitoring requirements as specified in the terms of this right or any reporting requirements by statute, order, policy, regulation, decision, judgment or probationary designation. The more stringent requirement shall control in each instance where there is a conflict or inconsistency between the requirements. Right holder shall comply with the measuring and monitoring requirements of chapter 2.8, title 23, California Code of Regulations.

    (000000R)

14. No water shall be diverted or used under this right for commercial and applicable personal medical use cannabis cultivation unless the water right holder is in compliance with all applicable conditions, including the numeric and narrative instream flow requirements, of the current version of the State Water Board's Cannabis Cultivation Policy – Principles and Guidelines for Cannabis Cultivation, which is available online at: https://www.waterboards.ca.gov/water_issues/programs/cannabis/docs/policy.pdf

    (0000120)

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THIS RIGHT IS ALSO SUBJECT TO THE FOLLOWING TERMS AND CONDITIONS:

A. Right holder is on notice that: (1) failure to timely commence or complete construction work or beneficial use of water with due diligence, (2) cessation or partial cessation of beneficial use of water, or (3) failure to observe any of the terms or conditions of this right, may be cause for the State Water Board to consider revocation (including partial revocation) of this right. (Cal. Code Regs., tit. 23, § 850.)

(0000016)

B. Right holder is on notice that when the State Water Board determines that any person is violating, or threatening to violate, any term or condition of a right, the State Water Board may issue an order to that person to cease and desist from that violation. (Wat. Code, § 1831.) Civil liability may be imposed administratively by the State Water Board pursuant to Wat. Code, § 1055, or may be imposed by the superior court. The Attorney General, upon the request of the board, shall petition the superior court to impose, assess, and recover those sums. (Wat. Code, § 1846.)

(0000017)

C. Right holder is not authorized to make any modifications to the location of diversion facilities, place of use or purposes of use, or make other changes to the project that do not conform with the terms and conditions of this right, prior to submitting a change petition and obtaining approval of the State Water Board.

(0000018)

D. Right holder shall measure the amount of water beneficially used under this right using devices and/or methods satisfactory to the Deputy Director for Water Rights.

In order to demonstrate compliance with the beneficial use monitoring requirements of this right, right holder shall provide evidence that the devices and/or methods are functioning properly, in a manner satisfactory to the Deputy Director of Water Rights, within thirty days of first use of the device and/or method, with the reports required by chapter 2.7, title 23, California Code of Regulations, and whenever requested by the Division of Water Rights.

(0000015)

E. Right holder shall comply with the reporting requirements as specified in the terms of this right or any reporting requirements by statute, order, policy, regulation, decision, judgment or probationary designation. The more stringent requirement shall control in each instance where there is conflict or inconsistency between the requirements.

Right holder shall comply with the reporting requirements of chapter 2.7, title 23, California Code of Regulations.

Right holder shall promptly submit any reports, data, or other information that may reasonably be required by the State Water Board, including but not limited to documentation of water diversion and beneficial use under this right.

(0000010)

F. Right holder shall promptly submit any reports, data, or other information that may reasonably be required by the State Water Board, including but not limited to documentation of water diversion and use under this right and documentation of compliance with the terms and conditions of this right.

(0000010)

G. Right holder shall grant, or secure authorization through right holder's right of access to property owned by another party, the staff of the State Water Board, and any other authorized representatives of the State Water Board the following:

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1. Entry upon property where water is being diverted, stored or used under a right issued by the State Water Board or where monitoring, samples and/or records must be collected under the conditions of this right;

2. Access to copy any records at reasonable times that are kept under the terms and conditions of a right or other order issued by State Water Board;

3. Access to inspect at reasonable times any project covered by a right issued by the State Water Board, equipment (including monitoring and control equipment), practices, or operations regulated by or required under this right; and,

4. Access to photograph, sample, measure, and monitor at reasonable times for the purpose of ensuring compliance with a right or other order issued by State Water Board, or as otherwise authorized by the Water Code.

(0000011)

H. This right shall not be construed as conferring right of access to any lands or facilities not owned by right holder.

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I. All rights are issued subject to available flows. Inasmuch as the source contains treated wastewater, imported water from another stream system, or return flow from other projects, there is no guarantee that such supply will continue.

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J. This right does not authorize diversion of water dedicated by other right holders under a senior right for purposes of preserving or enhancing wetlands, habitat, fish and wildlife resources, or recreation in, or on, the water. (Wat. Code, § 1707.) The Division of Water Rights maintains information about these dedications. It is right holders' responsibility to be aware of any dedications that may preclude diversion under this right.

(0000212)

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Right holder shall, within 30 days of issuance of any permits, approvals or waivers, transmit copies to the Division of Water Rights.

(0000203)

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(0000029D)

L. Pursuant to Water Code sections 100 and 275 and the common law public trust doctrine, all rights and privileges under this right, including method of diversion, method of use, and quantity of water diverted, are subject to the continuing authority of the State Water Board in accordance with law and in the interest of the public welfare to protect public trust uses and to prevent waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion of said water.

The continuing authority of the State Water Board may be exercised by imposing specific requirements over and above those contained in this right with a view to eliminating waste of water and to meeting the reasonable water requirements of right holder without unreasonable draft on the source. Right holder may be required to implement a water conservation plan, features of which may include but not necessarily be limited to (1) reusing or reclaiming the water allocated; (2) using water reclaimed by another entity instead of all or part of the water allocated; (3) restricting diversions so as to eliminate agricultural tailwater or to reduce return flow; (4) suppressing evaporation losses from water surfaces; (5) controlling phreatophytic growth; and (6) installing, maintaining, and operating efficient water measuring devices to assure compliance with the quantity limitations of this right and to determine accurately water use as against reasonable water requirements for the authorized project. No action will be taken pursuant to this paragraph unless the State Water Board determines, after notice to affected parties and opportunity for hearing, that such specific requirements are physically and financially feasible and are appropriate to the particular situation.

The continuing authority of the State Water Board also may be exercised by imposing further limitations on the diversion and use of water by right holder in order to protect public trust uses. No action will be taken pursuant to this paragraph unless the State Water Board determines, after notice to affected parties and opportunity for hearing, that such action is consistent with California Constitution, article X, section 2; is consistent with the public interest; and is necessary to preserve or restore the uses protected by the public trust.

(0000012)

M. The quantity of water diverted under this right is subject to modification by the State Water Board if, after notice to right holder and an opportunity for hearing, the State Water Board finds that such modification is necessary to meet water quality objectives in water quality control plans which have been or hereafter may be established or modified pursuant to Division 7 of the Water Code. No action will be taken pursuant to this paragraph unless the State Water Board finds that (1) adequate waste discharge requirements have been prescribed and are in effect with respect to all waste discharges which have any substantial effect upon water quality in the area involved, and (2) the water quality objectives cannot be achieved solely through the control of waste discharges.

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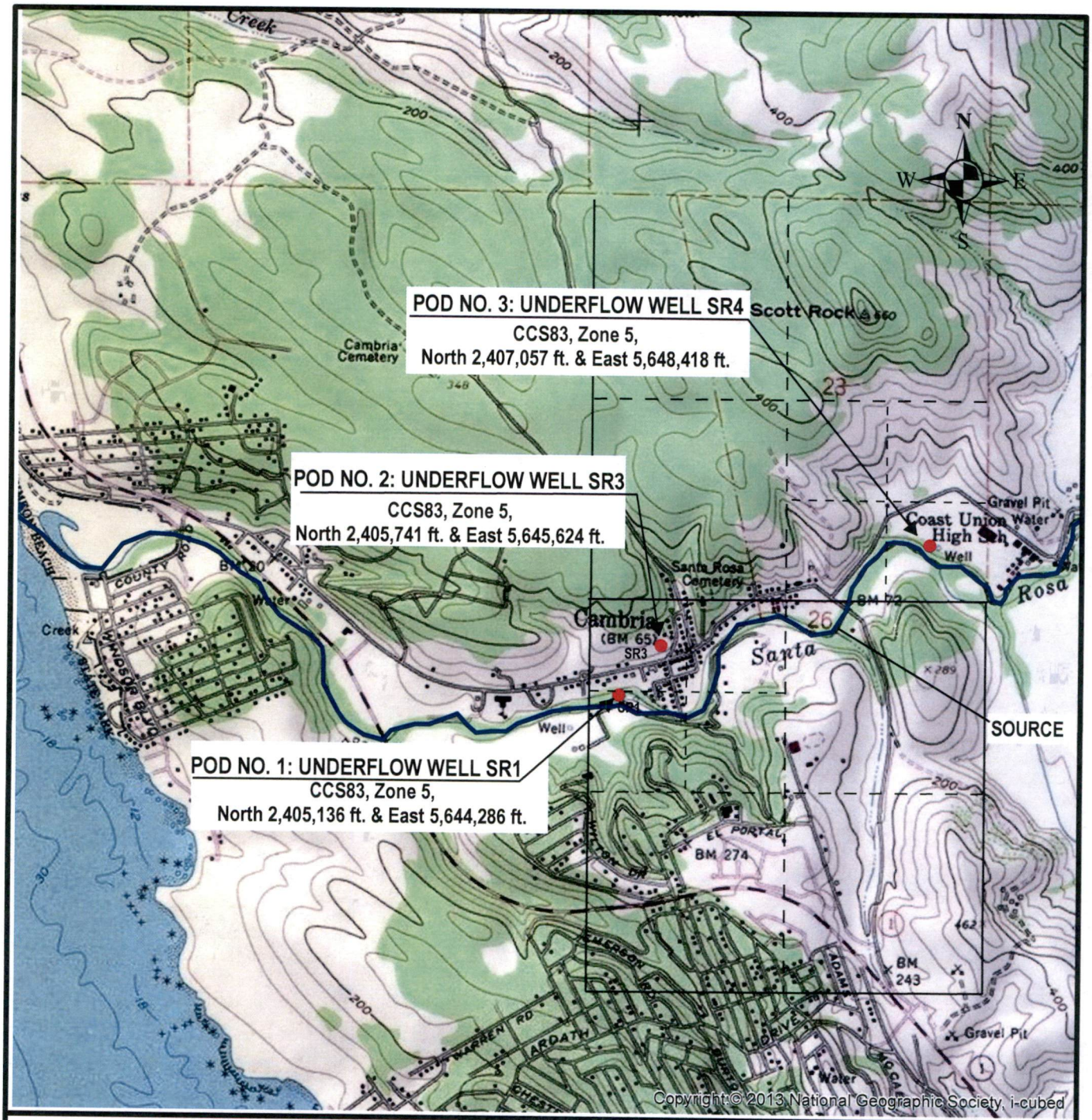
STATE WATER RESOURCES CONTROL BOARD

Scott McDonald, for

Erik Ekdahl, Deputy Director
Division of Water Rights

Dated: MAR 14 2019

Docusign Envelope ID: CD1B5FD8-CD5C-8D03-8169-6EA25443FA19



OWNER: **CAMBRIA COMMUNITY SERVICES DISTRICT**

SOURCE: **SANTA ROSA CREEK UNDERFLOW**

POINTS OF DIVERSION:

WITHIN (1) SW 1/4 OF NW 1/4
(2) NW 1/4 OF NW 1/4 OF PROJECTED
(3) SE 1/4 OF SE 1/4

SECTIONS (1) (2) 26, T27S, R8E, MDB&M
(3) 23, T27S, R8E, MDB&M

COUNTY OF **SAN LUIS OBISPO**

U.S.G.S. QUAD: **CAMBRIA** DATE: **PR 1979** SCALE: **1:24,000**

STATE OF CALIFORNIA
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

STATE WATER RESOURCES CONTROL BOARD
DIVISION OF WATER RIGHTS

APPLICATION NO. **28158**

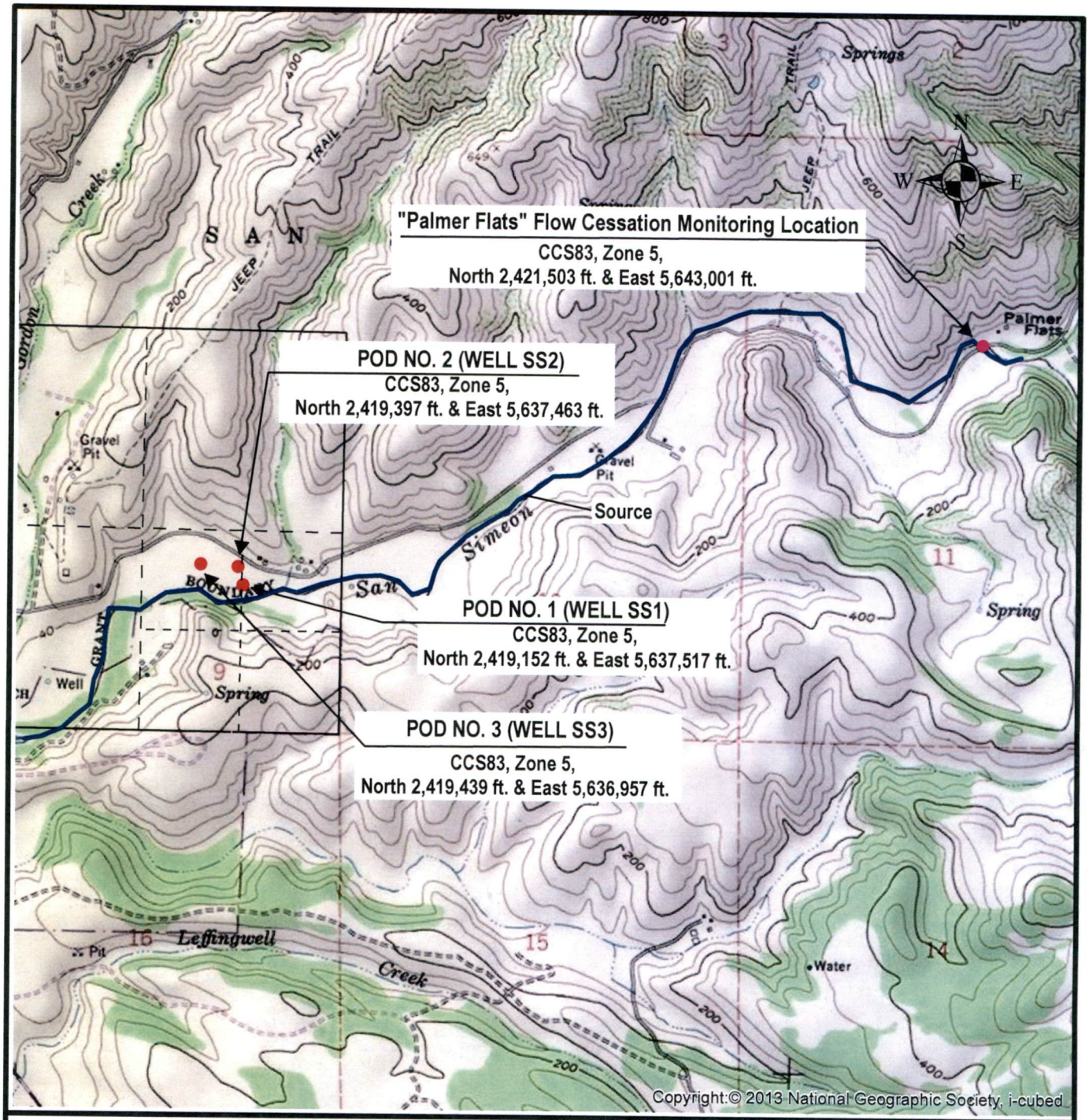
PERMIT NO. **20387**

LICENSE NO. **13917**

DATE:	DRAWN:	CHECKED:
2-8-2018	SMc	MAM

Note: This map does not constitute a public land survey as defined by California Business & Professions Code section 8726. It has been prepared for descriptive purposes only.

Docusign Envelope ID: CD1B5FD8-CD5C-8D03-8169-6EA25443FA19



OWNER: **CAMBRIA COMMUNITY SERVICES DISTRICT**

SOURCE: **SAN SIMEON CREEK UNDERFLOW**

POINTS OF DIVERSION:

WITHIN (1) NE 1/4 OF SE 1/4
(2) NW 1/4 OF SE 1/4
(3) NW 1/4 OF SE 1/4
OF PROJECTED

SECTION 9, T27S, R8E, MDB&M

COUNTY OF **SAN LUIS OBISPO**

U.S.G.S. QUAD: **CAMBRIA** DATE: **PR 1979** SCALE: **1:24,000**

STATE OF CALIFORNIA
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

STATE WATER RESOURCES CONTROL BOARD
DIVISION OF WATER RIGHTS
MAP NO. 2

APPLICATION NO. **25002**

PERMIT NO. **17287**

LICENSE NO. **13916**

DATE:	DRAWN:	CHECKED:
2-8-2018	SMc	MAM

Note: This map does not constitute a public land survey as defined by California Business & Professions Code section 8726. It has been prepared for descriptive purposes only.

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H

APPENDIX H

SAN LUIS OBISPO COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

Docusign Envelope ID: CD1B5FD8-CD5C-8D03-8169-6EA25443FA19

APPENDIX H

SAN LUIS OBISPO COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

For the full plan, please refer to the County of San Luis Obispo website:

https://www.slocounty.ca.gov/departments/administrative-office/office-of-emergency-services/forms-documents/2025-draft-multi-jurisdictional-hazard-mitigation-plan

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APPENDIX I
2025 UWMP ADOPTION RESOLUTION

Docusign Envelope ID: CD1B5FD8-CD5C-8D03-8169-6EA25443FA19

APPENDIX I – ADOPTION RESOLUTION

Documentation pending. It will be included in the Final 2025 UWMP.

Docusign Envelope ID: CD1B5FD8-CD5C-8D03-8169-6EA25443FA19

J

APPENDIX J
2025 UWMP SUBMITTAL DOCUMENTATION

Docusign Envelope ID: CD1B5FD8-CD5C-8D03-8169-6EA25443FA19

APPENDIX J –2025 UWMP SUBMITTAL DOCUMENTATION

Documentation pending. It will be included in the Final 2025 UWMP.

Docusign Envelope ID: CD1B5FD8-CD5C-8D03-8169-6EA25443FA19

K

APPENDIX K
COASTAL DEVELOPMENT PERMIT 428-10

Docusign Envelope ID: CD1B5FD8-CD5C-8D03-8169-6EA25443FA19

California Coastal Commission
SOUTH CENTRAL COAST REGIONAL COMMISSION
735 STATE STREET, (805) 963-6871
BALBOA BUILDING, SUITE 612
SANTA BARBARA, CA 93101

RECEIVED JUN 2 9 1981

COASTAL DEVELOPMENT PERMIT

2 absent

On May 29, 1981, by a vote of 10 to 0, the California Coastal Commission granted to CAMBRIA COMMUNITY SERVICES DISTRICT Permit # 428-10, subject to the conditions set forth below, for development consisting of amendment to condition of Coastal Development Permit No. 132-18 and 132-20 (Condition Nos. 2 and 4 respectively) to modify the annual 131.20 hook-ups permissable to allow 125 residential hook-ups.

more specifically described in the application file in the Commission offices.

The development is within the coastal zone in San Luis Obispo County at Community of Cambria.

After public hearing held on May 29, 1981, the Commission found that, as conditioned, the proposed development is in conformity with the provisions of Chapter 3 of the California Coastal Act of 1976; will not prejudice the ability of the local government having jurisdiction over the area to prepare a local coastal program that is in conformity with the provisions of Chapter 3 of the California Coastal Act of 1976; if between the sea and the public road nearest the sea, is in conformity with the public access and public recreation policies of Chapter 3 of the California Coastal Act of 1976; and either (1) will not have any significant adverse impact on the environment, or (2) there are no feasible alternatives or feasible mitigation measures available that would substantially lessen any significant adverse impact that the development as approved may have on the environment.

Issued on behalf of the South Central Coast Regional Coastal Commission on May 29, 1981.

Carl C. Hetrick
Executive Director

The undersigned permittee acknowledges receipt of the California Coastal Commission Permit # 428-10, and fully understands its contents, including all conditions imposed. (Please return one signed copy to the South Central Coastal Commission as soon as possible; upon receipt of same, the permit card will be mailed to you to post on project property.

June 30, 1981 — Edward V. Main

PERMITTEE

Docusign Envelope ID: CD1B5FD8-CD5C-8D03-8169-6EA25443FA19

Permit # 428-10, is subject to the following conditions:

I. STANDARD CONDITIONS

1. Assignment of Permit This permit may not be assigned to another person except as provided in Cal. Admin. Code, Title 14, Section 13170.

2. Notice of Receipt and Acknowledgement Construction authorized by this permit shall not commence until a copy of this permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of its contents, is returned to the Commission.

3. Expiration If construction has not commenced, this permit will expire two (2) years from the date on which the Commission voted on the application. Application for extension of this permit must be made prior to the expiration date.

4. Construction All construction must occur in accord with the proposal as set forth in the application for permit, subject to any special conditions set forth below. Any deviations from the approved plans must be reviewed by the Commission pursuant to Cal. Admin. Code, Title 14, Sections 13164 - 13168.

II. SPECIAL CONDITIONS

1. Approve the Amendment to Coastal Development Permit Nos. 132-18 and Conditions 2 and 4 respectively to state as follows:

Unless and until a Local Coastal Program is certified specifically approving an increase in water supply beyond that provided by this permit:

a. No more than a total of 5,250 dwelling units shall be permitted to receive water connections (including existing and new units). For the purposes of this condition a "dwelling unit" is defined as a single apartment or condominium unit or a single family residence.

b. The total number of annual hookups shall be limited to 125 dwelling units. The total number of service connections allowed shall be cumulative (i.e., if all 125 dwelling unit hook-ups are not utilized in one year, the remainder can be added to the next year's total).

The additional allocation from that allowed in Permit Nos. 132-18 and 131-20 is based on the reduction in per capita water use experienced in 1979 and 1980, and assumes that the reduction is indicative of a long term reduction in water usage. As the majority of the reduction is due to the implementation of the increasing block rate structure, the Commission finds that this amendment shall be void if the District changes the rate structure to a flat rate or a decreasing block rate structure.

2. All other conditions of Coastal Development Permit Nos. 132-18(as partially amended by Permit No. 161-07) and 131-20 shall remain effective.

Carl C. Hetrick

CARL C. HETRICK
Executive Director

Docusign Envelope ID: CD1B5FD8-CD5C-8D03-8169-6EA25443FA19

CALIFORNIA COASTAL COMMISSION
SOUTH CENTRAL COAST REGION

HEARING ITEM NO. 7
(H-7)

MEETING AT DISCOVERY MOTOR INN

1800 Monterey Street, San Luis Obispo, CA

HEARING AGENDA - FRIDAY, May 29, 1981 - 1:15 p.m.

APPLICATION NO. 428-10

APPLICANT: Cambria Community Services District
P.O. BOX 65
Cambria, CA 93428

LOCATION: Community of Cambria
Co. of San Luis Obispo

PROJECT: Amendment to condition of Coastal Development Permit No. 132-18 and 132-20 (Condition Nos. 2 and 4 respectively) to modify the annual hook-ups permissable to allow 125 residential hook-ups.

STAFF RECOMMENDATION:
The Staff recommends that the Commission adopt the following resolution:

I. APPROVAL WITH CONDITIONS

The Commission hereby approves a permit for the proposed amendment subject to the conditions below, on the grounds that, as conditioned, the proposed development is in conformity with the provisions of Chapter 3 of the Coastal Act of 1976, with the public access and public recreation policies of Chapter 3 of the Coastal Act, will not prejudice the ability of the local government having jurisdiction over the area to prepare a local coastal program that is in conformity with the provisions of Chapter 3 of the Coastal Act, and there are no possible alternatives, or mitigation measures, as provided in the California Environmental Quality Act, available which would substantially lessen any significant adverse impact that the development as finally proposed may have on the environment.

1. Approve the Amendment to Coastal Development Permit Nos. 132-18 and Conditions 2 and 4 respectively to state as follows:

Unless and until a Local Coastal Program is certified specifically approving an increase in water supply beyond that provided by this permit:

a. No more than a total of 5,250 dwelling units shall be permitted to receive water connections (including existing and new units). For the purposes of this condition a "dwelling unit" is defined as a single apartment or condominium unit or a single family residence.

b. The total number of annual hookups shall be limited to 125 dwelling units. The total number of service connections allowed shall be cumulative (i.e., if all 125 dwelling unit hook-ups are not utilized in one year, the remainder can be added to the next year's total).

The additional allocation from that allowed in Permit Nos. 132-18 and 131-20 is based on the reduction in per capita water use experienced in 1979 and 1980, and assumes that the reduction is indicative of a long term reduction in water usage. As the majority of the reduction is due to the implementation of the increasing block rate structure, the Commission finds that this amendment shall be void if the District changes the rate structure to a flat rate or a decreasing block rate structure.

2. All other conditions of Coastal Development Permit Nos. 132-18(as partially amended by Permit No. 161-07) and 131-20 shall remain effective.

III. FINDINGS AND DECLARATIONS
The Commission finds and declares as follows:

1. Project Description

The Cambria Community Services District (CCSD) has applied for an amendment to Coastal Development Permit No. 132-18, Condition No. 2 and Coastal Development Permit No. 131-20, Condition No. 4. The original permits were for the expansion and upgrade of the community water and sewer systems and are summarized in following:

(a) 132-18. The rehabilitation of the existing Cambria water distribution system and the development of a new source of water for the District users by the drilling of wells in the San Simeon Groundwater Basin. The State Water Resources Control Board, Division of Water Rights, had appropriated 1,230 acre/feet of water from this basin to the District with a determination that safe yield of the groundwater basin is 1,460 acre feet.

(b) 131-20. The expansions of the existing secondary treatment plant to a 1 mgd packaged treatment plant, construction of 12 foot land outfall 15,000 square feet in length and disposal fields and a reservoir in the San Simeon Creek area.

The condition(s) requested for modification limited the number and yearly allocation of new (the full conditons are for these permits are included as Appendix 1) residential water and sewer hook-ups in Cambria. The condition is a follows:

"Unless and until a Local Coastal Program is certified specifically approving an increase in water supply beyond that provided by this permit:"

a. "No more than a total of 3,800 dwelling units shall be permitted to receive water connections (including existing and new units). For the purposes of this condition a "dwelling unit" is defined a single apartment or condominium unit or a single family residence."

b. "The total number of annual hookups shall be limited to the schedule of service connections in the Feasibility Report, attached hereto and incorporated herein by reference as Exhibit 4. The effective date of this schedule shall coincide with the implementation of this project. The total number of service connections allowed shall be equal to the cumulative total to that date."

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"In addition to the 3,800 connections allowed under this permit, the Commission may allow additional connections consistent with the other conditions of the permit if the Commission determines after public hearing that water conservation measures have achieved a reduction in water usage consistent with the requirements of Public Resources Code Section 30231; the number of connections allowed in this manner shall be determined by the long term reduction in water usage."

The schedule referred to under "b" and presented as Table 1 extends for a 30 year period and allows 84 hookups in the first year, decreasing over time to 56. The schedule was derived from the original estimates which the CCSD based their financial analysis upon.

Specifically, the District requests that "Exhibit A" as referenced in (b) above and presented as Exhibit 1 herein be changed and in its place the annual number of water and sewer hookups be set at 125. The District has not explicitly requested that the total number of dwelling units referenced in "a" above, 3,800, be modified, however based on the discussion which follows it is reasonable that if the Commission grants the rate change that it should also modify the total number of hookups permissable.

The yearly allocation begins on March 21st of each year. The yearly allocation for FY1981 was exhausted in less than one month

2. Commission Regulations with Respect to Permit Amendments

The Administrative Regulations set forth the circumstances whereby an amendment to a permit may be filed. Section 13166(a) requires:

"13166. Amendments to Permits Other than Administrative Permits.
(a) Applications for amendments to previously approved developments shall be filed with the commission or regional commission which issued the permit."

"(1) An application for an amendment shall be rejected if, in the opinion of the executive director, the proposed amendment would lessen or avoid the intended effect of a partially approved or conditioned permit unless the applicant presents newly discovered material information, which he could not, with reasonable diligence, have discovered and produced before the permit was granted."

In the case of this permit the Executive Director has determined that there is materially new information indicating a decrease in per capita water demand. Accordingly, the application has been filed.

3. Basis of the Original Permit Condition

Citing PRC Sections 30250(a) and 30254, the Commission found that there could be adverse impacts on coastal resources as a result of the development accommodated by the water project equal to an increase of 2.9 times the existing population. Accordingly, the Commission established that the project should be limited to serve 3,800 households, limit the area to be served to existing developed areas, and mitigate the rate of development to extend over a 30 year period required to meet the repayment plan of the Davis-Grunsky Loan Project Funding.

TABLE D

CAMBRIA COUNTY WATER DISTRICT

REVENUE AND EXPENSE ESTIMATES
(Allowing for Increased Water Rates, Availability Charge, Connection Fees and Proposed Davis Grunsky Loan)

Year Ending 6-30	Services Per Year	Unit Connection Charge	REVENUES: Ad Valorem Taxes	Connection Charges	Water Avail. Charges	Water Sales	Total Revenues	Total Annual Revenue Per Service	EXPENDITURES: Water Rate ($ Dollars) Per 100 c.f.	Operation and Maintenance	Capital Improv.	Total Expenditures	Surplus/ Deficit
1977	84	$ 250	$ --	$ --	$ --	$ --	$ --	$ --	$ --	$ --	$ --	$ --	$ --
1978	84	250	28M	6.4M	35M	174M	195.4M	1253	.80	143M	--	143M	54.4M
1979	84	250	31	8.4	65	191	255	1539	.80	157	--	157	98
1980	84	500	34	21.0	65	199	319	1539	.80	170	--	170	149
1981	84	500	37	20.5	65	166	289	1539	.80	180	--	180	109
1982	84	500	54	19.5	65	174	309	1527	.80	191	93.8M	93.8M	215.2
1983	84	500	54	19.5	65	211	349	1527	.80	191	--	191	158.2
1984	84	600	54	23.5	65	213	343	1469	.90	202	196.2	398.2	55.2
1985	84	600	53	23.5	65	219	361	1469	.90	202	196.2	398.2	37.2
1986	84	600	52	23.5	65	232	372	1469	1.00	214	196.2	410.2	18.2
1987	84	700	52	23.0	65	267	407	1469	1.00	227	196.2	423.2	(16.2)
1988	84	700	52	23.0	65	319	459	1469	1.00	241	196.2	437.2	(34.2)
1989	84	800	52	23.0	65	324	464	1469	1.10	255	196.2	451.2	(52.2)
1990	84	800	52	23.0	65	358	498	1469	1.10	264	196.2	460.2	(70.2)
1991	84	800	52	23.0	65	363	503	1471	1.10	264	196.2	460.2	(89.2)
1992	84	800	52	23.0	65	370	510	1471	1.10	264	196.2	460.2	(108.2)
1993	84	800	52	23.0	65	378	518	1471	1.10	264	196.2	460.2	(127.2)
1994	84	800	52	23.0	65	386	526	1471	1.10	264	196.2	460.2	(146.2)
1995	84	800	52	23.0	65	394	534	1471	1.10	264	196.2	460.2	(165.2)
1996	84	800	52	23.0	65	403	543	1471	1.10	264	196.2	460.2	(184.2)
1997	84	800	52	23.0	65	411	551	1471	1.10	264	196.2	460.2	(203.2)
1998	84	800	52	23.0	65	420	560	1471	1.10	264	196.2	460.2	(222.2)
1999	84	800	52	23.0	65	429	569	1471	1.10	264	196.2	460.2	(241.2)
2000	84	800	52	23.0	65	438	578	1471	1.10	264	196.2	460.2	(260.2)
2001	84	800	52	23.0	65	447	587	1471	1.10	264	196.2	460.2	(279.2)
2002	84	800	52	23.0	65	456	596	1471	1.10	264	196.2	460.2	(298.2)
2003	84	800	52	23.0	65	465	605	1471	1.10	264	196.2	460.2	(317.2)
2004	84	800	52	23.0	65	474	614	1471	1.10	264	196.2	460.2	(336.2)
2005	84	800	52	23.0	65	484	624	1471	1.10	264	196.2	460.2	(355.2)
2006	84	800	52	23.0	65	494	634	1471	1.10	264	196.2	460.2	(374.2)
2007	84	800	52	23.0	65	504	644	1471	1.10	264	196.2	460.2	(393.2)
2008	84	800	52	23.0	65	514	654	1471	1.10	264	196.2	460.2	(412.2)
2009	84	800	52	23.0	65	524	664	1471	1.10	264	196.2	460.2	(431.2)
2010	84	800	52	23.0	65	535	675	1471	1.10	264	196.2	460.2	(450.2)
2011	84	800	52	23.0	65	545	685	1471	1.10	264	196.2	460.2	(469.2)
2012	84	800	52	23.0	65	556	696	1471	1.10	264	196.2	460.2	(488.2)
2013	84	800	52	23.0	65	567	707	1471	1.10	264	196.2	460.2	(507.2)
2014	84	800	52	23.0	65	578	718	1471	1.10	264	196.2	460.2	(526.2)
2015	84	800	52	23.0	65	589	729	1471	1.10	264	196.2	460.2	(545.2)
2016	84	800	52	23.0	65	601	741	1471	1.10	264	196.2	460.2	(564.2)
2017	84	800	52	23.0	65	612	752	1471	1.10	264	196.2	460.2	(583.2)
2018	84	800	52	23.0	65	624	764	1471	1.10	264	196.2	460.2	(602.2)
2019	84	800	52	23.0	65	636	776	1471	1.10	264	196.2	460.2	(621.2)
2020	84	800	52	23.0	65	648	788	1471	1.10	264	196.2	460.2	(640.2)
2021	84	800	52	23.0	65	660	800	1471	1.10	264	196.2	460.2	(659.2)
2022	84	800	52	23.0	65	672	812	1471	1.10	264	196.2	460.2	(678.2)
2023	84	800	52	23.0	65	684	824	1471	1.10	264	196.2	460.2	(697.2)
2024	84	800	52	23.0	65	696	836	1471	1.10	264	196.2	460.2	(716.2)
2025	84	800	52	23.0	65	708	848	1471	1.10	264	196.2	460.2	(735.2)
2026	84	800	52	23.0	65	721	861	1471	1.10	264	196.2	460.2	(754.2)
2027	84	800	52	23.0	65	733	873	1471	1.10	264	196.2	460.2	(773.2)
2028	84	800	52	23.0	65	746	886	1471	1.10	264	196.2	460.2	(792.2)
2029	84	800	52	23.0	65	758	898	1471	1.10	264	196.2	460.2	(811.2)
2030	84	800	52	23.0	65	771	911	1471	1.10	264	196.2	460.2	(830.2)
2031	84	800	52	23.0	65	784	924	1471	1.10	264	196.2	460.2	(849.2)
2032	84	800	52	23.0	65	797	937	1471	1.10	264	196.2	460.2	(868.2)
2033	84	800	52	23.0	65	810	950	1471	1.10	264	196.2	460.2	(887.2)
2034	84	800	52	23.0	65	823	963	1471	1.10	264	196.2	460.2	(906.2)
2035	84	800	52	23.0	65	836	976	1471	1.10	264	196.2	460.2	(925.2)
2036	84	800	52	23.0	65	849	989	1471	1.10	264	196.2	460.2	(944.2)
2037	84	800	52	23.0	65	863	1003	1471	1.10	264	196.2	460.2	(963.2)
2038	84	800	52	23.0	65	876	1016	1471	1.10	264	196.2	460.2	(982.2)
2039	84	800	52	23.0	65	890	1030	1471	1.10	264	196.2	460.2	(1001.2)
2040	84	800	52	23.0	65	904	1044	1471	1.10	264	196.2	460.2	(1020.2)
2041	84	800	52	23.0	65	918	1058	1471	1.10	264	196.2	460.2	(1039.2)
2042	84	800	52	23.0	65	932	1072	1471	1.10	264	196.2	460.2	(1058.2)
2043	84	800	52	23.0	65	946	1086	1471	1.10	264	196.2	460.2	(1077.2)
2044	84	800	52	23.0	65	960	1100	1471	1.10	264	196.2	460.2	(1096.2)
2045	84	800	52	23.0	65	974	1114	1471	1.10	264	196.2	460.2	(1115.2)
2046	84	800	52	23.0	65	989	1129	1471	1.10	264	196.2	460.2	(1134.2)
2047	84	800	52	23.0	65	1003	1143	1471	1.10	264	196.2	460.2	(1153.2)
2048	84	800	52	23.0	65	1018	1158	1471	1.10	264	196.2	460.2	(1172.2)
2049	84	800	52	23.0	65	1033	1173	1471	1.10	264	196.2	460.2	(1191.2)
2050	84	800	52	23.0	65	1048	1188	1471	1.10	264	196.2	460.2	(1210.2)
2051	84	800	52	23.0	65	1063	1203	1471	1.10	264	196.2	460.2	(1229.2)
2052	84	800	52	23.0	65	1078	1218	1471	1.10	264	196.2	460.2	(1248.2)
2053	84	800	52	23.0	65	1093	1233	1471	1.10	264	196.2	460.2	(1267.2)

FOOTNOTES:

① Current District practice is to credit full amount of ad valorem tax revenues to water revenue account. Column 4 above reflects only 30% of ad valorem tax revenues applied to the water revenue account.

② Connection charge income shown is net income after deducting estimated connection costs which are incurred by the District. Net income is estimated at $100 per connection for the years 1977 and 1978, and at one-half the connection charge thereafter.

③ Water availability charge income is based upon $10 charge per 8,588 parcels becoming effective July 1, 1977.

④ Effective November 1, 1976 increased water rates become effective. Based on estimated District population of 2,300 and annual per capita water sales revenues of $54 ($4.50 per month) water sales revenues are estimated allowing for future population increases.

⑤ Amortization of $3.3 million Davis Grunsky Loan dated July 1, 1977 with final payment in the year 2007 (30 year term).

⑥ Note that surplus/deficit column is shown for additional capital projects in the years 1978 and 1979; and does not reflect full 100% application of ad valorem tax revenues per note ①. Estimated deficits will be further reduced to the extent that District assessed valuation increases in future years.

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Public Resources Code Section 30250.

(a) New residential, commercial, or industrial development, except as otherwise provided in this division, shall be located within, contiguous with, or in close proximity to, existing developed areas able to accommodate it or, where such areas are not able to accommodate, in order areas with adequate public services and where it will not have significant adverse effects, either individually or cumulatively, on coastal resources. In addition, land divisions, other than leases for agricultural uses, outside existing developed areas shall be permitted only where 50 percent of the usable parcels in the area have been developed and the created parcels would be no smaller than the average size of surrounding parcels.

(b) Where feasible, new hazardous industrial development shall be located away from existing developed areas.

(c) Visitor-serving facilities that cannot feasibly be located in existing developed areas shall be located in existing isolated developments or at selected points of attraction for visitors.

Public Resources Code Section 30254.

New or expanded public works facilities shall be designed and limited to accommodate needs generated by development or uses permitted consistent with the provisions of this division; provided, however, that it is the intent of the Legislature that State Highway Route 1 in rural areas of the coastal zone remain a scenic two-lane road. Special districts shall not be formed or expanded except where assessment for, and provision of, the service would not induce new development inconsistent with this division.

Where existing or planned public works facilities can accommodate only a limited amount of new development, services to coastal dependent land use, essential public services and basic industries vital to the economic health of the region, state, or nation, public recreation, commercial recreation, and visitor-serving land uses shall be be precluded by other development.

In determining the amount of development which could be accommodated by the withdrawal of 1,230 acre feet the following factors were utilized. One, water demand was estimated to be 140 gallons per day per person, or .163 acre/feet per person per year. Two, average persons per household for the futue was estimated to be 2.0. Based on these assumptions, approximately 7,600 persons or 3,800 households could be accommodated by the water available from the apporpriation from San Simeon Groundwater Basin.

It had been estimated that there were a total of 6,300 building sites within the District as defined by County ordinance (this is not total development potential, as it assumes one unit per legal building site). Of the 6,300 sites, approximately 1,500 parcels had been improved leaving 4,800 undeveloped sites. Accordingly, the project could serve 2,300 new parcels (3,800-1,500) or 48 of the 4,800 remaining vacant parcels (one lot, one unit).

4. Basis for Request for Amendment

The CCSD request is based on (1) a documented decrease in per capita water consumption; (2) identification of additional water resources (Santa Rosa Creek, Steiner Creek and Perry Creek). With respect to the second factor, the staff does not believe that sufficient information has been provided to date to indicate that additional water resources are available and can be developed consistent with Coastal Act policies.

With respect to the first matter, decrease in per capita water consumption, the CCSD has provided information that actual per capita water consumption in 1979 and 1980 was substantially less than originally projected. In 1979, per capita water consumption was 92 gpcd; in 1980 105 gpcd (1979 pupulation 2,932 (estimated); 1980 population 3,030 from U.S. Census Bureau).

This represents a substantial reduction in assumed per capita water consumption of 140 gpcd or 34% in 1979 and 25% in 1980 below assumed water consumption. In reviewing the disagregated data on residential and commercial data, it is clear that the reduction is primarily the result of conservation efforts in the residential sector. Table 2 is a presentation of Water Produced and Metered Consumption, Cambria for 1966 through 1980.

Several factors have resulted in the substantial actual water reduction from the original projections, the major ones are consumer education and a change in water rate structure. The District has engaged in an aggressive water conservation education program which has included the provision of free flow reducing devices for plumbing fixtures. The District's water rate structure for residential cumstomers was modified in April 1978, in response to a requirement of the Regional Commission (Permit No. 161-07). The reduction in the bimonthly minimum charge and the implementation of an increasing block rate structure has provided customers with a considerable financial incentive to conserve water.

According to the District manager, the greater decrease in per capita water consumption in 1979, as compared to 1980, may be reflective of the immediate reaction to the change in water rates in mid-1978. The District manager also advises the staff that he anticipates further reduction in per capita water use in the future due to impact to major increases in power costs which will be a result in higher costs to the consumers; and the increase in proportion of the housing stock comprised of energy efficient residences as required by recent changes to County Code.

The staff believes that it is reasonable to assume that the per capita water demand reduction of 25% from the 140 gpcd is reflective of general long-term water demand assuming that the increasing block rate structure is maintained. While per capita demand may decrease even more over time, it can not be predicted with any certainty at this time. In the original permit condition the Commission recognized that should long term water usage decrease, the total number of connections permitted could be evaluated.

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WATER PRODUCED AND METERED CONSUMPTION
CAMBRIA, (1966-1980)[1]

YEAR	POPULATION[2]	WATER PRODUCED	METERED CONSUMPTION
1966		299.4	215.9
1967		327.4	225.2
1968		358.0	229.2
1969		369.5	243.6
1970	1,716	357.0	261.8
1971		415.8	296.3
1972		416.1	309.7
1973		396.6	3
1974		3	
1975		483	3
1976	2,667	518	3
1977(DROUGHT)		330	3
1978		447	3
1979		456	302
1980	3,030	473	355

1 Data for 1966 - 1973 from Cambria County Water District, Feasibility Report, Proposed Water Improvements (October, 1976); Data for 1975 - 1980 from District Manager.

2 Population for census years only from U.S. Bureau of The Census (1970 and 1980) State Department of Finance (1975).

3 Information not available.

For comparison purposes in following is a presentation of the number of existing lots which can be served by the appropriate water from San Simeon Groundwater Basin, based on the original analysis contained in Permit No. 132-18 of per-capita water demand and the number of existing lots which can be served based on the 25% water reduction evidenced in 1980.

Original Analysis (Permit No. 132-18)

a 7,600 persons equivalent to 3,800 households can be served by 1,230 acre/feet (.163 acre/feet per person per year).

3,800 households served by the project
-1,500 existing developed parcels, (1977)
2,300 potential new development

2,300 = 48% of the 4,800 remaining vacant lots

Analysis Based on New Information

a 10,500 persons equivalent to 5,250 households can be served by 1,230 acre/feet (.117 acre/feet per person per year).

5,250 households served by the project
-1,800 existing developed parcels, (1981, estimate)
3,450 potential new development

3,450 = 77% of the 4,500 remaining vacant lots

It should be underscored that this analysis assumes one unit per legal lot and does not assume any divisions of land at all. The County's LUP hearing draft plan by land use designation shows development twice what the existing water system could accommodate or 21,525 people.

The District's request to modify the rate of growth of the system to allow 125 residential housing units annually would allow for the phasing of growth over a 30 year period, consistent with the original permit. For the first new full year, 1982, the 125 permits would last 27 years plus the four years between 1978-1981 (In 1978 only 42 permits were allowed to be issued). For this year (1981) the District would be entitled to 41 additional residential permits over the number the District has already issued.

The growth rate of the Community, commensurate with services available would theoretically remain in balance with the original permit for the District. One of the major concerns of the Commission is that the community have adequate time to develop additional water resources in an environmentally sensitive manner and to allow the community sufficient time to implement a resource based land use plan.

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In regard to the capability of the wastewater treatment facilities the following applies. According to District estimates, the existing treatment facility of 1.0 million gallons per day (mgd) has sufficient capacity for 13.4 years; assuming an annual growth rate of 125 residential units. The plant has been designed to accept the addition of two more packaged treatment plants (future) for a total capacity of 2.0 mgd. Revenue reserves are being set aside at this time for that possibility. Upon reaching 75% design capacity of the total 1.0 mgd plant the District plans to proceed with detailed design for a third module which will provide another 0.5 mgd.

The growth management system in the original permit was based on the need to mitigate the impacts of growth accommodated by the water system over a sufficient period, based on assumptions of known water supplies available to the Community. The limitation on sewer capacity does not pose major problems with regard to the impact on environmental resources as does a possible additional water project. For instance, with a water project evaluation of the impact on the groundwater resources must be carefully evaluated.

5. Environmentally Sensitive Resources and Location of New Development

The relevant Coastal Act policies are PRC Sections 30231, 30240, 30250 and 30254.

Public Resources Code Section 30231.

> The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum population of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entainment, controlling runnoff, preventing depletion of groundwater supplies and substantial interference with surface water flow, encouraging waste water recamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

Public Resources Code Section 30240.

> (a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on such resources shall be allowed within such areas.
>
> (b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade such areas, and shall be compatible with the continuance of such habitat areas.

Public Resources Code Section 30250.

> (a) New residential, commercial, or industrial development, except as otherwise provided in this division, shall be located within, contiguous with, or in close proximity to, existing developed areas able to accommodate it or, where such areas are not able to accommodate, in order areas with adequate public services and where it will not have significant adverse effects, either individually or cumulatively, on coastal resources. In addition, land divisions, other than leases for agricultural uses, outside existing developed areas shall be permitted only where 50 percent of the usable parcels in the area have been developed and the created parcels would be no smaller than the average size of surrounding parcels.
>
> (b) Where feasible, new hazardous industrial development shall be located away from existing developed areas.
>
> (c) Visitor-serving facilities that cannot feasibly be located in existing developed areas shall be located in existing isolated developments or at selected points of attraction for visitors.

Public Resources Code Section 30254.

> New or expanded public works facilities shall be designed and limited to accommodate needs generated by development or uses permitted consistent with the provisions of this division; provided, however, that it is the intent of the Legislature that State Highway Route 1 in rural areas of the coastal zone remain a scenic two-lane road. Special districts shall not be formed or expanded except where assessment for, and provision of, the service would not induce new development inconsistent with this division.
>
> Where existing or planned public works facilities can accommodate only a limited amount of new development, services to coastal dependent land use, essential public services and basic industries vital to the economic health of the region, state, or nation, public recreation, commercial recreation, and visitor-serving land uses shall be be precluded by other development.

The amendment allows for an increase in development accommodated by the water distribution system. There will be no increase in water supply, rather more people can be served by the original system due to community conservation.

The remaining conditions of the original Permit 132-18, except as amended by 161-07 shall not be changed; nor shall any of the other existing conditions of Permit No. 131-20. The development to be accommodated by the project prior to certification of the LCP is thereby limited to the existing service district and users with existing water service agreements; priority uses are established for 20% of the system capacity is designated for public commercial and recreational uses; and mitigation measures to assure maintenance of the resources of San Simeon and Santa Rosa Creek groundwater resources is included.

The project modifications as requested by the District will accommodate development over a 30 year period which is equivalent to the development period under the original permit and will permit the impacts associated with the substantial development accommodated by the project to be adequately mitigated.

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6. Prejudice to the Local Coastal Program

Public Resources Code Section 30604(a) states:

(a) Prior to certification of the local coastal program, a coastal development permit shall be issued if the issuing agency, or the commission on appeal, finds that the proposed development is in conformity with the provisions of Chapter 3 (commencing with Section 30200) of this division and that the permitted development will not prejudice the ability of the local government to prepare a local coastal program that is in conformity with the provisions of Chapter 3 (commencing with Section 30200). A denial of a coastal development permit on grounds it would prejudice the ability of the local government to prepare a local coastal program that is in conformity with the provisions of Chapter 3 (commencing with Section 30200) shall be accompanied by a specific finding which sets forth the basis for such conclusion.

In the County LUP hearing draft, the staff propose that the yearly growth rate of Cambria be increased to allow 125 residential permits annually, consistent with this permit application.

There are a number of issues which the Commission staff have identified with regard to the existing plan. There were presented in the joint Regional-State Commission staff review of April 3, 1981. They relate to ultimate buildout and site standards. The issue of community restoration is still of very high priority and must be resolved in the LUP. There are land use planning solutions to the overcommittment to development in the Community which must be seriously considered and evaluated prior to allowing additional subdivisions in the Community.

The change requested by the District based on an increase in development accommodated by the original permit will not prejudice the County's ability to prepare an LCP consistent with the requirements of PRC Section 30604(a).

APPENDIX

CONDITIONS OF APPROVAL OF COASTAL DEVELOPMENT
PERMITS 132-18, 131-20 and 161-07

Conditions as Adopted for Appl. No. 132-18, Cambria Community Services District

Condition No. 1 - Service Area

Prior to the certification of the appropriate Local Coastal Program, the district shall neither guarantee nor promise to deliver any amount of the 1,230 acre feet of water to be derived from the wells located in the area known as the Bonomi Ranch in the San Simeon Creek groundwater basin to any individual or entity whose property is located outside of its Assessment District Nos. 1 and 2 and Subdivided Tracts No.s 358, 384 and 420. Privided however, that should the Commission prior to the certifaction of the appropriate Local Coastal Program grant a development permit for the subdivision of any land within the District which is outside of Assessment Districts Nos. 1 & 2 and Subdivision Tracts Nos. 358, 384 and 420, then the District may provide water service from this 1,230 acre feet to such land and provided further, that the applicant may utilized portions of this 1,230 acre feet of water to service the following individuals and entities whose property is located outside of the District's present boundaries, but with which the District has existing water service agreements:

a) Air Force Radar Station
b) Sibley Ranch - agricultural uses
c) YMCA Camp
d) Cambria Cemetery
e) San Simeon State Park

Since the intent of this condition is to avoid the premature commitment of any lands within the district to other than presently existing uses before adequate Coastal Planning has been done at the local level, the District shall not:

a. Cause to be assessed for benefit received from this project,

b. Levy any stand by fees or,

c. Accept any future payment in exchange for the promise to serve or to issue water permits for or to annex,

Any property which is not located in the District's Assessment District No. 1 & 2 and Subdivision Tracts 358, 384, and 420 or which have not been subdivided pursuant to a Coastal Development Permit granted by the Commission subsequent to the effective date of this permit and prior to the certification of the appropriate Local Coastal Program.

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Condition No. 2 - Service Connections

Unless and until a Local Coastal Program is certified specifically approving an increase in water supply beyond that provided by this permit:

a. No more than a total of 3800 dwelling units shall be permitted to receive water connections (including existing and new units). For the purposes of this condition a "dwelling unit" is defined as a single apartment or condominium unit or a single family residence.

b. The total number of annual hookups shall be limited to the schedule of service connections in the Feasibility Report, attached hereto and incorporated herein by reference as Exhibit 4. The effective date of this schedule shall coincide with the implementation of this project. The total number of service connections allowed shall be equal to the cumulative total to that date.

In addition to the 3800 connections allowed under this permit, the Commission may allow additional connections consistent with the other conditions of the permit if the Commission determines after public hearing that water conservation measures have achieved a reduction in water usage consistent with the requirements of Public Resources Code 30231; the number of connections allowed in this manner shall be determined by the long term reduction in water usage.

Condition No. 3. - San Simeon Creek Groundwater Quality

The District shall prepare an operation and maintenance manual for a basin management program which meets the requirements of the State Water Resources Control Board's Water Right's Determination; to the extent that the State Water Resources Control Board's Water Right's Determination takes into account the existing fishery resources, the water supply appropriate for domestic purposes and a water supply appropriate for agricultural purposes.

This operations and maintenance manual shall be submitted to the State Water Resources Control Board staff. An annual report on the opertation of the basin shall be prepared by a qualified hydrologist and submitted to the Regional Water Quality Control Board and State Health Department to demonstrate that the District has complied with the requirements of this condition.

Condition No. 4. - Santa Rosa Creek

Use of all District wells on Santa Rosa Creek shall be discontinued when water production from San Simeon Creek has been established. Any continued permitted use of the Santa Rosa Creek wells shall be limited to the supplementing of San Simeon Creek well production in years when the 1230 acre feet cannot be safely removed. Except in the emergency situations defined below, the withdrawal of water from Santa Rosa Creek shall not exceed 260 acre feet during the dry season which normally extends from July 1 through November 20 and shall not exceed 147 acre feet per month at any other time. At no time shall the combined withdrawal from San Simeon Creek and Santa Rosa Creek exceed the 1230 acre feet annually. In addition, the following emergency situations shall be permitted: fire or any emergency use authorized by the State Water Resources Control Board or the State Health Department. Until the San Simeon Creek wells are functioning, no new water permits shall be permitted in the District (Requirement underlined amended by Permit No. 161-07).

Condition No. 5 - Erosion Control

The areas which are disturbed by the construction work shall be restored to their approximate original condition prior to construction, this shall include but is not limited to the replanting of any vegetation removed during the course of construction.

Condition No. 6 - Water Conservation

Prior to utilization of facilities, the applicant shall demonstrate the existence of a water conservation program. An acceptable water conservation program shall include, at a minimum: elimination of the decreasing block rate structure which currently exists; modification of the plumbing portions of the building code to require installation of low-flow toilets and pressure reducing devices on all taps; establishment of a retrofit program providing free water dams and pressure reducing washers; and evidence of a public information program informing the public of the need to save water, the availability of flow reduction devices, and the need to use drought-resistant plants in landscaping.

Condition No. 7 - Reservation of Capacity for Public Commercial and Recreation Uses

At all times at least 20% of the permitted water production capacity shall be reserved for public commercial or recreation uses; a public commercial or recreation use shall be a use designated as such in a permit action by the Regional or State Coastal Commission or a designated recreational use set forth in an approved Local Coastal Program for the Cambria area.

Condition No. 8 - Archaeology

Prior to construction the applicant shall have an archaeological survey made of all areas potentially affected by construction which have not been previously surveyed. All feasible recommendations made by the applicant's archaeological consultant shall become conditions of this permit. The choice of archaeological consultant, and final determinatio of the feasibility of the consultant's recommendations shall be subject to approval by the State Historic Preservation Officer.

Conditions to Application No. 161-07, Amendment to No. 132-18 Condition No. 4, to permit District to issue seven (7) water permits per month after commencement of drilling wells in the San Smeon basin:

1. The Cambria Community Services District (CCSD) shall be permitted to issue no more than seven (7) water permits monthly for a period not to exceed six months, or until such time as an overdraft situation is indicated by the District's water use monitoring program.

2. Should the San Simeon wells become operational while this amendment is in effect this amendment shall expire.

3. On a monthly basis the District shall submit to the Executive Director of the Regional Commission logs for wells #1, 3 and the Taylor Ranch well. At such time as the Executive Director of the Regional Commission determines that an impending overdraft situation exists he may immediately void this eprmit amendment. Such action shall remain binding unless changed by the Regional Commission, which will retain final authority to resolve any disputes in this matter.

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4. Prior to issuance of permit, applicant shall submit to the Executive Director for his review and opinion evidence to the effect that a rate structure which encourage water conservation has been implemented (i.e., a rate structure that provides for elimination of the decreasing block rate structure and of the minimum monthly charge).

Conditions for Application 131-20, Sewer Treatment Plant of Cambria Community Services District.

Condition No. 1 - Service Area.

Prior to certification of the Local Coastal Program the District can neither guarantee nor provide sewer service to any area outside of its Assessment Districts No. 1 and 2 and Subdivision Tracts Nos. 358, 384 and 420. Provided however, that should the Commission prior to the certification of the appropriate Local Coastal Program grant a Development Permit for the subdivision of any land within the District which is outside of Assessment Districts No.1 and 2 and Subdivision Tracts 358, 384 and 420 then the District may provide sewer service to such land.

Further, since the intent of this condition is to avoid the premature commitment of any lands within the District to other than presently existing uses before adequate coastal planning has been done at the local level, the District shall not:

a. Cause to be assessed for benefit received for this project,

b. Levy any standby fees or,

c. Accept any future payment in exchange for any promise to serve, to issue sewer connection permits for, or to annex,

any property which is not located in the District's Assessment District Nos. 1 & 2 and Subdivision Tracts 358, 384 and 420.

Condition No. 2 - Treatment Plant Capacity.

The treatment plant capacity allowed under this permit shall not be greater than a 1.0 million gallon daily flow.

Condition No. 3 - San Simeon Creek Groundwater Quality.

The District shall prepare an operation and maintenance manual for a basin management program which meets the requirements of the State Water Resources Control Board's Water Right's Determination, to the extent that the State Water Resources Control Board's Water Rights Determination takes into account the existing fishery resources, the water supply appropriate for domestic purposes and a water supply appropriate for agricultural purposes.

This operation and maintenance manual shall be submitted to the State Water Resources Control Board staff. An annual report on the operation of the basin shall be prepared by a qualified hydrologist and submitted to the Regional Water Quality Contol Board and State Health Department to demonstrate that the District has complied with the requirements of this condition.

Condition No. 4 - Sewerage Connections.

Unless and until a Local Coastal Program is certified specifically approving an increase

n water supply beyond that provided by Permit 132-18:

a. No more than a total of 3800 dwelling units shall be permitted to receive sewer connections (including existing and new units). For the purposes of this condition a "dwelling unit" is defined as a single apartment or condominium unit or a single family residence. In order to assure priority for existing residences the District shall submit evidence to the Regional Commission that connections have been reserved for the total of residences existing as of the day of this permit. Additional connections for up to a total of 3800 dwelling units, shall be allowed for that portion of the 3800 dwelling units which remains after capacity has been reserved for existing residences.

b. The total number of annual hookups shall be limited to the schedule of service connections attached hereto and incorporated herein by reference as Exhibit 4. The total cumulative number of connections shall be the same as those connections allowed under Application 132-18.

In addition to the 3800 connections allowed under this permit the Commission may allow additional connections consistent with the other conditions of this permit if the Commission determines after public hearing that water conservation measures have achieved a reduction in water usage consistent with the requirements of Public Resources Code 30231; the number of connections allowed in this manner shall be determined by the long-term reduction of water usage.

Condition No. 5 - Reservation of Capacity for Public Commercial and Recreation Uses.

At all times at least 20% of the permitted capacity shall be reserved for public commercial or recreational uses; the public commercial or recreation use shall be a use designated as such in a permit action by the Regional or State Coastal Commissions or a designated recreational use set forth in an approved Local Coastal Program for the Cambria area.

Condition No. 6 - Arcaeological Sites.

Prior to construction the District shall have an archaeological survey made of all areas potentially affected by construction which have not been previously surveyed. All feasible recommendations made by the applicant's archaeological consultant shall become conditions of this permit. The choice of archaeological consultant and final determination of the feasibility of the consultant's recommendation shall be subject to approval by the State Historic Preservation Officer.

Condition No. 7 - Erosion Control.

The areas which are disturbed by the construction work shall be restored to their approximate original condition prior to the construction, this shall include but is not limited to the replanting of any vegetation removed during the course of construction.

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E OF CALIFORNIA EDMUND G. BROWN JR., Governor
California Coastal Commission
SOUTH CENTRAL COAST REGIONAL COMMISSION
924 COAST VILLAGE CIRCLE, SUITE 36
SANTA BARBARA, CALIFORNIA 93108
969-5828

WATER

August 12, 1977

Conditions as Adopted for Application No. 132-18, Cambria Community Services District

Condition No. 1. - Service Area

Prior to the certification of the appropriate Local Coastal Program, the district shall neither guarantee nor promise to deliver any amount of the 1230 acre feet of water to be derived from the wells located in the area known as the Bonomi Ranch in the San Simeon Creek groundwater basin to any individual or entity whose property is located outside of its Assessment District Nos. 1 and 2 and Subdivision Tracts Nos. 358, 384, and 420. Provided however, that should the Commission prior to the certification of the appropriate Local Coastal Program grant a development permit for the subdivision of any land within the District which is outside of Assessment Districts Nos. 1 & 2 and Subdivision Tracts Nos. 358, 384 and 420, then the District may provide water service from this 1230 acre feet to such land and provided further, that the applicant may utilized portions of this 1230 acre feet of water to serve the following individuals and entities whose property is located outside of the District's present boundaries, but with which the District has existing water service agreements:

a) Air Force Radar Station
b) Sibley Ranch - agricultural uses
c) YMCA Camp
d) Cambria Cemetery
e) San Simeon State Park

Since the intent of this condition is to avoid the premature commitment of any lands within the district to other than presently existing uses before adequate Coastal Planning has been done at the local level, the District shall not:

a. Cause to be assessed for benefit received from this project,

b. Levy any stand by fees or,

c. Accept any future payment in exchange for the promise to serve or to issue water permits for or to annex,

Any property which is not located in the District's Assessment District Nos. 1 & 2 and Subdivision Tracts 358, 384 and 420 or which have not been subdivided pursuant to a Coastal Development Permit granted by the Commission subsequent to the effective date of this permit and prior to the certification of the appropriate Local Coastal Program.

Condition No. 2 - Service Connections

Unless and until a Local Coastal Program is certified specifically approving an increase in water supply beyond that provided by this permit:

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a. No more than a total of 3800 dwelling units shall be permitted to receive water connections (including existing and new units). For the purposes of this condition a "dwelling unit" is defined as a single apartment or condominium unit or a single family residence.

b. The total number of annual hookups shall be limited to the schedule of service connections in the Feasibility Report, attached hereto and incorporated herein by reference as Exhibit 4. The effective date of this schedule shall coincide with the implementation of this project. The total number of service connections allowed shall be equal to the cumulative total to that date.

In addition to the 3800 connections allowed under this permit, the Commission may allow additional connections consistent with the other conditions of the permit if the Commission determines after public hearing that water conservation measures have achieved a reduction in water usage consistent with the requirements of Public Resources Code 30231; the number of connections allowed in this manner shall be determined by the long term reduction in water usage.

Condition No. 3. - San Simeon Creek Groundwater Quality

The District shall prepare an operation and maintenance manual for a basin management program which meets the requirements of the State Water Resources Control Board's Water Right's Determination; to the extent that the State Water Resources Control Board's Water Right's Determination takes into account the existing fishery resources, the water supply appropriate for domestic purposes and a water supply appropriate for agricultural purposes.

This operations and maintenance manual shall be submitted to the State Water Resources Control Board staff. An annual report on the oper ation of the basin shall be prepared by a qualified hydrologist and submitted to the Regional Water Quality Control Board and State Health Department to demonstrate that the District has complied with the requirements of this condition.

Condition No. 4. - Santa Rosa Creek

Use of all District wells on Santa Rosa Creek shall be discontinued when water production from San Simeon Creek has been established. Any continued permitted use of the Santa Rosa Creek wells shall be limited to the supplementing of San Simeon Creek well production in years when the 1230 acre feet cannot be safely removed. Except in the emergency situations defined below, the withdrawal of water from Santa Rosa Creek shall not exceed 260 acre feet during the dry season which normally extends from July 1 through November 30 and shall not exceed 147 acre feet per month at any other time. At no time shall the combined withdrawal from San Simeon Creek and Santa Rosa Creek exceed the 1230 acre feet annually. In addition, the following emergency situations shall be permitted: fire or any emergency use authorized by the State Water Resources Control Board or the State Health Department. Until the San Simeon Creek wells are functioning, no new water permits shall be permitted in the District.

Condition No. 5 - Erosion Control

The areas which are disturbed by the construction work shall be restored to their approximate original condition prior to construction, this shall include but is not limited to the replanting of any vegetation removed during the course of construction.

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Condition No. 6 - Water Conservation

Prior to utilization of facilities, the applicant shall demonstrate the existence of a water conservation program. An acceptable water conservation program shall include, at a minimum: elimination of the decreasing block rate structure which currently exists; modification of the plumbing portions of the building code to require installation of low-flow toilets and pressure reducing devices on all taps; establishment of a retrofit program providing free water dams and pressure reducing washers; and evidence of a public information program informing the public of the need to save water, the availability of flow reduction devices, and the need to use drought-resistant plants in landscaping.

Condition No. 7 - Reservation of Capacity for Public Commercial and Recreation Uses

At all times at least 20% of the permitted water production capacity shall be reserved for public commercial or recreation uses; a public commercial or recreation use shall be a use designated as such in a permit action by the Regional or State Coastal Commission or a designated recreational use set forth in an approved Local Coastal Program for the Cambria area.

Condition No. 8 - Archaeology

Prior to construction the applicant shall have an archaeological survey made of all areas potentially affected by construction which have not been previously surveyed. All feasible recommendations made by the applicant's archaeological consultant shall become conditions of this permit. The choice of archaeological consultant, and final determinatio of the feasibility of the consultant's recommendations shall be subject to approval by the State Historic Preservation Officer.

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III. Findings and Declarations.

The Commission finds and declares as follows:

1. Project Description

The proposed project includes the replacement of all steel mains in the water distribution system which are 4" or smaller. This is approximately 90% of the existing distribution system. New pressure zones will be established to take advantage of existing storage tanks and looping would be provided to eliminate excessively long dead-end mains.

The project also includes the development of a new water source for the Cambria Community Services District in the San Simeon Creek basin. The Cambria Community Services District has applied for the water rights for 1230 acre feet per year from the San Simeon Creek basin. Three wells are planned, their locations are illustrated in Ehibit 1, and the water will be transmitted by a 14" pipeline along San Simeon Creek road and along Highway 1 as shown in Exhibit 1.

Existing water supply. The existing water supply from Santa Rosa Creek has been determined by the State Department of Public Health to be unsuitable for consumption without treatment because of the high content of manganese and iron in the well water. Continued utilization of Santa Rosa Creek would require treatment relatively expensive to reduce iron and manganese and treatment would not resolve the additional problems of hardness and salinity. The existing supply also exceeds the recommended State and

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Federal standards for total dissolved solids. Therefore, the existing development requires a water supply of higher quality or the use of a treatment plant.

In addition, the water supply in lower Santa Rosa Creek is limited because the groundwater basin where the wells are located is not well connected hydrauically with the greater Santa Rosa groundwater basin, and has limited storage capacity. The supply from the Cambria Community Services District's (CCSD) wells have not met the community's needs during this drought period. Since 1970 there has been a 40% increase in service connections. The District has been supplementing the wells with water pumped from the wells upstream on Santa Rosa Creek. However, the dependability of these wells is now known, and more intensive utilization of Santa Rosa Creek groundwater by establishing upstream wells would also involve potential conflicts with upstream agricultural users. Consequently, the District is proposing to shift their well field to San Simeon Creek.

The groundwater in the San Simeon Creek basin does not require treatment for manganese and iron removal and contains half the TDS and hardness of the Santa Rosa basin groundwater. The available water to be pumped from storage in the San Simeon Creek alluvium has been estimated to be 1045 acre feet. This compares with an estimated safe yield from the District wells in the Santa Rosa Creek basin of 260 acre feet.

2. Development Accomodated by the Project.

The proposed project would ultimately withdraw 1230 ac. ft. annually from the San Simeon Creek basin from wells proposed to be located at the Bonomi Ranch. It has been estimated by the Feasibility Report that this would serve a population of approximately 7600 persons. This is based on historical use of water at 140 gallons per day per person. Based on an average occupancy of 2.0 persons per dwelling unit the 1230 ac. ft. would be capable of serving 3800 dwelling units.

The existing population of Cambria was found in the 1976 population special census to be the following:

1976

Population....2667 persons
Housing units.1594 units
Vacancy.....25.2%
Population per
occupied unit 22.2 persons/H.H.

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It has been estimated that there are a total of 6300 building sites within the District as defined by the County Ordinance. Of the 6300 sites, approximately 1500 parcels have been improved leaving approximately 4800 undeveloped sites existing in Cambria.

Based on the fact the 1230 ac. ft. will serve 3800 households, it is projected that the project will be able to serve 60% of the total potential development on existing parcels. The potential new development served by this project is estimated as follows:

3800 households served by the project
1500 existing developed parcels
2300 potential new development

2300 = 48% of the 4800 remaining vacant parcels.

Therefore, the proposed 1230 ac. ft. will serve the existing households plus an additional 2300 new households (or 48% of the existing vacant parcels). This is an increase of 4933 persons, or 2.9 times the existing population.

3. Location of Development

PRC 30250(a) provides that new development shall be located within, contiguous with, or in close proximity to, areas able to accomodate it, in other areas with adequate public services and where it will not have significant adverse effects, either individually or accumulatively, on coastal resources.

The Cambria Community Services District includes both existing residential subdivided land and undivided agricultural lands. Exhibit 3 illustrates the location of the boundaries and the general land uses included in the District. The developed areas include:

Assessment District No. 1
Improvement District No. 1
Tracts 358, 384, and 420.

Within these developed areas, there are located the 4800 vacant parcels. Based on the proposed projects ability to serve 2300 new households, it is found that new development can be located within the existing developed area.

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The location of the proposed distribution system is confined to the existing developed areas. However, the District boundaries do include 400 acres which are not subdivided, generally located within the north portion between the community of Cambria and Leffingwell Creek. The 400 acres has been in agricultural use and has been proposed for subdivision, although the Commission has not reviewed any application for subdivision of the area.

The inclusion of this 400 acres in the service or benefit area of the proposed project would extend the location of new development outside of the existing developed area, to an undivided area without existing streets or water and sewer lines.

Interpretive Guideline 7 states that new development in the coastal zone should first be channeled to existing developed areas able to accomodate it as required by Section 30250a. As such it is found that the location of the new development should be limited to the existing developed which able to accomodate it and the area of service and benefit should be limited to those specific areas. In addition, the new development served should be limited to the 3800 households in order to assure that the demand of the water resource is not exceeded.

Therefore, the project as conditioned to limit the connections to 3800 households and to limit the area to be served and benefited by the project to the existing developed areas as identified in recommended condition 1 would allow the Commission to make the finding that the project is consistent with PRC 30250a.

4. Impact of Development Generated by this Project.

PRC 30254 provides that new or expanded public works facilities shall be designed and limited to accomodate needs generated by development or uses permitted consistent with the provisions of this division.

There could be adverse impacts on coastal resources as a result of the development generated which is an increase of 2.9 times the existing population. The impact on the community's ability to plan for the growth and its ability to accomodate the development within the policies of the Coastal Act as required by the Local Coastal Program would be mitigated if the rate of development were extended over the 30 year period required to meet the repayment plan of the Davis-Grunsky Loan (project funding).

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The project as conditioned to limit the number of new services to the annual rate of connection projected in Exhibit 4, Table D, would allow the Commission to make the finding for approval because the impact of the development of the 2300 sites would be extended over the 30 year period and would allow the adverse impacts of development to be distributed over the entire period and therefore mitigated.

5. Land Modification and Erosion.

PRC 30251 provides that permitted development shall be sited and designed to minimize the alteration of natural land forms; and PRC 30253(2) provides that new development shall neither create nor contribute significantly to erosion, geologic instability or destruction of the site or surrounding area.

The proposed project would extend a 14 inch transmission main from Moonstone Beach Drive to the new well field on San Simeon Creek, traversing agricultural lands and San Simeon State Park. The mitigation measures in the EIR indicate that "where vegetation is temporarily distrubed by construction, natural vegetation will be encouraged to return; and special attention will be given to a pipeline route and well locations which will minimize the impace on native vegetation." Although this speaks to the concerns addressed in Sections 30251 and 30253 it does not specifically require the applicant to take adequate mitigation measures.

Therefore, condition 5 allows the Commission to make the finding that the project during and after its construction will not significantly add to any potential erosion problems of the area.

6. Recreational Uses.

PRC 30254 provides that where existing or planned public works facilities can only accomodate a limited amount of new development services to coastal dependent land use, essential public services and basic industries, public recreation and commercial recreation and visitor serving land uses shall not be precluded by other development.

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Cambria has been developing as a residential area for persons retiring and establishing vacation homes on the coast. The remote location and unique scenic beauty of the Santa Lucia mountains and the rich marine environment along the shoreline have made Cambria a place sought by many as a place to live. Recent growth in Cambria has been stimulated by the improvement of Highway 46 between Highway 101 and Cambria and the general increase in recreational use of our accessible coastal areas. Cambria's location along Highway 1 just south of the Big Sur area makes it a unique recreational destination point. In order to meet the recreational and visitor serving demands the allocation of ~~sewer~~ water connections should reserve a minimum for those uses, exclusive of residential uses. This will become an even more important factor as Cambria becomes a community or more permanent residences. Predominantly vacation and retirement communities on the coast have realized an increase in the number of permanent residences.

The project as conditioned to reserve 20% of the water available for the designated public and commercial recreation uses will allow the Commission to make the finding that the recreational and visitor-serving demands will not be precluded by the demands of the residential development.

7. Groundwater quality in San Simeon Creek.

Even though the utilization of the San Simeon Creek basin will improve the water quality and water supply for domestic use, development of the San Simeon well field will have adverse impacts on the coastal fishery resources. PRC 30231 requires that the biological productivity of coastal waters, streams, estuaries be maintained and, where feasible, restored through, among other things, preventing depletion of groundwater supplies and substantial interference with surface waterflow. In addition PRC 30240(b) provides that development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade such areas and shall be compatible with the continuance of such habitat areas.

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According to the final EIR for the water supply project, "streamflow occurs naturally in the last serveral hundred feet of San Simeon Creek, providing constant positive head from the lagoon to the ocean, and keeping salinity in the lagoon to a minimum. Removal of water from the basin could cause the streamflow to cease, thereby allowing degradation of the lagoon as an anadromous fish resource." The EIR points out that sea water intrusion into the basin could be established, and that the project could accelerate the dewatering of the mid-portion of the stream, with adverse effects on spawning and on fry and juvenile mortality. The use of Van Gordon and San Simeon Creek bottomlands for effluent disposal is expected to maintain freshwater inflow into the San Simeon Creek estuary, and limit saltwater intrusion, to mitigate the adverse effects on anadromous fisheries.

The Department of Fish and Game has protected the District's application for water rights to the 1230 ac. ft. from San Simeon Creek based on the adverse impacts on the stream flows. That protest has been withdrawn based on the following conditions:

1. "The permittee shall maintain water levels in the lower basin to sustain stream flow to the lagoon at the mouth of San Simeon Creek to maintain fish and riparian wildlife habitat."

2. "The permittee shall provide and operate as necessary, irrigation facilities to maintain riparian vegetation within district owned property."

Based on this agreement the Commission can find that the stream flows of San Simeon Creek will be maintained to protect the fish and riparian wildlife habitat.

The withdrawal of water by the proposed wells in the San Simeon basin could cause problems with sea water intrusion. The primary concern would be the lateral movement of saline water into the well field. The proposed District plan is to not allow the water levels in the well field vicinity to drop below sea level. According to Kenneth D. Schmidt, groundwater quality consultant in correspondence dated June 13, 1977 Gil Torres of the SWRCB staff the proposed monitoring program will allow early detection of sea water intrusion if it should occur. The rectifying measures include (1) pumpage of saline groundwater from the lower part of the valley and disposal to the ocean, and (2) pumpage from individual wells in the well field could be altered to decrease that in the lower part.

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It should be emphasized that continual monitoring is essential to the protection of the water quality of the stream and its long term use as a domestic water supply.

The project as conditioned to require adequate monitoring and mitigation measures to maintain the quality of the water for the fishery and wildlife habitat of San Simeon Creek and the quality of the water basin for domestic water use will allow the Commission to make the finding that the effect of the withdrawal of water from San Simeon Creek on the biological productivity will not be adverse and that the project will be compatible with the continuance of the habitat.

8. Agricultural water users on San Simoen Creek.

> PRC 30241 provides that the maximum amount of prime agricultural land shall be maintained in agricultural production through among other means, the assurance that public service and facility expansions and nonagricultural development do not impair agricultural viability, either through increased assessment costs or degraded air and water quality.

This raises the issue of the impact of withdrawal on the agricultural users of the subject water basin.

A study prepared by Coastal Valley Engineering (Attachment) to examine this problem showed that the primary water related agricultural interests upstream from the Bonomi Ranch were a total of 83 acres of fields, most of which were in alfalfa production. The total maximum requirements for water on the 83 acres would be 266 acre-feet per year. The owner of those acres is Mr. Pedotti and he hs lodged a protest to the CCSD water rights application with State Water Resources Control Board. The District feels the vested rights of the upstream user have been carefully considered in the project plan and that the water rights hearing process protects the vested rights of this user.

Because the State Water Resources Control Board is responsible for the determinations for appropriative and riparian water rights, and the fact the protest of the agricultural users on San Simeon Creek have been accepted for a hearing before the SWRCB the Commission can find that the viability of the agricultural productivity on San Simeon Creek will not be impaired through the loss of water supply as a result of this project.

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9. Withdrawals from Santa Rosa Creek.

PRC 30231 provides that the biological productivity and the quality of coastal waters, streams, wetlands, estuaries appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of wastewater discharges and entrainment, preventing depletion of groundwater supplies and substantial interference with surface water flow.

The district proposes to supplement the water supply of San Simeon Creek with water from the existing Santa Rosa Creek wells. Although the District is requesting the appropriative rights for 1230 ac. ft. cannot be safely withdrawn without adversely affecting the Stream flows in any year which is drier than normal. This is estimated to occur in 50 out of every 100 years.

If the San Simeon supply were not supplemented with the Santa Rosa Creek supply the actual capacity of the San Simeon source would be approximately 5200 persons.

The discontinuance of use of the Santa Rosa Creek wells would increase the stream flows and enhance the coastal fishery resources at Santa Rosa Creek is the most important anadromous fish stream in San Luis Obispo county in terms of stream flow and numbers of Steelhead. In the consideration of the use of the San Simeon Creek wells it is important to balance the improvement of Santa Rosa Creek stream flows from the abandonment of the wells and the sewage treatment disposal field with the adverse environmental effects which will occur to San Simeon Creek. As such, the use of San Simeon Creek can be justified by the improved conditions that will exist at Santa Rosa Creek.

The condition to restrict the use of the Santa Rosa Creek wells to the safe yield of 260 ac. ft. during a dry season allows the Commission to make the finding that the withdrawals from Santa Rosa Creek will have minimal adverse effects on Santa Rosa Creek as an anadromous fish resource and on the quality of the ground water.

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10. Water Conservation.

PRC 30250a provides that development shall be located in areas where it will not have significant adverse effects either individually or cumulatively on coastal resources. In this case the protection of the limited water supply for the residential and commercial uses should include conservation measures to insure that the available water resource is carefully utilized. The project as conditioned for the implementation of a water conservation program allows the Commission to make the finding that the project will mitigate adverse effects by reducing average per capita use.

11. Archaeological Sites.

The EIR of the Project Feasibility Report identifies several prehistoric sites of scientific interest and a letter from the Central Coast Indian Council also indicates concern for the protection of potential and existing sites of archaeological importance. Conditions 7 was developed to insure that the project would not adversely affect these coastal cultural resources as required by PRC 30244.

12. Local Coastal Program.

PRC 30604a provides that prior to the certification of LCP; a coastal development permit shall be issued if the Commission finds that the proposed development is in conformity of the policies of Ch. 3 and that the permitted development will not prejudice the ability of the local government to prepare a local coastal program. The project raises two issues the development generated by the project and its impact on the Highway 1 remaining as a scenic two land road.

In terms of the development generated, the gradual build out of Cambria as provided in condition 2 would allow the local government the opportunity to prepare the Local Coastal Program. The impact of the development on the policy in 30254 which provides that Highway 1 should remain a scenic two lane road is not clear in the absence of detailed planning consistent with the LCP.

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Substantive Documents

Feasibility Report
EIR

Correspondence to JoAnne Yokota date June 24, 1977 from William McFerrin, Coastal Valley Engineering.

Correspondence to Gil Torres, SWRCB, dated June 13, 1977 from Kenneth D. Schmidt

Hydrogeology and Basin Management for the proposed San Simeon Project, prepared by Kenneth D. Schmidt, Groundwater Quality Consultant.

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STATE OF CALIFORNIA — EDMUND G. BROWN JR., *Governor*

California Coastal Commission
SOUTH CENTRAL COAST REGIONAL COMMISSION
735 STATE STREET
BALBOA BUILDING, SUITE 612
SANTA BARBARA, CA 93101

COASTAL DEVELOPMENT PERMIT

2 absent

On July 25, 1980, by a vote of 10 to 0, the California Coastal Commission granted to CAMBRIA COMMUNITY SERVICES DISTRICT Permit # 415-22, subject to the conditions set forth below, for development consisting of amendment of Coastal Development Permit No. 132-18 to allow installation of 8", 6" and 2" waterline and appurtenances in existing right-of-way and on Coast Union High School.

more specifically described in the application file in the Commission offices.

The development is within the coastal zone in San Luis Obispo County at within the right-of-way of Main Street, Santa Rosa Creek Rd. and Coast Union High School, Community of Cambria. (APN: 13-081-17-996)

After public hearing held on July 25, 1980, the Commission found that, as conditioned, the proposed development is in conformity with the provisions of Chapter 3 of the California Coastal Act of 1976; will not prejudice the ability of the local government having jurisdiction over the area to prepare a local coastal program that is in conformity with the provisions of Chapter 3 of the California Coastal Act of 1976; if between the sea and the public road nearest the sea, is in conformity with the public access and public recreation policies of Chapter 3 of the California Coastal Act of 1976; and either (1) will not have any significant adverse impact on the environment, or (2) there are no feasible alternatives or feasible mitigation measures available that would substantially lessen any significant adverse impact that the development as approved may have on the environment.

Issued on behalf of the South Central Coast Regional Coastal Commission on July 25, 1980.

Carl C. Hetrick
Executive Director

The undersigned permittee acknowledges receipt of the California Coastal Commission Permit # 415-22, and fully understands its contents, including all conditions imposed. (Please return one signed copy to the South Central Coastal Commission as soon as possible; upon receipt of same, the permit card will be mailed to you to post on project property.

Aug 12, 1980
DATE

Edward V. Main
PERMITTEE
General Manager

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Permit # 415-22, is subject to the following conditions:

I. STANDARD CONDITIONS

1. Assignment of Permit This permit may not be assigned to another person except as provided in Cal. Admin. Code, Title 14, Section 13170.

2. Notice of Receipt and Acknowledgement Construction authorized by this permit shall not commence until a copy of this permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of its contents, is returned to the Commission.

3. Expiration If construction has not commenced, this permit will expire two (2) years from the date on which the Commission voted on the application. Application for extension of this permit must be made prior to the expiration date.

4. Construction All construction must occur in accord with the proposal as set forth in the application for permit, subject to any special conditions set forth below. Any deviations from the approved plans must be reviewed by the Commission pursuant to Cal. Admin. Code, Title 14, Sections 13164 - 13168.

II. SPECIAL CONDITIONS

1. Prior to the issuance of a coastal development permit, the applicant shall submit a program for the review and approval of the Executive Director assuring that a satisfactory level of water conservation has been incorporated in the high school facilities.

2. The water from San Simeon Creek for this project is to be utilized exclusively for human consumption and fire protection and is not to be utilized for irrigation.

3. The water distribution connection is to serve Coast Joint Union High School exclusively.

The complete Permit Fee of $ _____ must be submitted to the Commission. You have previously submitted $ _____. PLEASE ENCLOSE THE REMAINDER ($_____) WITH YOUR SIGNED COPY OF THE PERMIT FORM.

Carl C. Hetrick

CARL. C. HETRICK
Executive Director

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STATE OF CALIFORNIA EDMUND G. BROWN JR., *Governor*

California Coastal Commission
SOUTH CENTRAL COAST REGIONAL COMMISSION
924 COAST VILLAGE CIRCLE, SUITE 36
SANTA BARBARA, CALIFORNIA 93108
(805) 969-5828

RECEIVED JAN 10 1978

January 9, 1978

Howard Main
General Manager
Cambria Community Services District
P.O. Box 65
Cambria, CA. 93428

Subject: Permit #132-18

Dear Mr. Main:

This will acknowledge receipt of your signed copy of Coastal Development Permit No. 132-18. In addition, with reference to your accompanying letter dated November 29, 1977, we agree:

(a) that an application for an amendment to the last sentence in condition 4 would be accepted for filing if the District presented new information showing that the capacity of the Santa Rosa Creek basin has not been met;

(b) that water permits issued by the District prior to the effective date of this permit would not be counted as part of the annual hook-up limitation in condition 2b, and;

(c) that water connections not used for dwelling purposes, such as service to vacant parcels for raising horses, farm animals and vegetables, will not be counted as "dwelling unit" connections under condition 2.

However, we do not have any basis upon which to agree or disagree with points 1, 2, and 3 in your letter. You are, of course, free to take any legal action which you may feel necessary. However, you should be aware that under California law it is necessary to exhaust ones administrative remedys before seeking court action; and since the District failed to exhaust its administrative remedys by filing an appeal of the Regional Commission's decision imposing the conditions to the State Commission, we do not see how the District could now seek judicial relief from those conditions.

I hope we have clarified the Commission's intent in the wording of the conditions. If there are further questions please do not hesitate to contact this office.

Sincerely,

Carl C. Hetrick
Executive Director

cc: Regional Commissioners

CCH/JY/mt

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Cambria Community Services District
2025 Water Shortage Contingency Plan
April 29, 2026
DRAFT

Prepared by Cambria Community Services District
and Maddaus Water Management Inc.

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INTRODUCTION AND WSCP OVERVIEW

Lay Description

This chapter describes The Cambria Community Services District's (CCSD's) Water Shortage Contingency Plan (WSCP), including shortage stages and shortage response actions. The California Water Code Section 10632 requires every Supplier that serves more than 3,000 acre-feet per year or has more than 3,000 connections to prepare and adopt a standalone WSCP as part of its UWMP. The WSCP is required to allow Suppliers to plan for a greater than 50% supply shortage and is due to be updated every five years. Water shortage contingency planning is a strategic planning process in which CCSD engages to prepare for and respond to water shortages, which occur when available water supply is insufficient to meet normally expected customer water use. A shortage may occur due to a number of reasons, such as water supply quality changes, climate change, drought, and catastrophic events (e.g., earthquake). CCSD WSCP provides real-time water supply availability assessment and structured steps designed to respond to actual conditions. This level of detailed planning and preparation will help maintain reliable supplies and reduce the impacts of supply interruptions. This WSCP is due to be updated, based on new requirements, every five years and was adopted as a current update for submission to the California Department of Water Resources by July 1, 2026.

1.1 Overview of the WSCP

The WSCP identifies specific criteria that will be used to declare and determine the severity of long-term supply shortages including annual rainfall, groundwater conditions, or limited production capacity (due to destruction of critical supply facilities).

Short-term supply shortages may be caused by constrained production capacity or natural or man-made catastrophic emergencies and include, but are not limited to, the following events: power outages, winter storms, wildfires, earthquakes, structural failures, contamination, and bomb threats. These types of emergencies may limit CCSD's immediate ability to provide adequate water service to meet the requirements for human consumption, sanitation, and fire protection. Such emergencies are usually limited in duration and, at the time of declaration, are not expected to last more than a few weeks; thus, consumption reduction measures and prohibitions may differ from those needed for long-term shortages.

This WSCP provides a structured guide for CCSD to address water shortages, incorporating prescriptive information and standardized action levels along with implementation strategies in the event of a supply interruption. The WSCP contains documented processes and procedures, which are given legal authority through the Water Shortage Contingency Response Ordinance (CCSD Chapter Code 4.12). This way, when shortage conditions arise, the CCSD governing body, its staff, and the public can easily identify and efficiently implement predetermined steps to mitigate a water shortage to the level appropriate for the anticipated degree of water shortfall. This can be done through real-time water supply availability assessment and well-defined actions aligned with different water shortage levels which, if necessary, may be modified to respond to actual conditions. Figure 8.1 illustrates the interdependent relationship between the three procedural documents related to planning for and responding to water shortages.

This WSCP is not intended to replace water distribution system operating rules or procedures, but rather to complement CCSD's recently adopted San Luis Obispo County Multi-Jurisdictional Hazard Mitigation Plan (SLOMJHMP). The WSCP also describes CCSD's procedures for conducting an Annual Water Supply and Demand Assessment (Annual Assessment). An Annual Assessment, as required by Water Code Section 10632.1, is to be submitted to the California Department of Water Resources (DWR) on or before July 1st of each year.

It should be noted that the Water Code does not prohibit a supplier from taking actions not specified in its WSCP, if needed, without having to formally amend its WSCP or UWMP.

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Figure 8-1. Water Shortage Contingency Plan Flow of Information

1.1.1 Water Shortage Contingency Plan Requirements and Organization

CCSD's WSCP is fully included in this Chapter 8. It includes the steps to assess if a water shortage is occurring and the level of shortage drought actions to achieve the best response as appropriate to the water shortage conditions. The WSCP contains the following prescriptive elements:

- An analysis of water supply reliability
- The demand response actions for each of the six standard water shortage levels that correspond to water shortage percentages ranging from 10% to greater than 50%
- An estimate of the potential to close the supply gap for each action
- Protocols and procedures to communicate identified actions for any current or predicted water shortage conditions
- Procedures for an annual water supply and demand assessment
- Monitoring and reporting requirements to determine customer compliance
- Revaluation and improvement procedures for evaluating the WSCP

The WSCP is based on adequate details of demand reduction and supply augmentation measures that are structured to match varying degrees of shortage so relevant stakeholders may know what to expect during a water shortage situation. CCSD has adopted water shortage levels consistent with the requirements identified in Water Code Section 10632 (a)(3)(A).

1.1.2 Water Supply Reliability Analysis

This section was completed pursuant to CWC Section 10632(a)(1) and describes the key findings of the water supply reliability analysis in Chapter 7 and conducted pursuant to CWC Section 10635. As discussed in Chapter 7, CCSD has completed an assessment of the water service reliability based on its current water supplies. The service reliability assessment considered hydrological variability, climate conditions, and other factors that have the potential to affect CCSD's ability to meet its water demands.

As part of the 2025 UWMP requirements, this UWMP presents a supply reliability analysis for the following scenarios: normal year, single-dry year, and five consecutive dry years. CCSD expects to meet demands

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under all water year scenarios with groundwater (supplemented by the WRF) while continuing to promote conservation. CCSD anticipates using approximately 495 to 625 AFY from the San Simeon and Santa Rosa aquifers, depending on the year type. It is anticipated that this range of supply volume will be available to meet CCSD's demands either by using the WRF, reducing demand via conservation, or implementing a combination of both.

The UWMP also requires a Drought Risk Assessment (DRA) to analyze supply reliability for 2026-2030. The DRA, found in Chapter 7, analyzes historical production data and length of dry season to allow CCSD to view patterns and more reliably determine if there could be any water shortages within a given time frame. Future demand and supply estimates for the planning period are analyzed in Chapter 7. It was determined that there are no gaps between supply and demand. As mentioned previously, CCSD will be able to meet demand by leveraging the WRF, conservation, or a combination of both. Since CCSD's only current source of water is groundwater, CCSD is committed to promoting conservation and utilizing the WRF to improve its supply portfolio and subsequent reliability.

1.2 Annual Water Supply and Demand Assessment Procedures

Per Water Code Section 10632.1, CCSD will conduct an Annual Assessment pursuant to subdivision (a) of Section 10632 and by July 1st of each year, which began in 2022. CCSD performs an Annual Assessment, presents the report to the Board of Directors, including any recommendations for shortage response actions, and submits it to the DWR WUE Drought Portal. The goal of the Annual Assessment is to forecast water supply availability for the upcoming anticipated dry season and through a dry-year wet season. CCSD continuously tracks water supply conditions to forecast estimated supply availability based on the estimated dry season start date, streamflow monitoring, estimated dry season length, groundwater level monitoring, or the hydrologic year-type classification. The metrics CCSD utilizes to assess supply availability are included in Table 8-1a and are summarized below:

- Dry season start date – date of cessation of surface flow at Palmer Flats in San Simeon Creek
- Rainfall totals as measured at Rocky Butte (Station 703) and Santa Rosa at Main (Station 717)
- Groundwater well levels at SS1, SS2, SS3, and SS4, SR4, Windsor Bridge East, and Windsor Bridge West
- Groundwater well 9P2-SS4 gradient

In addition to the above metrics, the timing of rainfall throughout the wet season and the rate of rainfall during individual winter storms are considered in estimating when the surface flow in San Simeon Creek will cease and the dry season will start.

1.3 Six Standard Water Shortage Levels

CWC Section 10632 (a)(3)(B) authorizes Suppliers to continue using their existing water shortage levels that may have been included in past WSCPs.

CCSD utilizes six shortage stages that align with the State defined Water Shortage Levels to identify and respond to water shortages, including emergencies. The six shortage stages and the criteria for each stage are outlined in Table 8-1a. Table 8-3 summarizes the mandatory demand reduction actions and prohibitions associated with each water shortage stage. It should be noted that CCSD's prohibition on water waste is in place at all times, regardless of whether a water shortage stage has been declared. Therefore, the phrasing "at all times" is used to indicate this is required regardless of a particular stage. Section 4.08.050 of the CCSD municipal code allows for increasing levels of fines for any waste of water, which could also lead to disconnection of service.

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Table 8-1. Water Shortage Contingency Plan Levels

Submittal Table 8-1: Cross-reference for Standard vs Supplier Shortage Levels - Water Code 10632(a)(3)(B)	
☑	Check the box if Supplier uses Standard six levels of water shortage. Proceed to next table.

Table 8-1a. Standard Supplier Shortage Levels for CCSD

Standard Shortage Level	Water Resources Indicators and Triggers Criteria	Percent Shortage Range	Summary of Shortage Response Actions
1	Baseline - Water Use Efficiency is a Way of Life Dry season starts in June or later As of April 1st: Rainfall at 86-100% of normal Average SS well levels at or above 100% of normal (≥20.1 ft) WBE and WBW well levels at or above 100% of normal (WBE is ≥5.6 ft and WBW is ≥5.6 ft) 9P2-SS4 gradient at or above 100% of normal (≥3.0 ft)	Up to 10%	"Water Conservation as a Way of Life" - Inform customers of existing conservation ordinances and incentive programs; water waste prohibitions always in effect - If Stage 2 is imminent, then schedule Board Hearing at least 14 days prior to Stage 2 action Refer to Table 8-3 for detailed Demand Reduction Actions
2	Drought Watch Dry season starts in June or later As of April 1st: Rainfall at 71-85% of normal Average SS well levels at 91-100% of normal (18.2-20.1ft) WBE and WBW well levels at 91-100% of normal (WBE is 5.2-5.6 ft and WBW is 5.1-5.6 ft)	Up to 20%	"Water Shortage Watch" - Citations for violations of shortage response actions - Commence public outreach campaign - If Stage 3 is imminent, then schedule Board Hearing at least 14 days prior to Stage 3 action Refer to Table 8-3 for detailed Demand Reduction Actions

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Standard Shortage Level	Water Resources Indicators and Triggers Criteria	Percent Shortage Range	Summary of Shortage Response Actions
	9P2-SS4 gradient at 91-100% of normal (2.8-3.0 ft)		
3	Water Shortage Warning Dry season starts in May or later As of April 1st: Rainfall at 56-70% of normal Average SS well levels at 81-90% of normal (16.1-18.1ft) WBE and WBW well levels at 81-90% of normal (WBE is 4.6-5.1 ft and WBW is 4.6-5.0 ft) 9P2-SS4 gradient at 81-90% of normal (2.5-2.7 ft)	Up to 30%	"Water Shortage Warning" - All of the above, plus increased restrictions on use of potable water - Increase public outreach campaign to include weekly Farmer's Market booth and product giveaways or demos - If Stage 4 is imminent, schedule Board Hearing at least 14 days prior to action Refer to Table 8-3 for detailed Demand Reduction Actions
4	Drought Emergency Dry season starts in April or later As of April 1st: Rainfall at 41-55% of normal Average SS well levels at 71-80% of normal (14.1-16.0ft) WBE and WBW well levels at 71-80% of normal (WBE is 4.1-4.5 ft and WBW is 4.0-4.5 ft) 9P2-SS4 gradient at 71-80% of normal (2.2-2.4 ft)	Up to 40%	"Water Shortage Emergency" - All of the above, and establish water use allocations - Board meeting second month of billing cycle - recommend remaining in Stage 4 or moving to Stage 5, 3, 2, or 1 - Prepare WRF for operation Refer to Table 8-3 for detailed Demand Reduction Actions

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Standard Shortage Level	Water Resources Indicators and Triggers Criteria	Percent Shortage Range	Summary of Shortage Response Actions
5	Extreme Drought Emergency Dry season starts in March or earlier As of April 1st: Rainfall at 26-40% of normal Average SS well levels at 61-70% of normal (12.1-14.0 ft) WBE and WBW well levels at 61-70% of normal (WBE is 3.5-4.0 ft and WBW is 3.4-3.9 ft) 9P2-SS4 gradient at 61-70% of normal (1.9-2.1 ft)	Up to 50%	"Extreme Water Shortage Emergency" - All of the above, and reduce allocation, enforce excess use penalty - Mandatory audits for customers exceeding allocation - Board Meeting at second month of enforcement billing cycle, recommend remaining at Stage 5, move to Stage 6, 4, 3, 2, or 1 - Operate WRF as needed Refer to Table 8-2 for Supply Augmentation Actions and Table 8-3 for Demand Reduction Actions for additional information
6	Exceptional Drought Emergency Dry season starts in March or earlier As of April 1st: Rainfall <25% of normal Average SS well levels at <60% of normal (≤12.0 ft) WBE and WBW well levels at <60% of normal (WBE is ≤3.4 ft and WBW is ≤3.3 ft) 9P2-SS4 gradient at <60% of normal (≤1.8 ft)	>50%	"Exceptional Water Shortage Emergency" - Continue allocation enforcement; potable water for human health, sanitation, and fire protection only - Board Meeting at second month of enforcement billing cycle, recommend remaining at Stage 6, or move to Stage 5, 4, 3, 2, or 1 - Operate WRF as needed Refer to Table 8-2 for Supply Augmentation Actions and Table 8-3 for Demand Reduction Actions for additional information
NOTES: Refer to Table 8-2 for Supply Augmentation Actions and Table 8-3 for Demand Reduction Actions for additional information.			

1.4 Shortage Response Actions

CCSD Municipal Code Chapter 4.08 entitled "Waste of Water," prohibits water waste at all times, regardless of whether there may be a particular water conservation stage in place. This approach was originally adopted by the CCSD Board in 2000 as Ordinance 4-2000, which has since been codified within the CCSD Municipal Code.

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As mentioned above, there are long- and short-term water supply shortages, with significant overlap in regard to stages, mandatory prohibitions, and consumption reduction methods, as described in the following sections.

1.4.1 Supply Augmentation

Table 8-3 summarizes the possible actions identified by CCSD staff to implement during a water shortage as well as the criteria that would trigger each water shortage stage. This table of actions is designed as a menu of options; CCSD is not required to implement each action for each stage. Actions identified in earlier stages may also be used in later stages (e.g., actions identified in Stages 1-3 may be implemented in Stage 4 as well as other Stage 4 actions, etc.). The supply augmentation actions that align with each shortage level are described in Table 8-2. These augmentations represent short-term management objectives triggered by the WSCP and do not overlap with the long-term new water supply development or supply reliability enhancement projects.

The Cambria Water Reclamation Facility (WRF) provides an emergency shortage-contingency supply to protect the aquifer underlying the San Simeon Well Field during periods of water shortage resulting from limited aquifer recharge. The facility is designed to treat brackish groundwater drawn from wells installed in the alluvial aquifer adjacent to San Simeon Creek and CCSD's wastewater percolation ponds and produce Title 22-compliant indirect potable reuse water through advanced water treatment processes.

When activated, the WRF injects indirect potable reuse water on the western, downgradient edge of the San Simeon Well Field, with approximately 60% of the injected water traveling toward the well field and the remaining 40% traveling downgradient towards the wastewater percolation ponds. All injected water is put to beneficial use as gradient-control water, helping maintain groundwater supplies and, by extension, the community's essential water supply.

CCSD operates the WRF as a contingency supply, deployed during declared water shortage conditions, in accordance with operational permits and regulatory requirements. When operating, the facility serves as a critical component of CCSD's drought response strategy by increasing available potable water supplies and reducing reliance on the primary groundwater basin during periods of limited recharge. Although the WRF is not intended to serve as a continuous primary supply, it provides an important emergency supply augmentation capability that enhances system reliability and resilience during extended shortage conditions, including times of drought. The availability of this supplemental source enables CCSD to better manage supply deficits while implementing demand-reduction actions and conservation programs.

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Table 8-2. Supply Augmentation and Other Actions

Submittal Table 8-2 Retail: Supply Augmentation and Other Actions – Water Code Section 10632(a)(4)(A),(C) and (E)				
Yes	Is the Supplier completing this table using the standard six levels? (yes/no)			
Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier	How much is this going to reduce the shortage gap?		Additional Explanation or Reference
		Volume or Percentage	Shortage Gap Reduction Value (AF)	
5	Other Actions (describe)	Volume	21-250	21 to 250 AF of indirect potable reuse water reinjected using the Water Reclamation Facility
6	Other Actions (describe)	Volume	21-250	21 to 250 AF of indirect potable reuse water reinjected using the Water Reclamation Facility
NOTES: 250 AF would require the WRF to be run nonstop and therefore though reported as such in this table, is not presented this high in previous supply reliability tables, but rather at 150 AF per year which, in this planning period, is more than sufficient to meet future use.				

1.4.2 Demand Reduction

In accordance with the new UWMP requirements for the 2025 reporting cycle, CCSD has identified a variety of demand reduction actions (and their estimated water savings potential) that could be used, but are not required, to offset supply shortages. These actions include, but are not limited to conservation programs, leak detection and repair, and the prohibitions of using potable water for certain applications such as no washing of hard surfaces (except for health and safety reasons) or for turf irrigation. Although it is difficult to estimate the volume of savings for each action, CCSD expects to meet required reductions through a combination of response actions and outreach and communication efforts. The estimated water savings potential summarized in Table 8-3 represent a range based on information from published industry references and based on CCSD staff experiences with previous demand reductions. CCSD will implement various demand reduction actions in conjunction with outreach and communication efforts to the extent necessary to mitigate any impacts from a water shortage. Table 8-3 summarizes the various actions and estimated maximum potential savings required to be submitted to DWR as part of the UWMP. The demand reduction actions that align with each shortage level are described in Table 8-3. This table also estimates the extent to which that action will reduce the gap between supplies and demands to demonstrate that the chosen suite of shortage response actions can be expected to deliver the outcomes necessary to meet the requirements of a given shortage level.

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Table 8-3. Actions – Demand Reduction Actions

Submittal Table 8-3 Retail: Demand Reduction Actions - Water Code Section 10632(a)(4)(B) and (E)					
Yes	Is the Supplier completing this table using the standard six levels? (yes/no)				
Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)	Penalty, Charge, or Other Enforcement?
		Volume or Percentage Drop down	Shortage Gap Reduction (MG)		
All	Expand Public Information Campaign	Percentage	0-3%	Inform customers of existing water conservation ordinances and incentive programs.	No
All	Landscape - Restrict or prohibit runoff from landscape irrigation	Percentage	0-3%	CCSD Municipal Code 4.08.030 (1) prohibits the watering of landscaping, which allows excess water runoff.	Yes
All	Landscape - Limit landscape irrigation to specific times	Percentage	13-35%	CCSD Municipal Code 4.08.030 (2.b)	Yes
All	CII - Restaurants may only serve water upon request	Percentage	0-3%	CCSD Municipal Code 4.08.030 (5) prohibits the serving of water to customers by any eating establishment except when specifically requested.	Yes
All	Other - Prohibit use of potable water for washing hard surfaces	Percentage	0-3%	CCSD Municipal Code 4.08.030 (2) prohibits the washing of driveways, sidewalks, and other hard-surfaced areas by direct hosing.	Yes
All	Other - Require automatic shut of hoses	Percentage	0-3%	CCSD Municipal Code 4.08.030 (7) prohibits the washing of vehicles by use of an unrestrained hose.	Yes
All	Other - Prohibit use of potable water for construction and dust control	Percentage	0-3%	CCSD Municipal Code 4.08.030 (8) prohibits the use of potable water from CCSD's water supply for compacting or dust control purposes.	Yes

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Submittal Table 8-3 Retail: Demand Reduction Actions - Water Code Section 10632(a)(4)(B) and (E)					
Yes	Is the Supplier completing this table using the standard six levels? (yes/no)				
Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)	Penalty, Charge, or Other Enforcement?
		Volume or Percentage Drop down	Shortage Gap Reduction (MG)		
All	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Percentage	10-15%	CCSD Municipal Code 4.08.030 (4)	Yes
Stage 2	Expand Public Information Campaign	Percentage	2-5%	CCSD Municipal Code 4.12.040 (A) Expand public information campaign on water shortage through announcements at Board and Committee meetings, website, email, physical banners and signs, and billing inserts.	No
Stage 2	Landscape - Limit landscape irrigation to specific days	Percentage	0-5%	3 days per week, with a maximum runtime of 15 minutes per day.	Yes
Stage 3	Expand Public Information Campaign	Percentage	3-7%	CCSD Municipal Code 4.12.050 (A) Expand public information campaign on water shortage by staffing a booth at the weekly farmers market in addition to announcements at Board and Committee meetings, website, email, physical banners and signs, and billing inserts.	No
Stage 3	Landscape - Limit landscape irrigation to specific days	Percentage	3-8%	2 days per week, with a maximum runtime of 15 minutes per day.	Yes
Stage 3, 4, 5, & 6	Offer Water Use Surveys	Percentage	3-7%	Offer Water Efficiency Walkthroughs on a voluntary basis.	No

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Submittal Table 8-3 Retail: Demand Reduction Actions - Water Code Section 10632(a)(4)(B) and (E)					
Yes	Is the Supplier completing this table using the standard six levels? (yes/no)				
Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)	Penalty, Charge, or Other Enforcement?
		Volume or Percentage Drop down	Shortage Gap Reduction (MG)		
Stage 3, 4, 5, & 6	Water Features - Restrict water use for decorative water features, such as fountains	Percentage	0-3%	CCSD Municipal Code 4.12.CA. 1	Yes
Stage 3, 4, 5, & 6	Other	Percentage	0-3%	CCSD Municipal Code 4.12.CA. 1 prohibits the use of potable water for fire drills at drought stage 3 and higher.	Yes
Stage 4	Expand Public Information Campaign	Percentage	5-10%	CCSD Municipal Code 4.12.060 (B) Expand public information campaign on water shortage by staffing a booth at the weekly farmers market with conservation giveaways and information in addition to announcements at Board and Committee meetings, website, email, physical banners and signs, and billing inserts. In-person informational outreach to the highest 10% of water consumers for each customer class.	No
Stage 4	Implement or Modify Drought Rate Structure or Surcharge	Percentage	15-30%	1. Each residential customer account is allotted three (3) units per month. Permanent residents are limited to 3 units per individual per month. 2. Commercial accounts are limited to 3 units per Equivalent Dwelling Unit (EDU) of fraction thereof per month or the average of the	No

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Submittal Table 8-3 Retail: Demand Reduction Actions - Water Code Section 10632(a)(4)(B) and (E)					
Yes	Is the Supplier completing this table using the standard six levels? (yes/no)				
Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)	Penalty, Charge, or Other Enforcement?
		Volume or Percentage Drop down	Shortage Gap Reduction (MG)		
				last 12 months' water use, whichever is less. 3. Vacation rentals are limited to 3 units per month.	
Stage 4, 5, & 6	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	Percentage	0-5%		Yes
Stage 4, 5, & 6	Increase Frequency of Meter Reading	Percentage	0-5%	CCSD Municipal Code 4.12.060 (C) monthly water meter reading. Billing remains bi-monthly.	No
Stage 4, 5, & 6	Landscape - Prohibit certain types of landscape irrigation	Percentage	10-30%	CCSD Municipal Code 4.12.060 (A) prohibits the irrigation of gardens and landscaping with potable water at drought stages 4, 5, and 6 except for landscaping deemed necessary to protect public health and safety.	Yes
Stage 5	Expand Public Information Campaign	Percentage	5-10%	CCSD Municipal Code 4.12.060 (B) Expand public information campaign on water shortage by staffing a booth at the weekly farmers market with conservation giveaways and information in addition to announcements at Board and Committee meetings, website, email, physical banners and signs, and billing inserts. In-person informational outreach to the highest 10% of water consumers for each customer	No

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Submittal Table 8-3 Retail: Demand Reduction Actions - Water Code Section 10632(a)(4)(B) and (E)					
Yes	Is the Supplier completing this table using the standard six levels? (yes/no)				
Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)	Penalty, Charge, or Other Enforcement?
		Volume or Percentage Drop down	Shortage Gap Reduction (MG)		
				class. Inspections of consistent violators of water use allocations under 4.16.080.	
Stage 5 & 6	Implement or Modify Drought Rate Structure or Surcharge	Percentage	15-30%	CCSD Municipal Code 4.12.070 (D) 1. Each residential customer account is allotted two (2) units per month. Permanent residents are limited to 2 units per individual per month. 2. Commercial accounts are limited to 2 units per EDU or fraction thereof per month or 75% of the average of the last 12 months' water use, whichever is less. 3. Vacation rentals are limited to 2 units per month. Stages 5 and 6 – penalty chargers for violation of water use allocations. Water use that exceeds allocation by less than 25% will be subject to a 500% surcharge levied on all usage above a customer's allocation. Water use that exceeds allocation more than 25% will be subject to a 1000% surcharge levied on all usage above a customer's allocation.	Yes
Stage 5 & 6	Landscape - Prohibit all landscape irrigation	Percentage	>35%	CCSD Municipal Code 4.12.060 (A) prohibits the irrigation of gardens and landscaping with potable	Yes

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Submittal Table 8-3 Retail: Demand Reduction Actions - Water Code Section 10632(a)(4)(B) and (E)					
Yes	Is the Supplier completing this table using the standard six levels? (yes/no)				
Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)	Penalty, Charge, or Other Enforcement?
		Volume or Percentage Drop down	Shortage Gap Reduction (MG)		
				water at drought stages 4, 5, and 6 except for landscaping deemed necessary to protect public health and safety.	
Stage 6	Expand Public Information Campaign	Percentage	10-15%	CCSD Municipal Code 4.12.060 (B) Expand public information campaign on water shortage by staffing a booth at the weekly farmers market with conservation giveaways and information in addition to announcements at Board and Committee meetings, website, email, physical banners and signs, and billing inserts. In-person informational outreach to the highest 10% of water consumers for each customer class. Mandatory inspections of consistent violators of water use allocations under CCSD Municipal Code 4.16.080.	No

1.4.3 Operational Changes

CCSD's response to drought and dry years could include operating the WRF. The application submitted for the WRF's regular CDP estimated 21 AF of WRF production is estimated to occur during a normal year, which is based on a nine-hour daily runtime up to four working days per week for a minimum of eight weeks per year at a product water reinjection rate of 400 gpm. The upper end of realistic WRF production, as discussed elsewhere, is 150 AF. However, the WRF could theoretically operate 24 hours a day, five days a week, over a six-month dry season to produce approximately 250 AF. The WRF is currently only permitted to run under emergency conditions as described in Table 8-2.

CCSD currently relies on the San Simeon and Santa Rosa aquifers and divides its pumping between the two using an approximate split of 80% San Simeon and 20% Santa Rosa. If minimum water level thresholds are met or if the production limits are reached in one aquifer, CCSD will reduce pumping from the stressed

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aquifer and rely on the second aquifer to meet its demands. Should an infrastructure failure occur in one basin, CCSD could rely on the other basin until repairs are made.

1.4.4 Additional Mandatory Restrictions

Implementation of mandatory restrictions can be an effective but unpopular method for reducing customer usage because it is associated with enforcement actions and penalties. Mandatory restrictions can include a number of items such as limitations on outdoor water use (timing, volume, location), limiting total residential water use, restrictions on using water for certain functions (e.g., car washing), and other restrictions. Mandatory restrictions from either existing codes and ordinances or implemented by CCSD are reported in Table 8-3. During large-scale drought conditions, additional state or regional mandatory restrictions may be implemented. However, since these are not known or under the authority of CCSD, these are not included in the WSCP.

1.4.5 Emergency Response Plan

The CCSD service area has overhead power and communications lines, which co-exist with a heavily forested area of Monterey Pines. This has resulted in a history of power and communication outages during storm events, often caused by trees falling onto overhead lines. Therefore, CCSD relies upon emergency generators to operate its water system during such major power outages. In recent years, CCSD has expanded its use of solar and increased battery storage at all critical communication points. Additionally, CCSD completed a Supervisory Control and Data Acquisition (SCADA) upgrade, which enables the use of radio communications instead of overhead phone lines.

Emergency response planning by CCSD includes action plans for various emergency scenarios. The overall emergency response framework is based on the State of California's Standardized Emergency Management System (SEMS). CCSD adopted the San Luis Obispo County Multi-Jurisdictional Hazard Mitigation Plan (SLOMJHMP) in 2026. The SLOMJHMP includes goals and objectives that will further guide responding to catastrophic events. CCSD also completed the WRF as well as improvements to Well SR-3 during 2014, which improves the reliability of the water supply system and its ability to serve customers during drought conditions. Currently, CCSD is in the process of securing a regular Coastal Development Permit for its WRF. (See Section 6.2 for additional discussion on the WRF.)

1.4.6 Seismic Risk Assessment and Mitigation Plan

Per Water Code Section 10632.5, Suppliers are required to assess seismic risk to water supplies as part of their WSCP. The code also states that "An urban water supplier may comply with this section by submitting, pursuant to Section 10644, a copy of the most recent adopted local hazard mitigation plan or multi-hazard mitigation plan under the federal Disaster Mitigation Act of 2000 (Public Law 106-390) if the local hazard mitigation plan or multi-hazard mitigation plan addresses seismic risk." A copy of the most recently adopted Local Hazard Mitigation Plan (LHMP) under the Federal Disaster Mitigation Act of 2000 may be used to comply with this section if the plan addresses seismic risk.

CCSD's LHMP addresses seismic risk assessment and identification of vulnerabilities to hazards, including critical infrastructure and specific populations at risk. Both direct and indirect consequences of a major earthquake will severely stress the resources of both CCSD and San Luis Obispo County. Earthquakes often coincide with structural damage, pipeline failures, and fires, as well as power and communications interruptions. An emergency response command and control center has been established at the CCSD Fire Station, which is structurally designed to withstand earthquake events, has an emergency power supply, and includes a SCADA control center for water system operations.

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In 2026, CCSD adopted the San Luis Obispo Multi-Jurisdictional Hazard Mitigation Plan. A copy of that plan is included as Appendix H of the 2025 UWMP. The section of the San Luis Obispo Multi-Jurisdictional Hazard Mitigation Plan that discusses CCSD is Annex I: Cambria Community Services District.

1.4.7 Shortage Response Action Effectiveness

CCSD has estimated the effectiveness of the shortage response actions based on the best available data. Estimates of the effectiveness of demand reduction shortage response actions are quantified in Table 8-3. It is expected that the effectiveness of response actions is also a result of successful communication and outreach efforts. Although not all shortage response actions for supply augmentations and operational changes are quantifiable, CCSD expects to mitigate water shortages through demand reduction measures and operational changes, as well as continued public education and outreach efforts.

1.5 Communication Protocols

CWC Section 10632 (a)(5) the supplier is required to identify communication protocols and procedures to inform customers, the public, interested parties, and local, regional, and state governments, regarding predicted shortages, triggered response actions, and shortage emergencies.

Information on the current shortage level and the required demand-reduction actions will be provided during the Utility Department Manager Update at CCSD Board meetings. It will also be posted on the CCSD website.[1] CCSD Board meetings are held on the second Thursday of each month. The procedure to initiate a water shortage stage is outlined in Section 4.12.100 of the CCSD Code and includes a public communication requirement that the notice of the public hearing to adopt a recommended water shortage stage be published in The San Luis Obispo Tribune or a similar newspaper of general circulation, a minimum of seven (7) days before the hearing. The notice must include the time and location of the hearing.

1.6 Compliance and Enforcement

CCSD has adopted several ordinances that were established in their previous WSCP, which have since been incorporated into CCSD's Municipal Code.

These include the following criteria:

- Mandatory prohibitions against water waste at all times
- Water shortage stages with associated actions to be taken, consumption limitations, and overall conservation goals for each stage
- Penalties for excessive water use during declared water shortages

In addition to these ordinances, CCSD plans to enforce its updated WSCP as described in Table 8-3. The enforcement measures are also summarized below.

- Under shortage Stage 2, CCSD will write citations for violation of the demand reduction actions
- Under shortage Stage 3, CCSD will continue to write citations and will begin to implement fines for repeat citations.

[1] https://www.cambriacsd.org/

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Under Stage 4 CCSD will assign water use allocations and switch to monthly meter reads to track compliance. CCSD staff will notify customers in danger of exceeding water use allocations and provide information on how to reduce. Water use allocations are outlined below.

- Permanent resident: 3 units per month
- Commercial water use allocation: 3 units per EDU or fraction thereof; or average water use of last 12 months, whichever is less
- Vacation rental allocation: 3 units per month

Under Stages 5 & 6 CCSD will charge penalties for violation of water use allocations. Water use that exceeds allocation by less than 25% will be subject to a 500% surcharge levied on all usage above the customer's allocation. Water use that exceeds allocation by more than 25% will be subject to a 1000% surcharge levied on all usage above the customer's allocation. Water use allocations are outlined below.

- Permanent resident: 2 units per month
- Commercial water use allocation: 2 units per EDU or fraction thereof; or 75% of average of last 12 months water use, whichever is less
- Vacation rental allocation: 2 units per month

The CCSD Board may further refine the above subject restrictions and prohibitions

1.7 Legal Authorities

Under California law, including CWC Chapters 3.3 and 3.5 of Division 1, Parts 2.55 and 2.6 of Division 6, Division 13, and Article X, Section 2 of the California Constitution, the CCSD Board is authorized to declare a Water Shortage Emergency and implement the water shortage actions outlined in this WSCP. In all water shortage cases, shortage response actions will be implemented at the discretion of CCSD staff and members of the CCSD Board and will be based on an assessment of the supply shortage, customer response, and need for demand reductions.

It is noted that upon proclamation by the Governor of a state of emergency under the California Emergency Services Act (Chapter 7 [commencing with Section 8550] of Division 1 of Title 2 of the Government Code) based on water shortage conditions, the state will defer to the implementation of locally adopted WSCPs to the extent practicable.

1.8 Financial Consequences of WSCP

Besides prohibitions and reduction goals, CCSD has a steeply tiered water rate structure, which is further accelerated by drought surcharges. Table 8-3 presents the CCSD drought surcharges in drought Stages 4-6. CCSD also has enforcement capabilities (CCSD Municipal Code Sections 4.08.040 through 4.08.070, 4.12B.3.E, and 4.12C [F]), which include fines as well as shutting off a customer’s water service.

Revenue reductions from water conservation pose a possible challenge to CCSD. To a certain extent, lost revenues from reduced water sales can be offset by surcharges. To offset potential revenue losses from future droughts, CCSD will continue its efforts to establish and maintain a reserve water fund. Other adaptive, short-term measures could include delaying capital improvement expenditures.

1.9 Monitoring and Reporting

The water savings from implementation of the WSCP will be determined based on measurements of consumption from water meters and well production meters. First, the cumulative consumption for the various sectors (e.g., residential, commercial, etc.) will be compared to water use during non-drought years

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to determine if they are achieving the required water consumption reductions. Then if needed, individual accounts will be monitored. Weather and other possible influences may be accounted for in the evaluation. If the goals are not being met, CCSD can implement additional shortage response actions, as necessary.

1.10 WSCP Refinement Procedures

The WSCP is best prepared and implemented as an adaptive management plan. CCSD will use results obtained from its monitoring and reporting program to evaluate any need for revisions. Potential changes to the WSCP that may require an update include, but are not limited to, any changes to water stage criteria, changes to the shortage stage structure, and/or the addition of significant new customer reduction actions.

Any prospective changes to the WSCP would need to be presented at a public hearing and adopted by the CCSD Board. Notices for the public hearing date would be published in the local newspaper in compliance with CWC requirements.

1.11 Special Water Feature Distinction

The CWC Section 10623 (b) now requires that Suppliers analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas, as defined in subdivision (a) of Section 115921 of the Health and Safety Code. Non-pool or non-spa water features may use or be able to use recycled water, whereas pools and spas must use potable water for health and safety considerations, so limitations to pools and spas may require different considerations compared to non-pool or non-spa water features. This section is not applicable because CCSD currently does not manage artificial water features.

1.12 Plan Adoption, Submittal, and Availability

The WSCP must be adopted by the CCSD Board, which is responsible for final adoption of the WSCP and any proposed updates thereafter. The Final UWMP will be made available to the public on the CCSD website and at the CCSD Administration Office located at 2150 Main Street, #1-A, Cambria, CA.

The steps required for adoption of the WSCP are summarized below:

- Proposed Draft developed under the guidance of CCSD staff
- Public Draft circulated with the 2025 UWMP Public Hearing Notice
- Final WSCP approved by CCSD Board along with Final 2025 UWMP

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APPENDIX A – NOTICE OF PUBLIC HEARING

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Schedule for ad number IPL03303680

Wed Apr 29, 2026
The Tribune (San Luis Obispo) Print Publication — *All Zones*

Wed May 6, 2026
The Tribune (San Luis Obispo) Print Publication — *All Zones*

Notice of Public Hearing

The Cambria Community Services District (CCSD) is updating its current Urban Water Management Plan (UWMP) and Water Shortage Contingency Plan and will hold a Public Hearing to receive public feedback and suggestions. Updates to the UWMP are required every five (5) years in accordance with the California Water Code. This effort helps ensure the CCSD can provide Cambria with a safe and reliable supply of high-quality water to meet current and future demands.

The Public Hearing will be held to take public comment at the CCSD's Regular Board Meeting on May 14, 2026. The meeting begins at 10:00 AM and is held at 1000 Main Street, Cambria, CA 93428. At the conclusion of the Public Hearing, the CCSD Board will consider adopting the proposed UWMP.

The proposed UWMP will be available for review on the CCSD's website (https://www.cambriacsd.org/urban-water-management-plan). Hard copies will be available for review at the CCSD District Office, 2150 Main Street #1-A, Cambria, CA 93428, during business hours. Public comments may be submitted to boardcomment@cambriacsd.org or via the online public comment submission portal at: https://www.cambriacsd.org/written-public-comments

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Apr 29,May 6 2026

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APPENDIX B – ADOPTION RESOLUTION

The adoption resolution will be included here once the 2025 WSCP has been adopted by the CCSD Board of Directors.

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APPENDIX C – ORDINANCE

The CCSD's Water Shortage Contingency Plan Ordinance can be found here:

https://library.municode.com/ca/cambria_community_services_district/codes/code_of_ordinances?nodeId=TIT4WASY_CH4.12WASHCOPL