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2015 Urban Water Management Plan

June 2016

Prepared for



**SCOTTS VALLEY
WATER DISTRICT**

2 Civic Center Drive
Scotts Valley, CA 95066

K/J Project No. 1568036*00

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Section 1: Introduction

This volume presents the Urban Water Management Plan 2015 (Plan or UWMP) for the Scotts Valley Water District (SVWD or District) service area. In accordance with the California Water Code (CWC), urban water suppliers with 3,000 or more service connections or supplying 3,000 or more acre-feet of water per year are required to prepare an UWMP every five years.

This section provides a discussion on the importance and extent of water management planning efforts by the SVWD and the general purpose of the Plan and provides a list of acronyms and abbreviations used within this document.

1.1 Purpose

Water planning is an essential function of water suppliers but becomes critical as California grapples with ongoing drought and expected long-term climate changes. An UWMP is a planning tool that generally guides the actions of water management agencies. It provides elected officials, managers and the public with a broad perspective on a number of water supply issues. It is not a substitute for project-specific planning documents, nor was it intended to be when mandated by the State Legislature. For example, the Legislature mandated that a plan include a section which “describes the opportunities for exchanges or water transfers on a short-term or long-term basis.” (California Urban Water Planning Act, Article 2, Section 10630(d)) The identification of such opportunities, and the inclusion of those opportunities in a general water service reliability analysis, neither commits a water management agency to pursue a particular water exchange/transfer opportunity, nor preclude a water management agency from exploring exchange/transfer opportunities not identified in the plan. When specific projects are chosen to be implemented, detailed project plans are developed, environmental analysis, if required, is prepared, and financial and operational plans are detailed.

In short, this Plan is a management tool, providing a framework for action, but not functioning as a detailed project development or action. It is important that this Plan be viewed as a long-term, general planning document, rather than as an exact blueprint for supply and demand management. Water management in California is not a matter of certainty, and planning projections may change in response to a number of factors. From this perspective, it is appropriate to look at the Plan as a general planning framework, not a specific action plan. It is an effort to generally answer a series of planning questions including:

- What are the potential sources of supply and what is the reasonable probable yield from them?
- What is the probable demand, given a reasonable set of assumptions about growth and implementation of good water management practices?
- How well do supply and demand figures match up, assuming that the various probable supplies will be pursued by the implementing agency?

Using these “framework” questions and resulting answers, the implementing agency will pursue feasible and cost-effective options and opportunities to meet demands. SVWD is exploring

regional partnerships that enhance water supplies over a range of hydrologies that can benefit Santa Cruz County as a whole. Sources such as the surface water exchange from the City of Santa Cruz Water Department (SCWD) as well as continued groundwater extraction, other water exchanges, recycling, and water banking/conjunctive use are under consideration. Specific planning efforts will be undertaken in regard to each option, involving detailed evaluations of how each option would fit into the overall supply/demand framework, how each option would impact the environment, and how each option would affect customers. The objective of these more detailed evaluations would be to find the optimum mix of conservation and supply programs that ensure that the needs of the customers are met.

The California Urban Water Management Planning Act (Act) requires preparation of a plan that:

- Accomplishes water supply planning over a 20 year period in five-year increments. (SVWD is going beyond the requirements of the Act by developing a plan which spans 25 years.)
- Identifies and quantifies adequate water supplies, including recycled water, for existing and future demands, in normal, single-dry, and multiple-dry years.
- Implements conservation and efficient use of urban water supplies.

A checklist to ensure compliance of this Plan with the Act requirements is provided in Appendix A.

In short, the Plan answers the question: Will there be enough water for the SVWD service area in the future years, and what mix of programs should be explored for making this water available?

It is the stated goal of SVWD to deliver a reliable and high quality water supply for their customers, even during dry periods. Based on conservative water supply and demand assumptions over the next 25 years in combination with conservation of non-essential demand during certain dry years, the Plan successfully achieves this goal.

1.2 Relationship to Other Planning Efforts

This Plan provides information on water management specific to the District service area. However, water management does not happen in isolation. Other planning processes that integrate with the UWMP include the Scotts Valley General Plan, Recycled Water Facilities Planning Reports, Groundwater Management Program Annual Reports, Water and Recycled Water Master Plans, Integrated Regional Water Management Plan, and other planning documents. These documents have been used in development of this UWMP to allow for consistency and integration of water management planning and to optimize the use of water resources within the District service area and greater Santa Cruz region.

1.3 List of Abbreviations and Acronyms

The following abbreviations and acronyms are used in this report.

1,2-DCE	1,2-dichlorethane
20x2020 Plan	20x2020 Water Conservation Plan
AB	Assembly Bill
ACOE	U.S. Army Corps of Engineers
Act	California Urban Water Management Planning Act
AF	Acre Feet
AFY	AF per year
AMBAG	Association of Monterey Bay Area Governments
AWWA	American Water Works Association
AWWARF	American Water Works Association Research Foundation
Basin	Santa Margarita Groundwater Basin
BMOs	Best Management Objectives
BMPs	Best Management Practices
CASGEM	California Statewide Groundwater Elevation Monitoring Program
CAT	Climate Action Team
CCF	One Hundred Cubic Feet
CCR	Consumer Confidence Report
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CII	Commercial, Industrial, and Institutional
CIMIS	California Irrigation Management Information System
cis-1,2-DCE	cis-1,2-Dichloroethylene
City	City of Scotts Valley
COG	Council of Government
CUWCC	California Urban Water Conservation Council
CWC	California Water Code
DBP	Disinfection by-products
DCE	Dichloroethylene
DDW	Division of Drinking Water
District	Scotts Valley Water District
DMMs	Demand Management Measures
DOF	Department of Finance
DPH	Department of Public Health
DTSC	Department of Toxic Substances Control
DWR	California Department of Water Resources
eARDWP	Electronic Annual Reports to the Drinking Water Program (SWRCB)
EC	Electrical conductivity
EIR/EIS	Environmental Impact Report/Environmental Impact Statement
EPA	Environmental Protection Agency
ETo	Evapotranspiration
FPR	Facilities Planning Report
GIS	Geographic Information System
GPCD	gallons per capita per day
GPD	gallons per day
GPM	gallons per minute
GAC	Granular Activated Carbon
GWM	Groundwater Management Plan
HCD	Housing and Community Development

HCF	Hundred Cubic Feet
HECW	High Efficiency Clothes Washer
HET	High Efficiency Toilet
IRWMP	Integrated Regional Water Management Plan
LAFCO	Local Agency Formation Commission
MCL	Maximum Contaminant Level
MF	Multi-Family
M&I	Municipal and Industrial
MGD	million gallons per day
mg/L	milligrams per liter
MOU	Memorandum of Understanding Regarding Water Conservation in California
MTBE	methyl tertiary butyl ether
MWEL0	Model Water Efficient Landscape Ordinance
NPDES	National Pollutant Discharge Elimination System
NO3	Nitrates
PCE	tetrachloroethene
PHG	Public Health Goal
Plan	Urban Water Management Plan 2015
Ppb	parts per billion
PWS	Public Water System
RHNA	Regional Housing Needs Allocation
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SBX7-7	Senate Bill 7 of Special Extended Session 7
SCWD	City of Santa Cruz Water Department
Scotts Valley	City of Scotts Valley
SF	Single Family
SLVWD	San Lorenzo Valley Water District
SMGBAC	Santa Margarita Groundwater Basin Advisory Committee
SVWD	Scotts Valley Water District
SWRCB	State Water Resources Control Board
TCE	trichloroethylene
TDS	Total Dissolved Solids
TOC	Total Organic Carbon
µg/L	micrograms per liter
UAW	Unaccounted For Water
umhos/cm	Micromhos per centimeter
USEPA	United States Environmental Protection Agency
UWMP	Urban Water Management Plan
UV	ultraviolet
VOC	Volatile Organic Compound
WRF	Water Reclamation Facility
WSS	WaterSense Specification
WTF	Water Treatment Facility
WY	Water Year

Section 2: Plan Preparation

This section discusses Plan implementation, including efforts in coordination and public outreach related to the Plan.

2.1 Implementation of the Plan

The SVWD served approximately 10,744 persons in its service area, through 4,220 meter connections, and supplied approximately 1,133 acre-feet (AF) of potable water in 2015. This subsection provides the cooperative framework within which the Plan will be implemented including agency coordination, public outreach, and resources maximization.

Public Water System (PWS) data reported to the State Water Resources Control Board (SWRCB), Division of Drinking Water (DDW) is used to determine whether or not a retail supplier has reached the UWMP reporting threshold of 3,000 or more connections or 3,000 acre-feet of water supplied. This is done by reviewing the number of connections and volume of water supplied by each PWS that is managed by the water supplier.

Table 2-1 provides the name and number of the PWS that is managed by SVWD and reported in this UWMP.

Table 2-1: Public Water System (DWR Table 2-1)

Public Water System Number	Public Water System Name	Number of Municipal Connections 2015	Volume of Water Supplied 2015
CA4410013	Scotts Valley Water District	4220	1,131 AFY

Table 2-2: Plan Identification (DWR Table 2-2)

Type of Plan		
☒	Individual UWMP	
	☐	Water Supplier is also a member of a RUWMP
	☐	Water Supplier is also a member of a Regional Alliance
☐	Regional Urban Water Management Plan (RUWMP)	

Table 2-3: Agency Identification (DWR Table 2-3)

Type of Agency	
☐	Agency is a wholesaler
☒	Agency is a retailer
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 (acre-feet)

* SVWD prepares annual groundwater reports on an Oct 1 – Sept 30 Water Year (WY) basis which is used in this UWMP; SVWD's Fiscal Year is July1 – June 30.

2.2 Coordination with Other Agencies

Water agencies are permitted by the State to work together to develop a cooperative regional plan. SVWD coordinates with the local governments and water agencies for planning purposes. Water resource specialists with expertise in water resource management were retained to assist SVWD in preparing the details of the Plan. Agency coordination for this Plan is summarized in Table 2-4.

Table 2-4: Agency Coordination Summary

	Participated in UWMP Development	Received Notice of UWMP Update	Commented on Draft	Attended Public Meetings	Contacted for Assistance	Sent Notice of Intent to Adopt	Not Involved
County of Santa Cruz		✓				✓	
City of Scotts Valley	✓	✓			✓	✓	
Scotts Valley Fire District		✓					
San Lorenzo Valley Water District		✓					
Mt. Hermon Conference Center		✓					
City of Santa Cruz Water Department		✓			✓		
Santa Cruz Co. Local Agency Formation Commission		✓					
Soquel Creek Water District		✓					

2.3 Public Outreach

SVWD encourages community participation in water planning. Interested groups were informed about the development of the Plan along with the schedule of public activities. Notices of public meetings were published in the Scotts Valley Press-Banner, the local newspaper. Copies of the Draft Plan were made available at SVWD's office, and on the SVWD website. SVWD also conferred with the City of Scotts Valley Planning Department to gather data concerning planned development and the probable implementation of approved development.

SVWD notified eight agencies, identified in Table 2-4, including the City of Scotts Valley and Santa Cruz County of the opportunity to provide input regarding the Plan. Table 2-5 presents a timeline for public participation during the development of the Plan. A copy of the public outreach materials, including paid advertisements, website postings, and notice letters are attached in Appendix B. A copy of the resolution to adopt the 2015 UWMP will be included as Appendix C after the adoption by the Board and before submittal to the California Department of Water Resources (DWR).

Table 2-5: Public Participation Timeline

Date	Event	Description
March 1, 2016	Public notification to Scotts Valley City and Santa Cruz County	Describe UWMP requirements and process
May 11, 2016	Santa Margarita Groundwater Basin Advisory Committee Meeting	Discuss upcoming availability of Public Review Draft and schedule for adoption.
May 12, 2016	Public Review Draft	Release Draft UWMP and solicit input.
June 9, 2016	SVWD Board Workshop and Public Hearing	UWMP considered for approval by the SVWD Board.

The components of public participation include:

- Local Media:
 - Paid advertisements in local newspapers
- SVWD Public Participation:
 - Santa Margarita Groundwater Basin Advisory Committee (SMGBAC)
 - Board meeting/public hearing
- City/County Outreach:
 - Notification letters
 - Public availability of documents
 - SVWD website
 - SVWD office

Copies of the final document will be made available to the entities listed in Table 2-5 as well as the State of California Library. SVWD will submit the UWMP to DWR no later than 30 days after adoption and will make the UWMP available to public review during normal business hours.

Section 3: Water System and Service Area Description

This section provides general information about SVWD's service area characteristics including maps of the service area, a description of the service area and climate, the public water system, and the agency's organizational structure and history.

3.1 General Description

The Scotts Valley Water District was formed under County Water District Law, specifically California Water Code Section (CWC§) 30321, and received certification from the California Secretary of State in 1961. Its boundaries include most of the City of Scotts Valley (Scotts Valley or City) as well as some unincorporated areas north of the City. The District lies in the Santa Cruz Mountains, five miles inland from the Monterey Bay. It is approximately five miles from north to south and one mile east to west with an approximate area of 5.5 square miles. Groundwater is the sole source of potable water supply for the District

The District's service area relative to DWR established groundwater basins is shown on Figure 3-1. The District overlies a large portion of DWR Basin 3-27 and a small portion of Basins 3-21 and 3-50. The extent of the locally recognized Santa Margarita Groundwater Basin (Santa Margarita Basin or Basin) is also shown on Figure 3-1. No changes to the District's service area have occurred since 2010. Figure 3-1 also illustrates the District's location relative to nearby water suppliers and the Scotts Valley city limits. In accordance with Water Code §10620(d) nearby water suppliers, San Lorenzo Valley Water District and Mount Hermon, have been notified and provided the opportunity to comment.

Sewer service in the Scotts Valley area is provided by the City of Scotts Valley. SVWD coordinates closely with the Scotts Valley to provide recycled water to SVWD customers as described in Section 4.

3.2 Service Area Boundary Maps

Figure 3-1 illustrates the District service area within the regional supply context.

Figure 3-2 illustrates the potable water service area, which is equivalent to the public water system boundary and the jurisdictional boundary. SVWD does not supply raw water, so a raw water distribution system boundary does not exist.

Figure 3-1: Groundwater Basin Boundaries

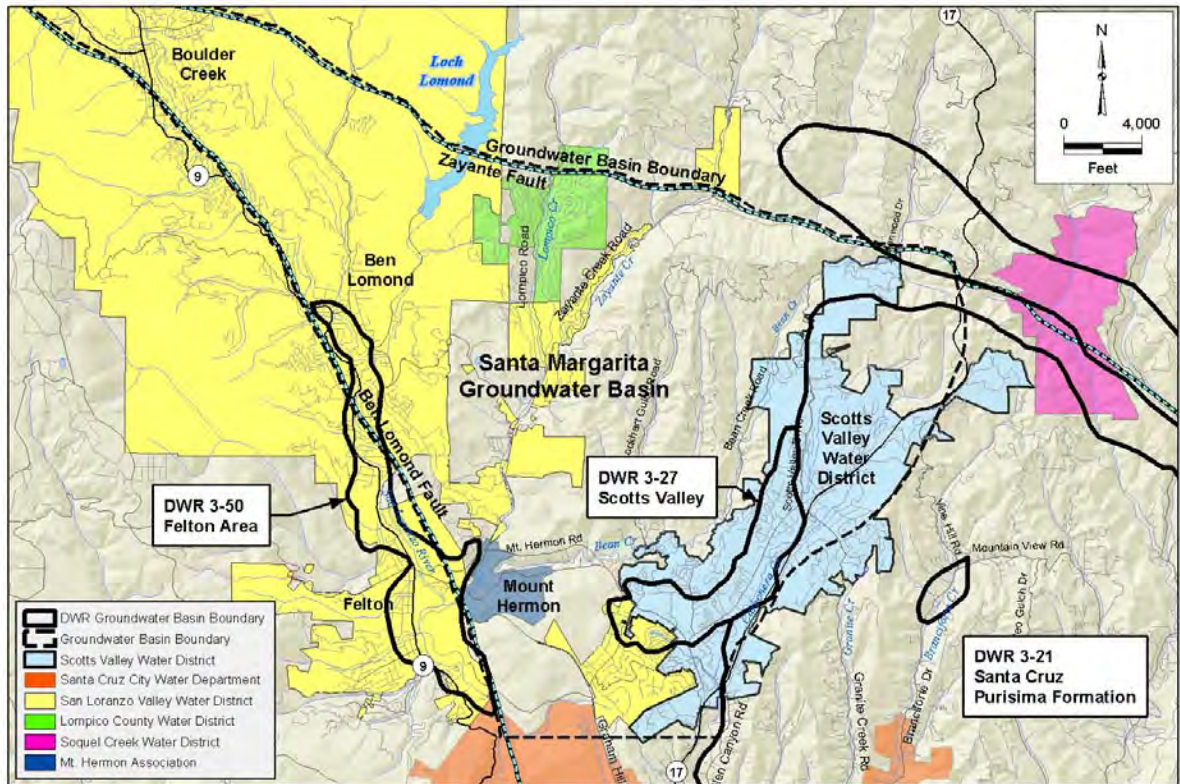
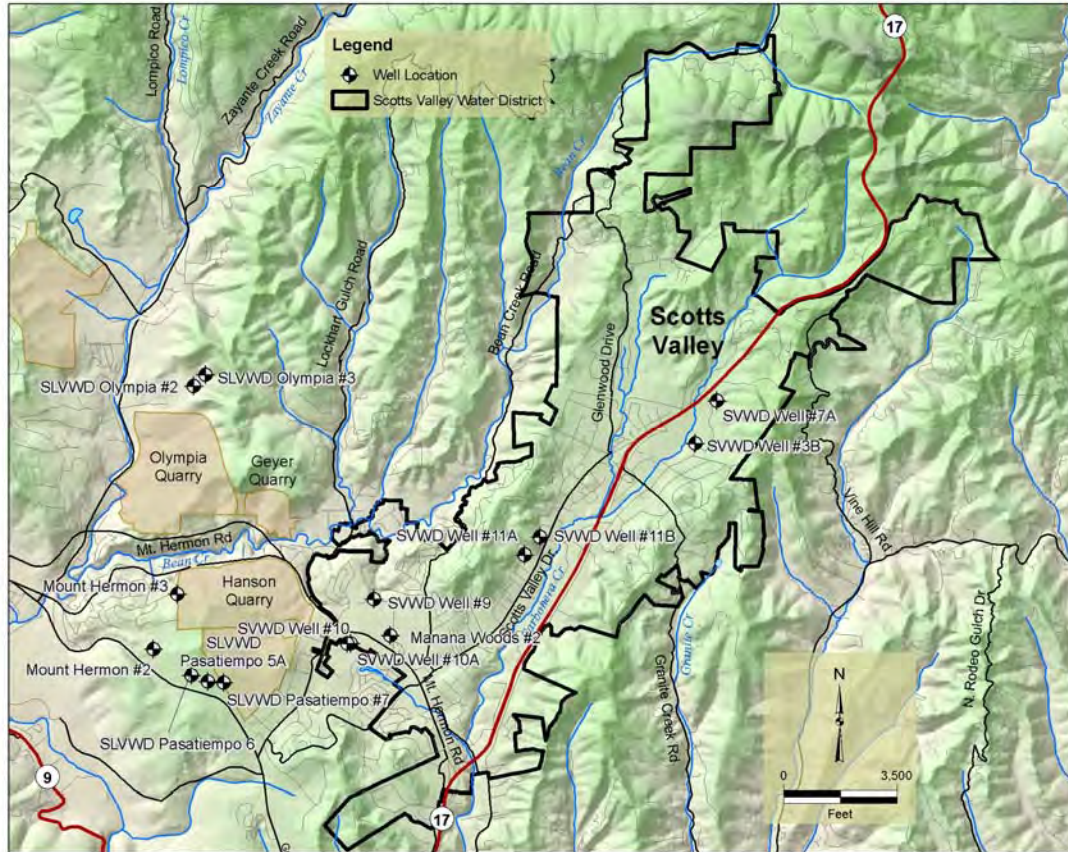


Figure 3-2: Scotts Valley Water District Service Area



3.3 Service Area Climate

3.3.1 Historical and Current Climate

The climate of SVWD's service area is mild. The area is cooled in the summer by early morning and evening coastal fog. Average rainfall is approximately 41.5 inches per year. Table 3-1 presents the region's annual average climate data. Standard Monthly Average Evapotranspiration (ET_o) and Average Maximum Temperature data are provided for 1990-2015 at CIMIS Station 104 at the De Laveaga Golf Course in the City of Santa Cruz. Although the weather patterns are slightly different at the coastal station than in the Santa Cruz Mountains, the data provide information regarding the regional climate. ET_o from plants is variable, differing with the type of vegetation cover and with weather and soil conditions. Evaporation in the District is generally low in the winter months and peaks in the summer. Average Monthly Rainfall is from the District's El Pueblo Yard precipitation gauge.

Comparison of the monthly rainfall and evaporation amounts reveal that winter is characterized by a surplus of rainfall over evaporation or ETo. This rainfall is then available for runoff and natural groundwater recharge. Native vegetation ETo is reduced substantially in summer when rainfall is minimal and soil moisture is depleted. At this time, however, landscape irrigation demands become greatest. This contributes to high water demands in the late summer creating a time lag between periods of high demand and high supply.

Table 3-1: Climate Data for the SVWD Service Area

	Jan	Feb	Mar	Apr	May	Jun
Standard Monthly Average ETo ^(a)	1.63	2.03	3.56	4.42	5.16	5.48
Average Rainfall (inches) ^(a)	7.68	8.24	6.20	2.50	1.00	0.27
Average Temperature (Fahrenheit) ^(a)	49.4	50.7	52.4	54.0	56.7	59.2

	Jul	Aug	Sep	Oct	Nov	Dec	Annual Total
Standard Monthly Average ETo ^(a)	5.16	4.87	3.81	2.99	1.81	1.35	42.27
Average Rainfall (inches) ^(a)	0.01	0.04	0.28	2.00	4.86	8.34	41.48
Average Temperature (Fahrenheit) ^(a)	60.6	61.5	60.6	58.3	53.1	48.7	55.4

Notes:

(a) ETo (evapotranspiration) and temperature data from California Irrigation Management Information System (CIMIS) Station #104 De Laveaga, <http://www.cimis.water.ca.gov/cimis/welcome.jsp>

(b) Average Monthly Rainfall data gathered from long-term average precipitation records from El Pueblo Yard during period 1982-2015

Rainfall in the Scotts Valley area during WY2015 totaled 28.9 inches (13.1 inches below average). Over the recent four-year drought (2012 to 2015), cumulative rainfall was 55 inches below average.

3.4 Service Area Population and Demographics

This section describes the population in the SVWD service area, including current and projected population, and demographic information in the District.

3.4.1 Current and Projected Population

Table 3-2 provides an estimate of population projections through 2040 in the SVWD service area which were derived from analysis by the Association of Monterey Bay Area Governments (AMBAG) using the 2010 Census data (AMBAG, 2011).

Table 3-2: Current and Projected Population in SVWD Service Area (DWR Table 3-1)

2010	2015	2020	2025	2030	2035	2040
10,309*	10,774	11,383	11,655	11,927	12,198	12,470

*From 2010 UWMP based on Geographic Information System Analysis prepared by Association of Monterey Bay Area Governments using 2010 Census Data

3.4.2 Other Demographic Factors

Water service is provided to primarily residential customers with some commercial, industrial, institutional, recreational, and landscape customers and for other uses, such as fire protection and pipeline cleaning.

The service area continues to experience modest increases in single family residential construction. Although the local population has increased slightly, the demand for potable water has decreased which is most likely linked to recent rate increases, active implementation of water conservation and recycled water programs, and the recent economic downturn. SVWD expects to see some continuing modest development activity in the near-term.

Section 4: System Water Use

This section describes and quantifies historic, current and projected water uses within the SVWD service area and the methodology used to project future demands within SVWD's service area.

Water usage is divided into sectors such as residential, commercial, industrial, institutional, landscape, and other purposes. Several factors can affect demand projections, including:

- Land use revisions
- New regulations
- Increases in water rates
- Consumer choice
- Economic conditions
- Transportation needs
- Highway construction
- Environmental factors
- Conservation programs
- Plumbing codes

The foregoing factors affect the amount of water needed, as well as the timing of when it is needed. Past experience has indicated that the economy is the biggest factor in determining water demand. During an economic recession, there is often a major downturn in development and a subsequent slowing of the projected demand for water. The projections in this Plan do not attempt to forecast recessions or droughts. Likewise, no speculation is made about future plumbing codes or other regulatory changes. However, the projections do include water conservation. There have been, and continue to be, major successful efforts statewide and locally to conserve water.

Although recycled water is addressed comprehensively in detail in Section 6, a summary recycled water demands are included in this section for a complete representation of water demand.

4.1 Recycled and Potable Water Demand

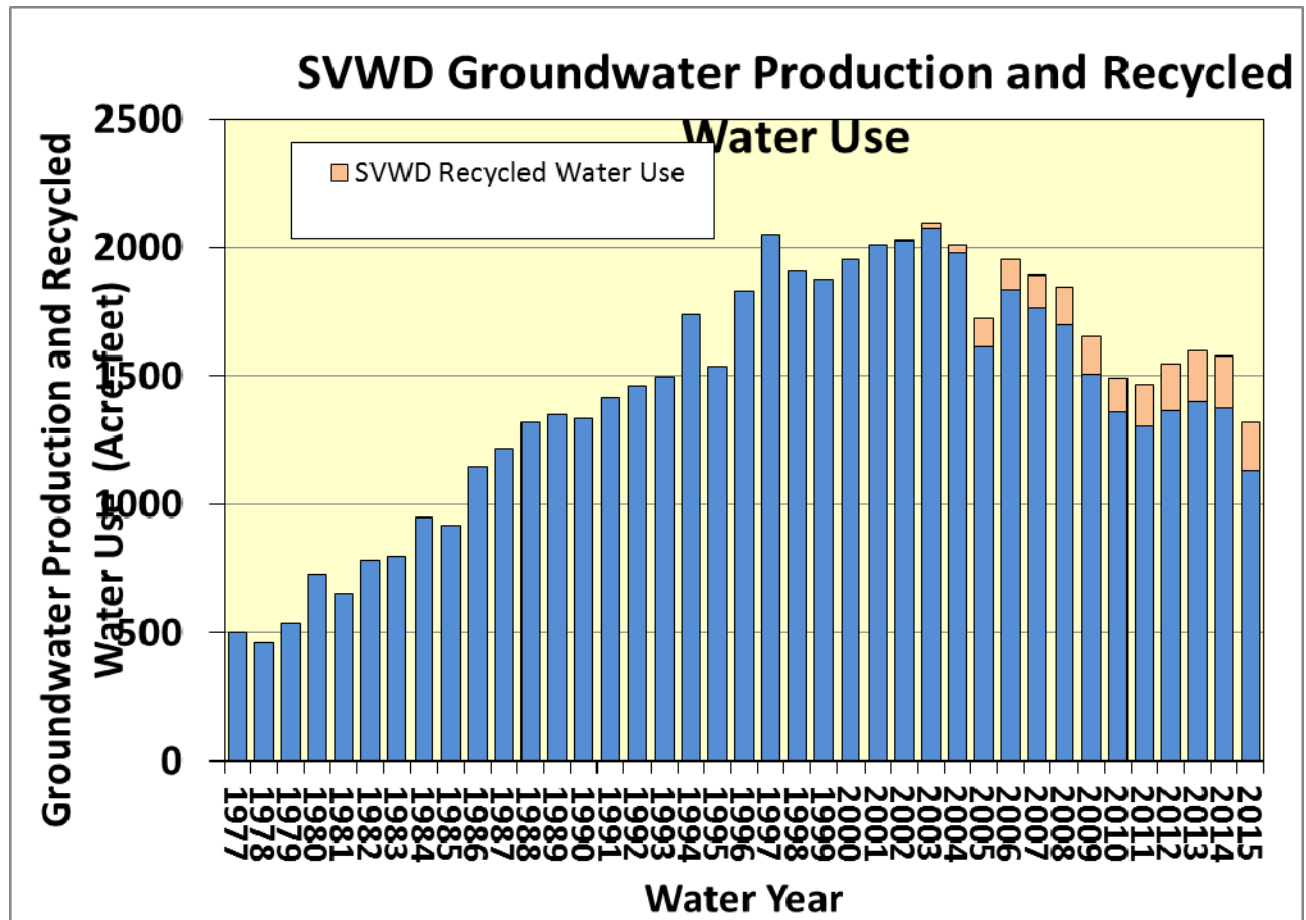
Groundwater is the sole source of potable water for SVWD. No raw water is supplied to or by SVWD. Recycled water, supplied to SVWD by the City of Scotts Valley Water Reclamation Facility, is used primarily for landscape irrigation.

Predicting future water supply requires accurate historic water use patterns and water usage records. Both the economy and entitlement process (compliance with the California Environmental Quality Act (CEQA)) are key factors impacting growth in population and demand.

Figure 4-1 presents the use of both groundwater and recycled water by SVWD since 1990. The water serves a range of customer types including single family homes, multi-family homes, commercial, industrial, institutional/government, and landscape, much of which is served with

recycled water. A more detailed breakdown of demand by customer classification is found in Table 4-1.

Figure 4-1: Historical Groundwater and Recycled Water Use



4.2 Current and Projected Water Uses by Sector

The California Water Code defines the following water use sectors. Those not applicable to SVWD are indicated with "N/A".

- Single-family residential
- Multi-family
- Commercial
- Industrial
- Institutional (and governmental)
- Landscape
- Sales to other agencies (N/A)
- Conjunctive use (N/A)
- Groundwater Recharge (N/A)
- Saline water intrusion barriers (N/A)

- Agricultural (N/A)
- Distribution System Losses

SVWD does not currently use water for other miscellaneous uses such as exchanges, surface water augmentation, transfers, or wetlands/wildlife habitat.

Table 4-1 provides the 2015 demands by sector, based on the SVWD meter records and includes projected demands in 5 year intervals through 2040. Demand projections assume that from 2020-2040, usage by existing customers will rebound to average of the 2010-2015 demand. This is estimated by calculating the gallons per day (gpd) per account for each use type then applying it to the number of existing accounts in 2020 and future years. Demands for new development are based on a water use efficient unit demand and applied to specific proposed developments that are either in the entitlement process or have approached the City of Scotts Valley for entitlement. Each proposed development has a number of residential and commercial units.

Table 4-1: Demands for Potable and Raw Water – Current and Projected (DWR Tables 4-1, 4-2, 4-3)

Use Type	2015 ^(a)	2020	2025	2030	2035	2040
Single-family	627	788	790	791	793	795
Multi-family	76	105	118	131	143	156
Commercial	178	186	186	186	186	186
Industrial	38	45	45	45	45	45
Institutional/governmental	26	40	40	40	40	40
Landscape (Potable Irrigation)	49	70	70	70	70	70
Losses ^(b)	138	111	113	114	115	116
Other (Fire Service)	1	2	2	2	2	2
Total Potable Water Demand (AFY)	1,133	1,348	1,364	1,380	1,395	1,411
Landscape (Recycled Water Irrigation)	200	210	220	230	240	250
Groundwater Recharge ^(c)	--	--	--	--	--	--
Total Recycled Water Demand (AFY)	200	210	220	230	240	250
Total Water Demand (AFY)	1,333	1,558	1,584	1,610	1,635	1,661

Note:

(a) Demands from 2015 metered deliveries based on Water Year (10/1/14- 9/30/15).

(b) Losses in 2020 – 2040 are average loss from 2010-2015 of 9% ; SVWD has conducted detailed pipeline leakage estimate which resulted in the repair of several minor leaks; therefor it can be concluded that losses are under reporting meters and not leaks.

(c) SVWD is evaluating potential recharge of advanced purified water but has not yet committed to a project

4.3 Distribution System Water Losses

Water losses can include “real losses”, which are physical losses from the water distribution system (and the supplier’s storage facilities) as well as “apparent losses”, which represent losses due to metering inaccuracies, data handling errors and/or unauthorized consumption. As part of the UWMP, the District is required to quantify its water losses for the most recent 12-month period available using the American Water Works Association (AWWA) Method. This

quantity, as a total of real and apparent losses, is presented in the analysis found in the AWWA worksheet used to calculate the losses as presented in Appendix D. Projected losses in 5-year increments are presented in Table 4-1 and are based on the percent water loss calculated in 2015 after SVWD made significant efforts to reduce pipeline leaks; apparent losses that remain are believed to be associated with older meters that are underreporting measurements and are in the process of replacement. Discussion on how the District plans to reduce distribution system losses is presented in Section 9 (Demand Management Measures).

Table 4-2: Water Loss Summary Most Recent 12 Month Period Available (DWR Table 4-4)

Reporting Period Start Date (mm/yyyy)	Volume of Water Loss* (acre-feet)
01/2015	89

* Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.

4.4 Estimating Future Water Savings

Each agency is required to indicate the extent to which future water savings from codes, standards, ordinances, or transportation and land use plans (known as "passive savings" are considered in the agency's water use projections. Future water savings estimates from such "passive savings" were included in the District's projected water demand presented above, namely in the projection of landscape irrigation demand. The specific ordinances considered in these future savings are noted in Section 9 and refer to Ordinances to Promote Water Conservation and Minimize Water Waste. The District's responses are found in Table 4-3.

Table 4-3: Inclusion in Water Use Projections (DWR Table 4-5)

Are Future Water Savings Included in Projections?	Yes
Section number where citations of the ordinances utilized in demand projections are found.	Section 9
Are Lower Income Residential Demands Included In Projections?	Yes

4.5 Water Use for Lower Income Households

Senate Bill 1087 requires that water use projections of a UWMP include the projected water use for single-family and multi-family residential housing for lower income households as identified in the housing element of any city, county, or city and county general plan in the service area of the supplier.

Housing elements rely on the Regional Housing Needs Allocation (RHNA) generated by the State Department of Housing and Community Development (HCD) to allocate the regional need for housing to the regional Council of Governments (COG) (or a HCD for cities and counties not covered by a COG) for incorporation into housing element updates. Before the housing element is due, the HCD determines the total regional housing need for the next planning period for each region in the state and allocates that need. The COGs then allocate to each local jurisdiction its

“fair share” of the RHNA, broken down by income categories; very low, low, moderate, and above moderate, over the housing element’s planning period. AMBAG is the COG responsible for preparing the RHNA for the Scotts Valley area. The City of Scotts Valley, in turn incorporated AMBAG’s RHNA into the 2014 update of the housing element of the General Plan.

The housing elements cover the planning period 2015-2023. The allocation for very low and low income classes as defined by the California Health and Safety Code were the following for the AMBAG region (AMBAG, 2014):

- Very Low – 24.1 percent
- Low – 15.7 percent

The AMBAG RHNA does not classify the allocation of low income households between single-family and multi-family residential housing types. It has been assumed that, multi-family housing types are included in the projected water use for lower income households. To remain consistent with the intent of the Senate Bill (SB) 1087 legislation and also to comply with the UWMP Planning Act, intent has been made to identify those water use projections for very low- and low- residential income households based on the income category, classification percentage, calculated demand projections as shown in Table 4-4 below.

SVWD will not deny or condition approval of water services, or reduce the amount of services applied for by a proposed development that includes housing units affordable to lower income households unless one of the following occurs:

- SVWD specifically finds it does not have sufficient supply.
- SVWD is subject to a compliance order issued by the Division of Drinking Water that prohibits new connections
- The applicant has failed to agree to reasonable terms and conditions relating to the provision service.

Table 4-4: Low Income Water Demand (AFY)

	2015	2020	2025	2030	2035	2040
Demand ^(a)	703	893	908	922	936	951
Very low income ^(b)	179.8	338.3	290.5	222.2	225.7	229.1
Low income ^(b)	117.1	219.9	189.0	144.8	147.0	149.3
Total Very Low and Low Income Demand	296.8	558.2	479.5	367.0	372.7	378.4

Notes:

(a) Residential Demand

(b) Regional Housing Need Allocation Plan - Planning Period (2015 - 2023) for Jurisdictions within AMBAG from draft February 2016 City of Scotts Valley Housing Element; demand for 56 units based on Multi family average demand and 6 unit per account distributed between 2015-2025

4.6 Climate Change

In November 2011, DWR issued “Climate Change Handbook for Regional Water Planning,” which outlines a process for assessing risks related to climate change, evaluating and selecting

strategies that appear most effective based on current knowledge, and monitoring conditions and updating strategies as knowledge improves. The process outlined in the handbook allows regional water management planners to conduct the necessary analyses to assess risks and possible climate change impacts. It also informs decisions concerning possible future actions. The handbook provides guidance for climate change planning in the context of regional water management. The 2014 Santa Cruz Integrated Regional Water Management (IRWM) Plan incorporated Santa Cruz specific analysis and evaluation of vulnerabilities to climate change which are summarized below.

The 2013 update of the DWR California Water Plan discusses how future climate conditions are anticipated to impact hydrological conditions by evaluating multiple future scenarios that are intended to capture a broad range of uncertain factors that affect water management. These changing hydrological conditions could affect future planning efforts, which are typically based on historic conditions; historical hydrology may no longer provide an accurate picture of future conditions.

The “California Water Action Plan” released in January 2014 is intended to guide state efforts and resources with regard to improving the reliability of water supply, providing the ecosystem restoration needed to bring the water system back into balance, and strengthening the resilience of the state’s infrastructure. The Water Action Plan recognizes that the challenges facing California are many: uncertain water supplies, water scarcity and drought, declining groundwater basins, poor water quality, declining native fish species and loss of wildlife habitat, flood risks, and supply disruptions.

Similarly, Volume 1, Section 5 of the California Water Plan, “Managing an Uncertain Future,” discusses three key considerations in the planning approach for future management of regional and statewide water resources. The planning approach should (1) recognize and reduce uncertainties inherent in the system, (2) define and assess the risks that can hamper successful system management and select management practices that reduce the risks to acceptable levels, and (3) keep an eye toward approaches that help implement and maintain water and flood management systems that have more sustainable outcomes.

Should global warming increase over time, it may cause a number of changes impacting future water supplies, including changes in hydrologic patterns that can alter groundwater recharge, sea level, rainfall intensity, and statewide water demand. Computer models have been developed to show water planners how California water management might adapt to climate change. DWR has committed to continue to update and refine these models based on ongoing scientific data collection and to incorporate this information into future California Water Plans.

Potential impacts of global climate change include the following:

- Could produce hydrologic conditions, variability, and extremes that are different from what current water systems were designed to manage
- May occur too rapidly to allow sufficient time and information to permit managers to respond appropriately
- May require special efforts or plans to protect against surprises or uncertainties

4.6.1 Santa Cruz Specific Planning Documents

The 2014 Santa Cruz IRWM Plan included discussion of the US Geological Survey study to assess the potential climate change impacts on Santa Cruz County water resources. Preliminary results suggest that recharge rates will be reduced by 30 percent.

The vulnerability of the water sector to climate change stems from a modified hydrology that affects the frequency, magnitude, and duration of extreme events, including flooding and drought, which, in turn, affect water quantity, quality, and infrastructure. The 2014 IRWM Plan identifies the following probable impacts due to changes in temperature and precipitation in Santa Cruz:

- Higher average monthly maximum temperatures of 3-4 degrees C above the 1971-2000 reference period, especially in spring and fall months, will result in generally drier conditions increasing evapotranspiration and water demands.
- Droughts are estimated to become 50 percent more frequent and persistent during this century with an average of one drought every decade and the potential for a multidecadal drought at the end of the 21st century.
- Intense rainfall events will continue to affect Santa Cruz County and may increase in up to 20-30 percent higher flows over historic 1971-2000 reference period, possibly leading to more frequent and/or more extensive flooding, and reduced potential to capture rainfall for recharge.
- Reduction in recharge over much of the Santa Cruz Region, associated with higher temperatures as well as changes in rainfall is estimated to be from 10-15 percent and up to 30 percent depending on the model. The San Lorenzo River Basin may experience slight increases in recharge.
- Rising sea levels increase susceptibility to coastal and estuarine flooding and increase salt water intrusion into coastal groundwater aquifers.

Future UWMP updates will continue to monitor the results of updated studies related to climate change.

Section 5: SB-X7-7 Baselines and Targets

As described in Senate Bill 7 of Special Extended Session 7 (SBX7-7), it is the intent of the California legislature to increase water use efficiency and the legislature has set a goal of a 20 percent per capita reduction in urban water use statewide by 2020. SBX7-7 requires that retail water suppliers comply with its requirements.

This section describes the SVWD methods for calculating baseline and target water consumption in accordance with DWR's *Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use* (DWR 2016). The SB X7-7 Verification Tables, which are required to be submitted to DWR to demonstrate compliance with the SB X7-7 requirements, are presented in Appendix E. This section also demonstrates that SVWD has achieved the 2015 interim water use target and plans for achieving the 2020 water use target.

The process for calculating the baseline and target water consumption and verifying compliance with the target is summarized below and is described in detail in the following sections:

- Define the Baseline Periods
- Estimate Service Area Population for the Baseline Period
- Calculate Gross Water Use for the Baseline Period
- Calculate Base Daily Per Capita Water Use
- Calculate 2015 and 2020 Targets
- Verify Compliance with 2015 Target

5.1 Baseline Periods

The UWMP Act allows urban water retailers to evaluate their Base Daily Per Capita Water Use using a 10- or 15-year period. The methodologies and information used are provided below.

5.1.1 Determination of the 10-15 Year Baseline Period (Baseline GPCD)

A 10-year to 15-year base period within the range January 1, 1990 to December 31, 2010 is allowed if recycled water made up 10 percent or more of the 2008 retail water delivery. If recycled water did not make up 10 percent or more of the 2008 retail water delivery, then a retailer must use a 10-year base period within the range January 1, 1995 to December 31, 2010. Although recycled water was more than 10 percent of the 2008 delivery in SVWD, the Base Daily Per Capita Water Use in SVWD has been based on a 10-year period as summarized in Table 5-1 that follows.

5.1.2 Determination of the 5-Year Baseline Period (Target Confirmation)

In addition to the 10-15 year baseline period, urban retailers must report daily per capita water use for a 5-year period within the range January 1, 2003 to December 31, 2010. This 5-year

base period is compared to the Target Based Daily Per Capita Water Use to determine the minimum water use reduction requirement as summarized in Table 5-1 that follows.

Table 5-1: Base Period Ranges

Base	Parameter	Value	Units
10-15 year base period	2008 total water deliveries ^(a)	1,699.7	AF
	2008 total volume of delivered recycled water ^(a)	182.4	AF
	2008 recycled water as a percent of total deliveries	10.7	percent
	Number of years in base period	10	years
	Year beginning base period range	1995	
	Year ending base period range	2004	
5-year base period	Number of years in base period	5	years
	Year beginning base period range	2003	
	Year ending base period range	2007	

Note:

^(a) Per SVWD meter records for potable water delivery.

5.2 Service Area Population

5.2.1 Required Use of 2010 U.S. Census Data

After examining a sample of data from Department of Finance, DWR has determined that significant discrepancies exist between DOF's projected populations for 2010 (based on 2000 U.S. Census data) and actual population for 2010, based on 2010 U.S. Census data. The average difference between projected and actual was approximately 3 percent, but the difference for some cities was as high as 9 percent.

Therefore, if an agency did not use 2010 Census data for their baseline population calculations in the 2010 UWMP DWR has determined that these agencies must recalculate their baseline population for the 2015 UWMPs using 2000 and 2010 Census data. This may affect the baseline and target gallons per capita per day (GPCD) values calculated in the 2010 UWMP, which must be modified accordingly in the 2015 UWMP. SVWD used 2010 Census data in their 2010 UWMP therefore the 2010 UWMP analysis is compliant and is not being updated.

For the population data, available GIS-based analysis provided by AMBAG and census data were used to estimate population for each year between 1994 to 2010, based on the approach described below. Data used for population is consistent with the method found in Appendix A of methodologies for *Calculating Baseline and Compliance Urban Per Capita Water Use* from DWR.

- The 1990 population is based on the AMBAG GIS based analysis of 1990 census block population data.
- The 2000 population is based on the AMBAG GIS-based analysis of 2000 census block population data.
- The 2010 population is based on the AMBAG GIS-based analysis of 2010 census block population data.

For individual years with no population data, the known population data for the years listed were used to generate annual population estimates. The approach includes using a linear interpolation between the years that the population is known. The population data, including the 2015 Compliance Year population are found in Table 5-2 that follows.

Table 5-2: Base Period Population

		Base Period Year		Distribution System Population
		Sequence Year	Water Year	
	10-year Base Period	Year 1	1995	8,797
		Year 2	1996	8,994
		Year 3	1997	9,191
		Year 4	1998	9,388
		Year 5	1999	9,585
		Year 6	2000	9,782
		Year 7	2001	9,835
		Year 8	2002	9,887
		Year 9	2003	9,940
		Year 10	2004	9,993
5-year Base Period		Year 11	2005	10,046
		Year 12	2006	10,098
		Year 13	2007	10,151
		Year 14	2008	10,204
		Year 15	2009	10,256
2015 Compliance Year Population				
			2015	10,774*

* 2015 population calculated by using number of accounts and 2010 census population to estimate persons per account and multiplying by number of accounts in 2015

5.3 Gross Water Use

Potable water use for the October 1 – September 30 water year were provided from the SVWD meter records. Table 5-3 summarizes the GPCD for compliance with SBX7-7.

Table 5-3: Gross Water Use

Base Period Year		Daily System Gross Water Use (MGD) ^(a)
Sequence Year	Water Year	
Year 1	1995	1.37
Year 2	1996	1.63
Year 3	1997	1.83
Year 4	1998	1.70
Year 5	1999	1.68
Year 6	2000	1.74
Year 7	2001	1.79
Year 8	2002	1.80
Year 9	2003	1.86
Year 10	2004	1.76
Year 11	2005	1.44
Year 12	2006	1.64

Year 13	2007	1.57
Year 14	2008	1.52
Year 15	2009	1.35
2015 Compliance Year Gross Water Use		
	2015	1.01

^(a) Per SVWD meter records for potable water delivery.

5.4 Baseline Daily per Capita Water Use

Using the data from Table 5-2 and Table 5-3, the calculated 10-year baseline is 179.9 GPCD and the 5-year baseline is 164.7 GPCD as shown on Table 5-4 and Table 5-5.

Table 5-4: Base Daily Per Capita Water Use 10 to 15 Year Range

Base Period Year		Distribution System Population	Daily System Gross Water Use (MGD)	Annual Daily Per Capita Water Use (GPCD)
Sequence Year	Water Year			
Year 1	1995	8,797	1.37	155.7
Year 2	1996	8,994	1.63	181.7
Year 3	1997	9,191	1.83	199.3
Year 4	1998	9,388	1.70	181.5
Year 5	1999	9,585	1.68	174.9
Year 6	2000	9,782	1.74	178.1
Year 7	2001	9,835	1.79	182.2
Year 8	2002	9,887	1.80	182.5
Year 9	2003	9,940	1.86	186.6
Year 10	2004	9,993	1.76	176.5
Year 11	2005	10,046	1.44	143.3
Year 12	2006	10,098	1.64	162.2
Year 13	2007	10,151	1.57	155.1
Year 14	2008	10,204	1.52	148.7
Year 15	2009	10,256	1.35	131.2
10-year Average Base Daily Per Capita Water Use				179.9

Note: Shaded years indicate data period selected to calculate the Base Daily Per Capita Water Use.

Table 5-5: Base Daily Per Capita Water Use 5 Year Range

Base Period Year		Distribution System Population	Daily System Gross Water Use (MGD)	Annual Daily Per Capita Water Use (GPCD)
Sequence Year	Water Year			
Year 1	2003	9,940	1.86	186.6
Year 2	2004	9,993	1.76	176.5
Year 3	2005	10,046	1.44	143.3
Year 4	2006	10,098	1.64	162.2
Year 5	2007	10,151	1.57	155.1
5-Year Average Base Daily Per Capita Water Use				164.7
95% of Average (maximum limit for 2020 target)				156.5

5.5 2015 and 2020 Targets

5.5.1 Target Calculation Method

SBX7-7 requires that SVWD identify their demand reduction targets for year 2015 and 2020 by utilizing one of four options:

- **Option 1:** 80 percent of baseline GPCD water use (i.e., a 20 percent reduction).
- **Option 2:** The sum of the following performance standards: indoor residential use (provisional standard set at 55 GPCD); plus landscape use, including dedicated and residential meters or connections equivalent to the State Model Landscape Ordinance (80 percent ETo existing landscapes, 70 percent of ETo for future landscapes); plus 10 percent reduction in baseline commercial, industrial institutional use by 2020.
- **Option 3:** 95 percent of the applicable state hydrologic region target as set in the DWR “20x2020 Water Conservation Plan” (20x2020 Plan) (DWR, 2010).
- **Option 4:** Savings by Water Sector: this method identifies water savings obtained through identified practices and subtracts them from the base daily per capita water use value identified for the water supplier.

Option 2 and Option 4 were considered and not selected, because they required data not currently being collected within the SVWD service area.

The SVWD service area is within the Central Coast Hydrologic Region as defined by DWR and this hydrologic region has been assigned a 2020 water use target of 117 GPCD per the DWR 20x2020 Water Conservation Plan (DWR, 2010). Therefore, in order to use Option 3, SVWD’s daily per capita water use for the 5-year base period would have to be close to 95 percent of the 117 GPCD target, or 111 GPCD. Since SVWD’s 5-year base period is greater than 111 GPCD limit, SVWD did not choose this option to reduce demand.

Option 1 is the simplest of the options provided and requires an 80 percent reduction in baseline per capita water use. Option 1 is also the most conservative of the four Options provided. For these reasons, SVWD selected Option 1 to comply with the SBX7-7 target.

5.5.2 2015 and 2020 Targets

The Option 1 method results in the 2020 target of 143.9 GPCD and the 2015 interim target of 161.9 GPCD for SVWD as shown in Table 5-6. Regardless of the target calculation method, each agency must confirm that the calculated 2020 target meets the minimum reduction required. This minimum reduction amount is defined as 5 percent of the 5-year baseline per capita water use of 164.7 GPCD calculated in Table 5-6. The 2020 target must be less than 95% of the 5-year baseline. Since the 2020 Target of 143.9 GPCD is less than 95% of 164.7 or 156.5 GPCD, the 2020 target meets the minimum required reduction and does not need to be adjusted.

For 2015, SVWD's water use is approximately 93.9 GPCD, which is well below the 2015 and 2020 target GPCD.

The current low water demand is mainly attributed to drought, rate structure, and the economic downturn. SVWD anticipates continuing to meet the 2020 target GPCD

Table 5-6: Baselines and Targets Summary (DWR Table 5-1)

Baseline Period	Start Year	End Year	Average Baseline GPCD*	2015 Interim Target *	Confirmed 2020 Target*
10 year	1995	2004	179.9	161.9	143.9
5 Year	2003	2007	164.7		

*All values are in Gallons per Capita per Day (GPCD)

Table 5-7: 2015 and 2020 Target Calculation

Calendar Year	Water Use
Base Daily Per Capita Water Use for the 10-year Baseline	179.9
2015 Target (90% of Base Daily Per Capita Water Use)	161.9
2020 Target (80% of Base Daily Per Capita Water Use)	143.9

*All values are in Gallons per Capita per Day (GPCD)

5.6 2015 Compliance Daily per Capita Water Use

Using data provided earlier, the actual 2015 GPCD is calculated and presented below in Table 5-8 which shows that SVWD has met the targeted reduction for 2015. No adjustments to the 2015 GPCD are proposed.

Table 5-8: 2015 Compliance (DWR Table 5-2)

Actual 2015 GPCD*	2015 Interim Target GPCD*	Optional Adjustments to 2015 GPCD					2015 GPCD* (Adjusted if applicable)	Did Supplier Achieve Targeted Reduction for 2015? Y/N
		Extra-ordinary Events*	Economic Adjust-ment*	Weather Normali-zation*	TOTAL Adjust-ments*	Adjusted 2015 GPCD*		
93.9	161.9	0	0	0	0	161.9	161.9	Yes

*All values are in Gallons per Capita per Day (GPCD)

Section 6: System Supplies

This section describes and quantifies the current and projected sources of water available to SVWD for the 25 year period covered by the Plan. A description and quantification of potential recycled water uses and supply availability is also included.

Table 6-1 is a summary of the existing and planned water supply sources discussed in this Section, from the present (2015) to 2040 in five-year increments. Sections 6.1 through 6.8 provide details of the water supplies summarized in Table 6-1.

Table 6-1: Summary of Current and Projected Water Supplies (AFY) (DWR Tables 6-8, 6-9)

Water Supply Sources	2015	2020	2025	2030	2035	2040
Wholesale (Imported) Water	0	0	0	0	0	0
SVWD Produced Potable Groundwater from Santa Margarita Basin	1,133	1,348	1,364	1,380	1,395	1,411
Transfer In/Out	0	0	0	0	0	0
Exchange In (Potable projected use)	0	0	0	0	0	0
Recycled Water (Non-potable local use, existing and projected) ^(a)	200	210	220	230	240	250
Desalination ^(b)	0	0	0	0	0	0
Total Water Supply	1,333	1,558	1,584	1,610	1,635	1,661
Total Pumping Amount Potentially Available to SVWD and Other Pumpers (Sustainable Yield) Near Scotts Valley ^(c)	2,600	2,600	2,600	2,600	2,600	2,600

Notes:

- ^(a) SVWD's Recycled Water Program is anticipated to expand gradually to provide 250 AFY of irrigation demand by 2040. SVWD is evaluating a SMBG groundwater recharge project to utilize remaining available effluent.
- ^(b) SVWD currently does not have water supply through desalination.
- ^(c) Based on the sustainable yield estimate for the portion of the basin (Scotts Valley portion of the Santa Margarita Basin) underlying Scotts Valley, as provided by the modeling analysis (ETIC, 2006). Sustainable yield is shared with the SLVWD and other small public and private pumpers

6.1 Purchased or Imported Water

SVWD has no current and future plans to acquire wholesale (imported) water from a wholesale agency. SVWD obtains its potable water supply from the Santa Margarita Groundwater Basin, as shown in Table 6-1. Future exchanges with SCWD may result for recycled water from Scotts Valley to be exchanged for treated surface water from SCWD, as discussed further in Section 6.7; since the exchange is in early stages, no estimate of quantity is made at this time.

6.2 Groundwater

SVWD relies on groundwater sources from the regional Santa Margarita Basin. Groundwater has been the sole source of potable water supply for SVWD; thus, careful management is necessary to manage the groundwater resource in a sustainable manner. SVWD has been actively managing the groundwater basin since the early 1980's in an effort to increase water supply reliability and to protect local water supply sources. Through the past groundwater

management and resource planning activities, SVWD has proven its commitment in progressively embracing activities that will protect groundwater resources and provide reliable water supply. Currently, SVWD operates six production wells (SVWD Wells #3B, #7A, #9, #10A, #11A, and #11B). Locations of the wells are shown on Figure 3-2.

In addition to SVWD, other water purveyors pump groundwater in the Santa Margarita Basin, including the San Lorenzo Valley Water District (SLVWD), Lompico County Water Department, the Mt. Hermon Association, the Santa Cruz Water Department, Soquel Creek Water District, and other domestic, private production wells.

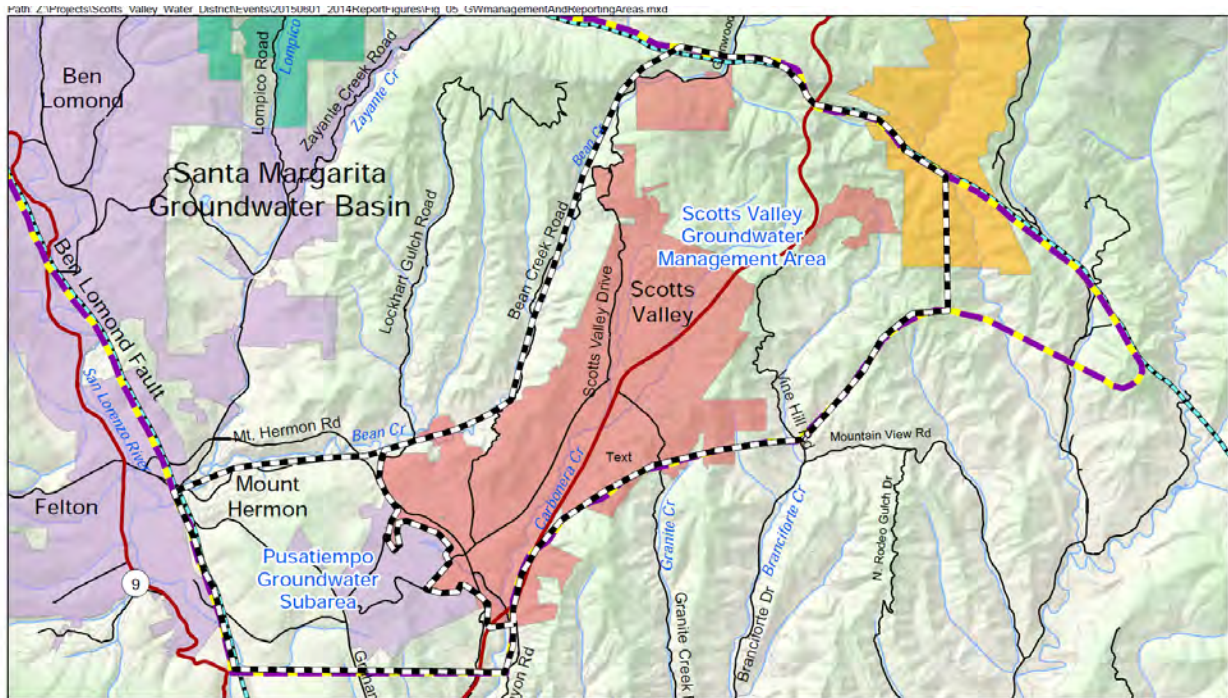
This section presents information about SVWD's groundwater supplies, including a summary of the basin description and historical and projected groundwater pumping from the basin.

6.2.1 Santa Margarita Groundwater Basin Description

The Santa Margarita Basin covers over 30 square miles in the Santa Cruz Mountains. The basin forms a roughly triangular area that extends from Scotts Valley in the east, to Boulder Creek in the northwest, to Felton in the southwest (Figure 6-1). The Santa Margarita Basin is a geologically complex area that was formed by the same tectonic forces that created the Santa Cruz Mountains. The basin is bounded by two regional faults, the Ben Lomond Fault to the west and the Zayante Fault to the north.

The Santa Margarita Basin includes portions of DWR defined Basins 3-21, 3-27, and 3-50. DWR has not classified these basins as overdrafted and these basins are not adjudicated as defined by DWR Bulletin 118 (DWR, 2003). SVWD overlies the Scotts Valley Groundwater Basin, designated as Groundwater Basin 3-27 by the DWR (DWR, 2003) and as a Sole Source Aquifer by the USEPA (Figure 6-1). The Scotts Valley Groundwater Basin is defined by DWR as encompassing 1.2 square miles of alluvium in Scotts Valley surrounded by Tertiary sedimentary formations.

Figure 6-1: Santa Margarita Groundwater Basin



6.2.1.1 Geology of the Santa Margarita Basin

The Santa Margarita Basin consists of a sequence of sandstone, siltstone, and shale that is underlain by granite. This sequence of sedimentary rocks is divided into several geologic formations that are defined on the basis of the type of rock and their relative geologic age based on studies by the United States Geological Survey (USGS) in reports by Clark (1966 and 1981), Brabb et al. (1997) and McLaughlin et al. (2001).

In the Santa Margarita Basin, the geologic formations that contain significant sandstone layers are the primary aquifers for water supply. The primary aquifers in the basin include:

- Santa Margarita Sandstone (Santa Margarita),
- Monterey Formation (Monterey),
- Lompico Sandstone (Lompico), and
- Butano Formation (Butano).

Historically, the majority of the water supply in the Scotts Valley area has been derived from the Santa Margarita, Lompico, and Butano.

The Santa Margarita and Lompico have long been recognized as primary aquifers. The Santa Margarita has a long groundwater production history, with several production wells completed within this unit (Muir, 1981). Similarly, the Lompico is currently the primary groundwater-producing horizon with several large production wells completed in this unit.

The Butano had been mapped in surface outcrop by Clark (1966 and 1981). However, it was not recognized as the deep aquifer underlying the northern Scotts Valley until more recently (ETIC, 2006 and 2007) when SVWD Wells #3B and #7A were reinterpreted as being completed primarily within the Butano. The production history of these wells indicates that the Butano is capable of producing significant volumes of groundwater.

The sandstone interbeds and the fractured siltstones in the Monterey can locally produce groundwater; however, the Monterey has limited water supply potential that is typically used for private domestic wells rather than for municipal supply. The SVWD Well #9 is completed across both the Santa Margarita and Monterey. Groundwater production from SVWD Well #9 has significantly decreased from historic production rates now that the well produces almost exclusively from the Monterey.

6.2.1.2 Scotts Valley and Pasatiempo Subbasins

Two subareas in the regional Santa Margarita Basin are defined and reported by SVWD to help facilitate the discussion of local groundwater basin conditions underlying the SVWD service area. These include the Scotts Valley Groundwater Subarea which is the portion of the Santa Margarita Groundwater Basin primarily used by the SVWD and the Pasatiempo Groundwater Subarea which is the portion of the Santa Margarita Groundwater Basin used primarily by the SLVWD. SVWD overlies the Scotts Valley Groundwater Subarea, encompassing 5.5 square miles. Figure 6-1 shows the boundaries of the regional Santa Margarita Basin, the Scotts Valley Groundwater Subarea, Pasatiempo Groundwater Subarea, and the service area for SVWD.

6.2.2 Groundwater Management

In 1994, SVWD formally adopted its Groundwater Management Plan (GMP) in accordance with the California Groundwater Management Planning Act groundwater legislation (codified in California Water Code Section 10750, et seq). The SVWD GMP (Todd Engineers, 1994) was the third GMP recorded by DWR and is found in Appendix F.

The overall purpose of the SVWD GMP is to develop a planning tool that will help guide SVWD in the management of the quantity and quality of the groundwater supply and to comply with the requirements of the California Groundwater Management Planning Act. As stated in the SVWD GMP:

“The purpose of this groundwater management plan is to address two major areas of concern in Scotts Valley: (1) management of groundwater supplies to meet present and future demands, and to provide for downstream water rights and in-stream uses; and (2) protection of water quality and remediation of existing groundwater contamination.”

The main goal of the GMP is to better manage the sole source aquifer serving the community's drinking water. The goal of the SVWD GMP is stated as:

“By implementation of a groundwater management plan for Scotts Valley, SVWD hopes to preserve and enhance the groundwater resource in terms of quality and quantity, and to minimize the cost of management by coordination of efforts among agencies.”

Prior to the establishment of formalized GMPs, SVWD prepared annual “Water Resources Management Plans”. These plans, similar to later GMPs, were prepared from 1984 through 1994. After California Water Code §10700 was enacted, providing authority for local agencies to adopt GMPs, SVWD prepared and adopted its formal GMP in July 1994.

SVWD actively participates in the SMGBAC, a forum for discussing regional water issues and developing collaborative solutions. The SMGBAC typically meets twice each year (spring and fall) at noticed, open public meetings. The District is also coordinating with other water districts to develop a Groundwater Sustainability Agency (GSA) to provide coordinated groundwater management for the entire SMGB, and is planning to submit a Basin Boundary Revision Request (HydroMetrics WRI, 2015) to DWR in 2016 as part of this process. The current SMGB GWMP will remain in effect until the GSA adopts a Groundwater Sustainability Plan.

6.2.2.1 Groundwater Levels

Groundwater flow in the basin is generally westward, toward Bean Creek, in the northern and southern portions of the basin (DWR, 2003). Bean Creek is topographically lower and parallels the basin in the northwest. Precipitation is the primary source of groundwater recharge in the basin in the form of direct percolation of precipitation through the soil to groundwater or infiltration from streams. The major groundwater outflows include discharge to streams and springs and groundwater pumping.

Historically, the majority of SVWD groundwater production has been derived from the major aquifers Santa Margarita, Lompico, and Butano. Groundwater levels in the Santa Margarita and Lompico declined by about 200 feet in the Scotts Valley area between the early 1980s and mid-1990s. Since the mid-1990s, groundwater levels in most Santa Margarita and Lompico wells in the Scotts Valley area have reduced the rapid rate of decline seen earlier. SVWD has conducted special assessments of the drawdown observed in the basin over the past several years to better understand the factors contributing to these trends (Kennedy/Jenks, 2008).

As part of the GWMP, the District collects groundwater level data from the production wells and several monitoring wells including:

- Monthly measurements from all six active SVWD production wells
- Monthly and semi-annual measurements from sixteen monitoring wells
- Five of the sixteen monitoring wells are equipped with electronic data transducers and collected continuous measurements during all or part of WY2015.

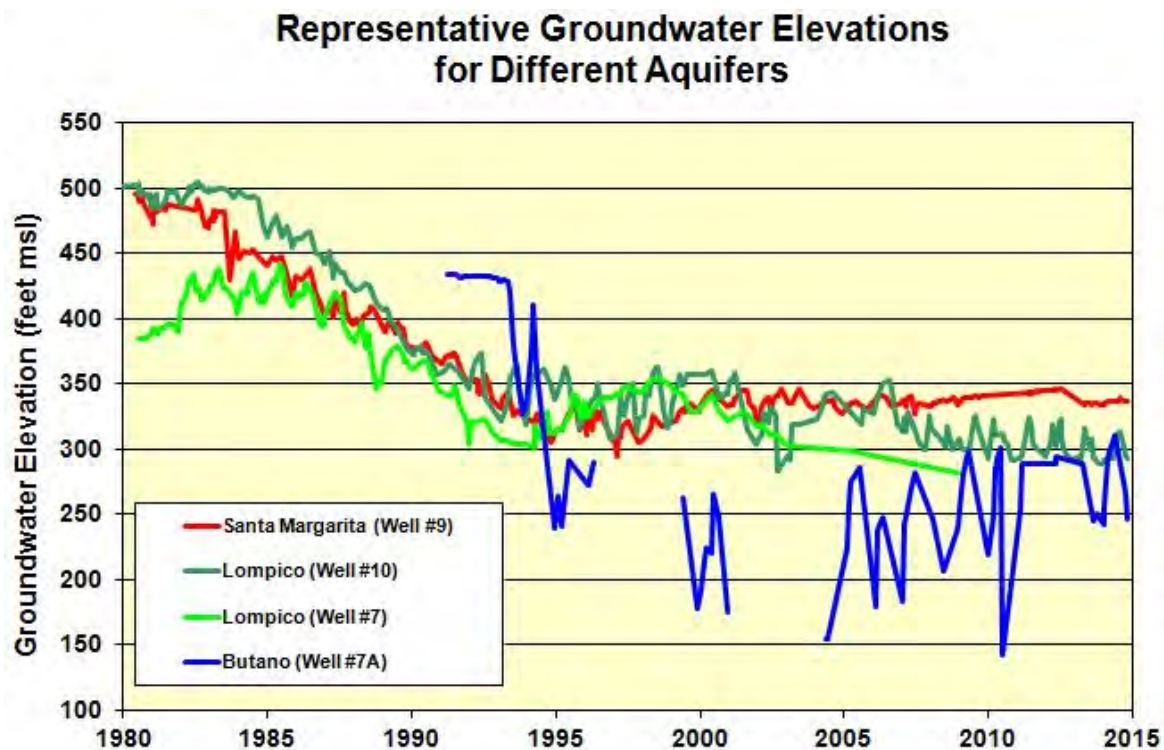
Reviewing groundwater levels from the SVWD production wells includes evaluating conditions during both pumping (dynamic) and non-pumping (static) conditions.

Figure 6-2 shows a hydrograph of groundwater levels since 1980 for representative wells in each of the major aquifers in the Scotts Valley area. The location of these wells is shown on Figure 3-2. The representative wells on Figure 6-2 include:

- The Santa Margarita is represented by SVWD Well #9. This well has not been pumped for several years.

- The Lompico is represented by SVWD Well #10 to represent the western areas and SVWD Well #7 to represent the eastern areas.
- The Butano is represented by SVWD Well #7A.

Figure 6-2: Historical Groundwater Levels from Different Aquifers



Prior to 1980, groundwater levels in the Scotts Valley area were generally higher than those in most of the rest of the Santa Margarita Basin. Therefore, the Scotts Valley area was a major recharge area for the basin, and groundwater flowed outward to the surrounding areas. After 1980, a variety of factors probably contributed to the observed groundwater level declines. The major factors include groundwater pumping increase to meet the water demand of a growing population, reduced recharge from the surface to groundwater due to an increase in paved areas and other land use changes associated with urbanization, and reduced groundwater recharge due to the drought of the late 1980s and early 1990s. A significant portion of the groundwater storage in the Santa Margarita was depleted during this time and has not recovered sufficiently to be considered a viable source of supply for SVWD. Production in other aquifers has been developed to replace the Santa Margarita supply.

Since the mid-1990s, groundwater levels in most Santa Margarita and Lompico wells in the Scotts Valley area have reduced the rapid rate of decline seen earlier. The most likely factor that has contributed to the observed trend is that lower groundwater levels in the Scotts Valley area allow groundwater from other portions of the basin to flow towards Scotts Valley. The generally above-average rainfall since the drought of the late 1980s and early 1990s may have also contributed to the observed trend in groundwater levels.

Even though total groundwater production from all producers in the Scotts Valley area has steadily declined from 2002 through 2015, as further described below, groundwater levels have stabilized but not shown any significant increase in response to the decline in pumping. Total groundwater pumping in 2015 was 1,133 AF, which is the lowest since 1985. The likely explanation of this pattern is that the potential increase in groundwater storage is spread over a large area so that the groundwater level response is not readily apparent from year to year. In addition, the reduction in recharge from urbanization and other causes has limited the ability of the aquifer to recover. An update to the groundwater model has been developed and is being used to understand recharge and aquifer storage and to update the sustainable yield estimate for the Scotts Valley Area.

6.2.2.2 Groundwater Quality

SVWD monitors the active groundwater producing wells for a number of constituents with a frequency that complies with the Safe Drinking Water Act requirements as outlined in the California Code of Regulations, Title 22 requirements. SVWD actively incorporates new constituents into the monitoring program as a result of new regulatory actions or trends in the water quality industry. All water quality results are reported to the California State Water Resources Control Board -Division of Drinking Water.

SVWD annually prepares and distributes the “Scotts Valley Water District Water Quality Report” to keep customers informed on water quality issues. This report provides the public with detailed results of water-quality testing, a description of the water source, answers to common questions about water quality, and other useful water quality information. SVWD’s Water Quality Reports are available at <http://www.svwd.org/your-water/water-quality>. These reports include detailed information about the results of quality testing of the water supplied during the preceding year. Water quality meets all State and Federal standards. In addition to the annual Water Quality Reports, SVWD describes water quality monitoring data in the Annual Report, prepared each year as part of the Groundwater Management Plan as discussed in Section 6.2.2.3.

The quality of water received by individual customers will vary depending on the groundwater source and level of treatment. Customers may receive water from one well at one time and water from another well at a different time, or blends of well. The source of supply in any single point in the SVWD distribution system may vary over the course of a day, a week, or a year. As reported in the Annual Report, In WY2015, natural-occurring constituents that require treatment (arsenic, iron, manganese, sulfate and TDS) remained within their respective historical ranges. For arsenic, one of four quarterly sampling events in WY2015 at SVWD Well #11B had a detection that exceeded the primary MCL.

For WY2015, detections of VOCs and MTBE (derived from past pollution releases at known environmental compliance sites) occurred as intermittent detections at low concentrations below the primary MCLs for these constituents. These concentrations are consistent with the overall declining historical trend for these constituents.

6.2.2.3 Groundwater Management Program Annual Report

SVWD prepares an Annual Report each year to provide a summary of groundwater management activities by SVWD and the groundwater conditions in the Scotts Valley area. The results, analysis and interpretation of the Monitoring Program are incorporated into Annual

Reports that are intended to provide a summary of the issues and analyses that are most pertinent to the needs and decisions that SVWD is currently facing. The report focuses on the water supply and water quality of the Basin to provide an assessment of groundwater management options and groundwater augmentation goals and options.

Annual Reports from the past several years and SVWD's complete updated databases can be downloaded from the SVWD website (www.svwd.org/index/District_Reports). In addition to the preparation of the Annual Report, SVWD conducts a public presentation annually to provide an update of the groundwater conditions, per the DWR requirement for the GMP.

6.2.3 Available Groundwater Supplies and Sustainable Yield

The projected groundwater pumping by SVWD in the Santa Margarita Basin (primarily the Scotts Valley Groundwater Subarea) is summarized in Table 6-2. As the sole source of potable water supply for SVWD, the Santa Margarita Sandstone Aquifer was designated as a "Sole Source Aquifer" by USEPA in 1985 (Federal Register, 1985). The "*Santa Margarita Aquifer, Scotts Valley*" is one of four areas in California designated as a "Sole Source Aquifer". The technical basis for this designation was the USGS report by Muir (1981). The USEPA defines a "Sole Source Aquifer" as an aquifer that supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer. These areas may have no alternative drinking water source that can physically, legally and economically supply all those who depend on the aquifer for drinking water (Federal Register, 1985).

Table 6-2 presents SVWD's projected pumping from 2020 through 2040 with projected pumping ranging from 1,348 AFY to 1,411 AFY. The pumping from other producers in the area was approximately 885 AFY in 2014, the most recent year in which the regional groundwater pumping assessment was included in the Groundwater Annual Report. (Kennedy/Jenks, 2015) If this value is added to the estimated pumping from SVWD, the total is below the estimated sustainable yield. Some increase in pumping from the other producers may occur in the future unless additional water conservation measures are implemented.

Table 6-2: Projected SVWD Groundwater Production (AFY)

Water Supply Sources	2020	2025	2030	2035	2040
Supplier Produced Potable Groundwater from Santa Margarita Groundwater Basin ^(a)	1,348	1,364	1,380	1,395	1,411
Total	1,348	1,364	1,380	1,395	1,411
Percent of Total SVWD Groundwater Pumping	85%	86%	85%	84%	83%
Total Pumping Amount Potentially Available to SVWD and Other Pumpers (Sustainable Yield Near Scotts Valley) ^(b)	2,600	2,600	2,600	2,600	2,600

^(a) Projected groundwater pumping.

^(b) Based on the sustainable yield estimate for the portion of the basin underlying Scotts Valley, as provided by the modeling analysis (ETIC, 2006). Projected declines in SVWD pumping may offset future pumping increases by other pumpers keeping overall pumping within the sustainable yield. Other pumpers were estimated to pump 885 AFY in 2014.

The regional Santa Margarita and Lompico aquifers have historically presented a significant source of storage in the region as described in Bulletin 118 (DWR, 2003) although not all portions of the aquifers are available to Scotts Valley. The Butano was not recognized as the deep aquifer underlying the northern Scotts Valley until more recently when this formation was identified as a water-bearing unit by the revised Santa Margarita Groundwater Basin hydrogeologic interpretation (ETIC, 2006 and 2007). The production history of SVWD wells extracting water from the Butano aquifer indicates that the Butano is capable of producing significant volumes of groundwater. In 2010, SVWD started the Butano Formation Groundwater Monitoring Project, funded by the AB303 Local Groundwater Assistance Program administered by DWR. This project installed two groundwater monitoring wells in the Butano and provides equipment for conducting long-term groundwater monitoring. The purpose of the project is to better characterize groundwater in the Butano, and help guide future decisions about whether to install new production wells in the Butano.

6.2.3.1 Sustainable Yield

The sustainable yield of the Basin was initially estimated to be approximately 4,200 AFY (Todd, 1995). This volume was reevaluated in 1998 by Todd Engineers using the basic water balance equation: inflow minus outflow equals change in storage and confirmed that the 4,200 AFY value for sustainable yield was reasonably accurate and conservative. In 2006, the basin-wide Santa Margarita Basin Groundwater Model was completed. The numerical model was used to produce a sustainable yield volume given the current pumping scheme in the basin and the revised hydrogeologic interpretation.

Based on the numerical model analysis, the sustainable yield for the entire Santa Margarita Basin was estimated at 3,320 AFY (ETIC, 2006). This volume represents the amount of water that is available to the water producers under the current pumping configuration without causing any overall change in storage. Further analysis estimated the sustainable yield in just the Scotts Valley area at 2,600 AFY (ETIC, 2006). The sustainable yield (as defined by ETIC, 2006) represents the annual amount of water that can be taken from the existing wells in a basin over a period of years without “causing adverse impacts” (i.e. depleting storage beyond the ability of the basin to be replenished naturally). Exceeding the sustainable yield for the basin may lead to perennial declines in groundwater levels which over time may result in widespread loss of well production.

Based on the more recent analysis (ETIC, 2006), in this Plan, the sustainable yield of 2,600 AFY is considered to be the available groundwater resource for SVWD and other users of the Scotts Valley and Pasatiempo Subbasins. This amount represents the annual amount of water that can be taken from the existing wells in the basin over a period of years without “causing adverse impacts”.

SVWD’s projected pumping in Table 6-2 is significantly below the estimated sustainable yield of 2,600 AFY in the vicinity of Scotts Valley and is expected to decline over time as recycled water uses increases. Therefore, potential increased pumping by other pumpers in the Scotts Valley Groundwater Subarea will likely be within the overall sustainable yield of the basin. As shown in Table 6-2, SVWD’s groundwater, as a percentage of total demand, is anticipated to decline slightly from 85 percent in 2020 to 83 percent in 2040 as more recycled water becomes available for non-potable irrigation from the Recycled Water Program and water demand reduces as a result of the Water Conservation Program. Given the pumping projections that are

below the estimate of sustainable yield, water supply reliability issues are not anticipated to occur in the SVWD service area. However, SVWD is currently studying injection of advanced purified water (recycled water that has received full advance treatment) in the SMGB to increase groundwater in storage for local and potential regional benefit.

6.2.3.2 Adequacy of Supply

Although there have been significant years of drought, the overall storage in the basin is apparently sufficient to provide adequate resources for SVWD given the past, current, and anticipated future demand. The long-term adequacy of the supply will rely on improving direct and in-lieu recharge, and reduction in groundwater pumping through improved water use efficiency, recycled water production. The reliability of supply can be also affected by the loss of individual wells resulting from catastrophe, such as an earthquake, or environmental contamination. These scenarios are discussed further in Section 8 of this Plan.

SVWD overlies a significant portion of the Basin which has been estimated to have an overall storage capacity of over 200,000 AF, a portion of which is accessible to SVWD. The very nature of groundwater reduces the short-term impact of drought years because of the absolute availability of supply, but long-term impacts need to be managed by monitoring the condition of storage, water level, and well performance under these conditions.

The ultimate supply of groundwater in the basin is natural recharge resulting from precipitation in the basin which can be enhanced with artificial recharge. Because the primary supply of water for SVWD, with the exception of recycled water, is the basin, precipitation and the ability for the precipitation to recharge the aquifer defines the supply of SVWD.

The reliability of the recycled water resource of SVWD is unaffected by climactic conditions given that the source of recycled water is wastewater. The recycled water distribution system is susceptible to major catastrophes, such as a seismic event that can disrupt operation.

6.2.4 Historical Groundwater Pumping

Table 6-3 presents SVWD's historical and current annual total groundwater pumping from 2011 to 2015. On average, about 86 to 89 percent of water historically used in the service area was from groundwater extraction. The remaining was supplied by recycled water that has increased from about 0.2 AF delivery in 2002 to about 200 AF delivery in 2015. Groundwater production of 1,133 AF in 2010, which is less than historical pumping since 1985, is attributed primarily to drought conditions, use of recycled water and implementation of conservation programs.

Table 6-3: SVWD Historical Groundwater Production (AFY) (DWR Table 6-1)

Basin Name	2011	2012	2013	2014	2015
Santa Margarita Basin ^(a)	1,301	1,362	1,400	1,377	1,133
Total	1,301	1,362	1,400	1,377	1,133
Percent of Total Water Supply	89%	88%	88%	87%	86%

^(a) Groundwater pumping production provided by SVWD based on metered data.

Historical groundwater pumping data dating back to 1976 show that prior to 2003, groundwater production grew accordingly with the increase in population in Scotts Valley (Figure 6-3). From

1977 through 2003, groundwater production rose steadily from about 500 AF to over 2,000 AF (Figure 6-3). Since 2004, however, SVWD has actively worked to control the growth in water demand through the Recycled Water and Water Conservation Programs, each of which are described in Sections 6.5 and 9 respectively. The observed decline in groundwater production primarily results from these programs.

In the past twelve years, groundwater production has declined by nearly 940 AFY, even though the number of service connections has continued to increase (Figure 6-3). The slight increase in demands in 2012, 2013 and 2014 can be attributed to low rainfall and drought conditions. SVWD's groundwater production over the past five years has averaged 1,314 AFY, which is below the estimated sustainable yield of 2,600 AFY for the Scotts Valley Groundwater Subarea that is available to SVWD and the other pumpers. About 885 AFY was pumped by the other pumpers in 2014.

Figure 6-3: Annual Groundwater Production by SVWD

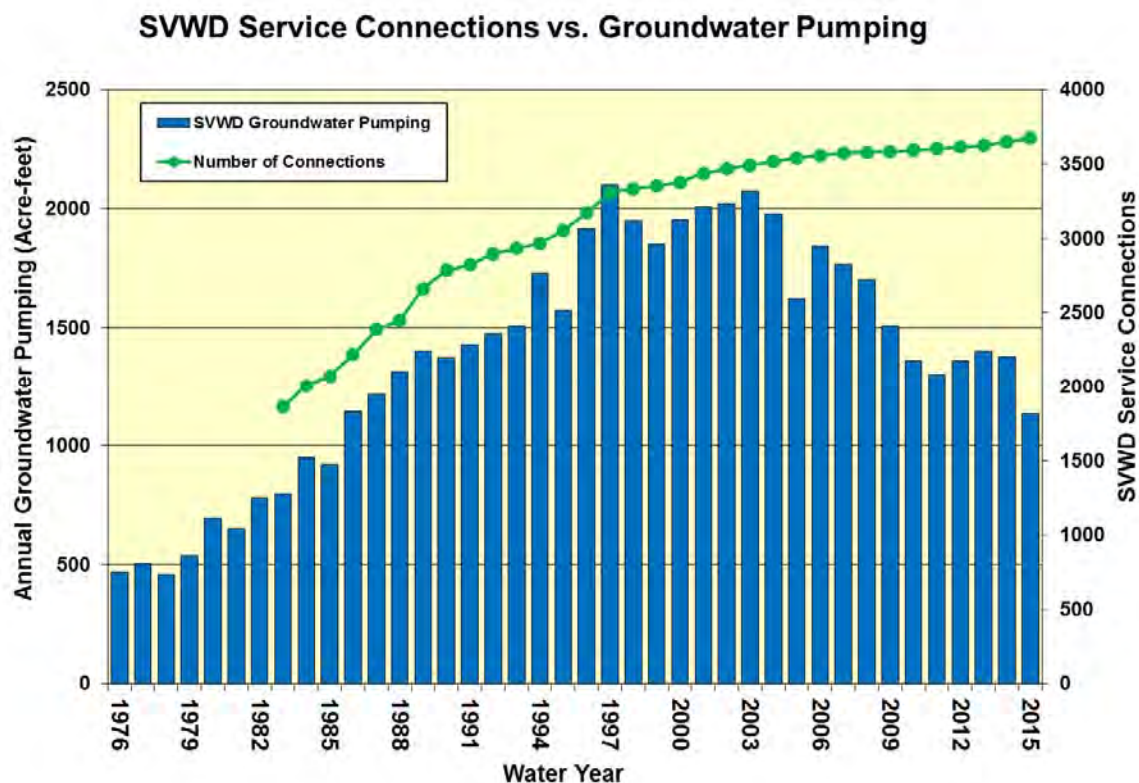


Table 6-4 shows estimated pumping volumes by SVWD from each major formation in the basin for water years 2011 through 2015. In 2015, all of the groundwater production for SVWD water supply was derived from the Lompico and the Butano. In 2015, the Lompico is the highest producing aquifer with an estimated 895 AF and the Butano is the second highest producing aquifer with 238 AF.

Table 6-4: Groundwater Volume Pumped by Aquifer (DWR Table 6-1)

Aquifer	WY2011	WY2012	WY2013	WY2014	WY2015
Monterey	3	4	35	23	0
Lompico	975	972	1,020	989	895
Butano	323	386	345	365	238
Total	1,301	1,362	1,400	1,377	1,133

6.3 Surface Water

The Phase 1 Conjunctive Use and Enhanced Aquifer Recharge Project (Conjunctive Use Study) completed in 2011 identified a range of potential water sources including surface water, stormwater, surplus recycled water and other potential water supplies that were evaluated as a possible source for groundwater recharge. However, the Conjunctive Use Study acknowledged the significant challenges with surface water diversions, namely water rights modifications that can take tens of years to complete. Therefore, SVWD has no current and future plans to use surface water. Future exchanges with SCWD may result for recycled water from Scotts Valley to be exchanged for treated surface water from SCWD, as discussed further in Section 6.7.

6.4 Stormwater

In addition to the consideration of stormwater as a source for groundwater recharge in the Conjunctive Use Study, a 2015 technical memorandum evaluated the facilities necessary to divert peak stormwater from Scotts Valley to Hanson Quarry. Two alternatives were evaluated in the technical memo, with facilities costs ranging from \$2.7M to \$3.9M, not including storage, treatment, and/or recharge. Treatment would be required to remove suspended solids and other possible constituents prior to injection. In addition, urban stormwater is by its very nature subject to significant hydrologic peaks which can make capture and conveyance challenging. Therefore, although stormwater was considered as a source water for the Santa Margarita Groundwater Basin groundwater replenishment project, its use poses significant challenges and is not considered further at this time.

6.5 Wastewater and Recycled Water

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. For purposes of the UWMPs, “recycled water” means only municipal recycled water, that is, water that has been treated and discharged from a municipal wastewater facility.

This section of the Plan describes the existing and future recycled water opportunities available to the SVWD service area. The description includes estimates of potential supply and demand for 2015 to 2040 in five-year increments, as well as SVWD’s proposed incentives and optimization plan.

6.5.1 Recycled Water Coordination

The City of Scotts Valley is responsible for the collection and safe disposal of wastewater generated within the SVWD service area. A portion of the wastewater generated in Scotts Valley is treated to Title 22 standards for tertiary disinfected recycled water, suitable for unrestricted non-potable use at the City Scotts Valley Water Reclamation Facility (WRF). SVWD is the recycled water purveyor and is responsible for storage and delivery of recycled water to customers within its service area.

6.5.2 Wastewater Collection, Treatment, and Disposal

The Scotts Valley WRF is a conventional activated sludge wastewater treatment facility with a design dry weather treatment capacity of 1.5 mgd and a design peak wet weather treatment capacity of 5.0 mgd. Major facilities include an influent pump station, a flow equalization structure with 0.9 MG of storage capacity, two aeration basins with fine-bubble diffuser panels, two secondary clarifiers, a chlorine contact tank and an effluent pump station. Disinfected secondary effluent is pumped to Santa Cruz where it is discharged into the Monterey Bay via the existing ocean outfall pipeline shared with Santa Cruz Wastewater Treatment Facility. Scotts Valley's flow constitutes approximately 8% of the flow discharged through Santa Cruz's outfall to the Pacific Ocean.

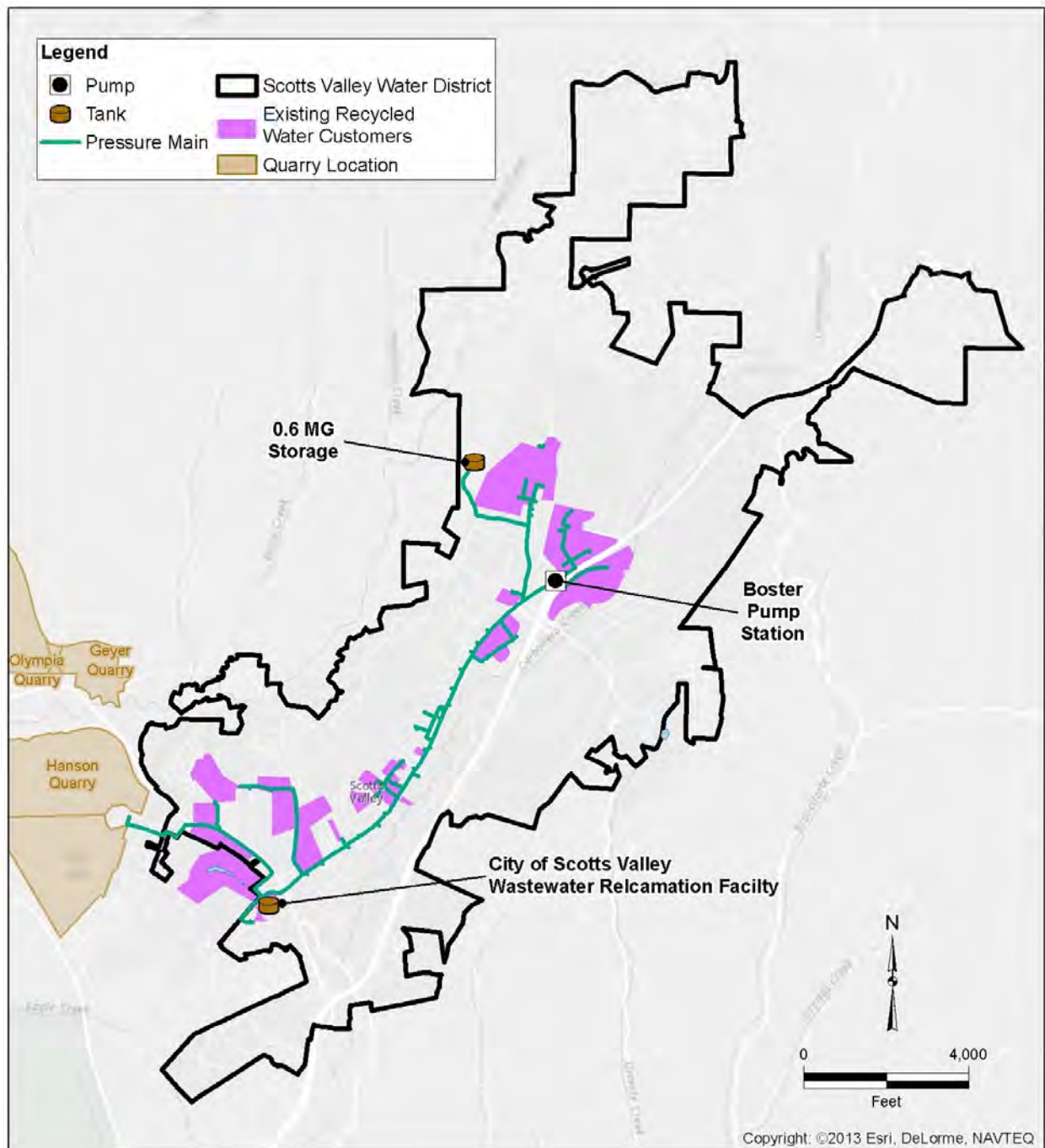
The Scotts Valley WRF includes a tertiary recycled water treatment facility with a design treatment capacity of 1.0 MGD. The facility is used to treat secondary effluent to a tertiary level using chemical coagulation and flocculation, filtration, denitrification, and ultraviolet (UV) disinfection. The treated effluent meets California DPH Title 22 recycled water standards for unrestricted use (Kennedy/Jenks, 2009). Recycled water from the Scotts Valley WRF is purchased by SVWD, the recycled water purveyor in the Scotts Valley area.

Additional recycled water facilities operated by the District include:

- Recycled water pumping at the Scotts Valley WRF and on Scotts Valley Drive near Highway 17.
- 0.6 Million Gallons (MG) of recycled water storage located above Scotts Valley High School near the end of Cass Way, which is also used for firefighting.
- High pressure distribution main along Scotts Valley Drive.
- Pressure reducing valve (PRV) and low pressure (70 pounds per square inch (psi) maximum) Mt Hermon distribution main.
- Distribution extensions to current customers.

Figure 6-4 illustrates the recycled water distribution system.

Figure 6-4: Recycled Water Facilities



Recycled water has been available in Scotts Valley since 2002 and the program has expanded steadily through expansion of pipelines and customer service connections. As of January 2016, the existing recycled water system includes approximately 6 miles of recycled water pipeline and supplies an annual average of approximately 196 acre-feet (AF)/year of recycled water, over the 2010-2015 period, to 50 customer service connections. Current recycled demands are

primarily in the summer months for irrigation. Secondary treated water from the WRF that is not treated for recycled water is discharged to the Pacific Ocean through the Santa Cruz ocean outfall.

Influent wastewater flows have been gradually decreasing in spite of increasing population. One factor in the decreasing flow is the improved efficiency of washers, toilets, sink and shower heads which are using potable water more efficiently. As a result, one of the limiting factors in recycled water delivery is the limited dry weather wastewater flows (Kennedy/Jenks, 2009).

In 2014, the City of Scotts Valley WRF experienced an average influent flow of 0.91 mgd during the dry-weather months of May through September, of which an average of 0.46 mgd was discharged as secondary effluent and an average of 0.29 mgd was delivered as recycled water. During the remainder of 2014, the WRF experienced an average influent flow of 0.96 mgd of which an average of 0.73 mgd was discharged as secondary effluent and an average of 0.08 mgd was delivered as recycled water. Figure 6-5 shows the monthly influent flows to the WRF, secondary effluent to the ocean outfall, and recycled water production for 2014. Table 6-5 and Table 6-6 present the 2015 wastewater flow information.

The City of Scotts Valley WRF exhibits typical seasonal variations in influent flow. Flows are largely influenced by heavy rainfall during the early and late months of the year. A total of 40 inches of rain was recorded for 2014.

The average annual wastewater influent flows are approximately 1,000 to 1,200 AFY.

Figure 6-5: Available Recycled Water

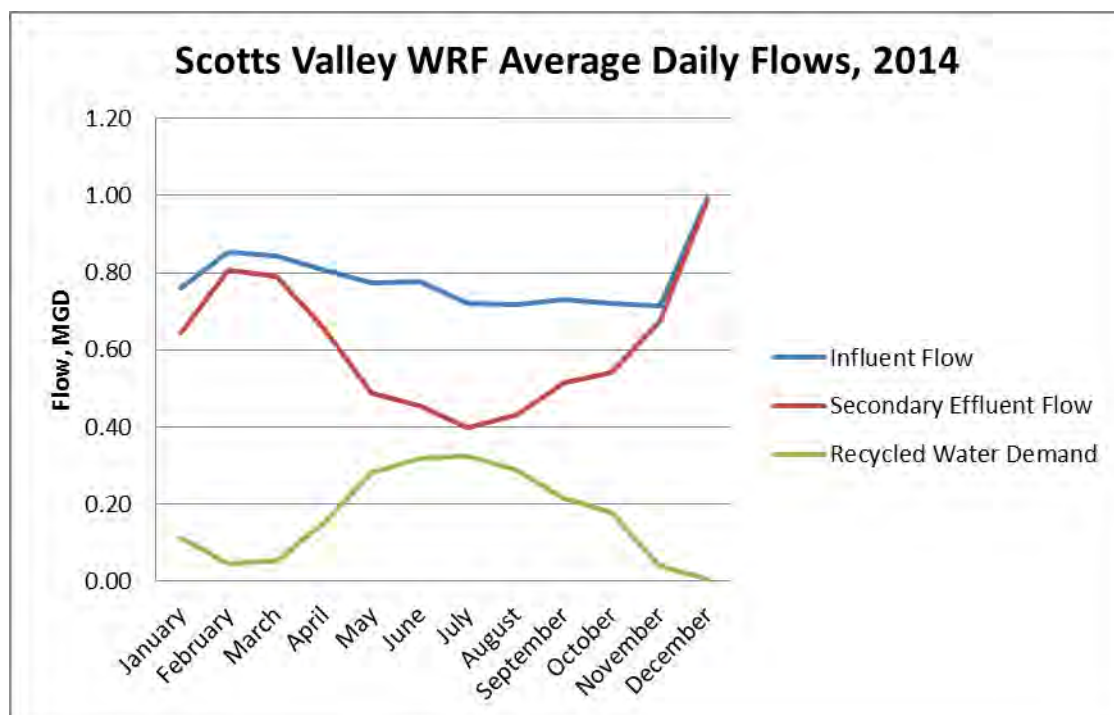


Table 6-5: Wastewater Collected Within Service Area in 2015 (DWR Table 6-2)

Wastewater Collection Agency	Metered or Estimated	Wastewater Volume Collected 2015	Wastewater Treatment Agency	Treatment Plant Name	WWTP Located in UWMP Area?	WWTP Operation by Third Party Contractor ?
City of Scotts Valley	Estimated based on influent meter data	1,042	City of Scotts Valley	Scotts Valley WRF	Yes	No
Total Wastewater Volume Collected in Service Area		1,042				

Table 6-6: Wastewater Treatment and Discharge within Service Area in 2015 (Table 6-3)

Waste-water Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Waste-water Discharge ID Number (optional)	Method of Disposal	Does This Plant Treat Waste-water Generated Outside the Service Area?	Treatment Level ⁽¹⁾	2015 Volumes (acre-feet)			
							Waste-water Treated	Discharged Treated Waste-water	Recycled Within Service Area	Recycled Outside of Service Area
Scotts Valley Water Recycling Facility	Pacific Ocean in joint outfall with City of Santa Cruz	36° 56' 08" N; 122° 04' 08" W	--	Ocean outfall	Yes ⁽²⁾	Secondary	1,042	842	0	0
	Recycled Water Customers	N/A	--	Reuse	Yes	Tertiary	0	0	200 ⁽³⁾	0
Total							1,042	842	200	0

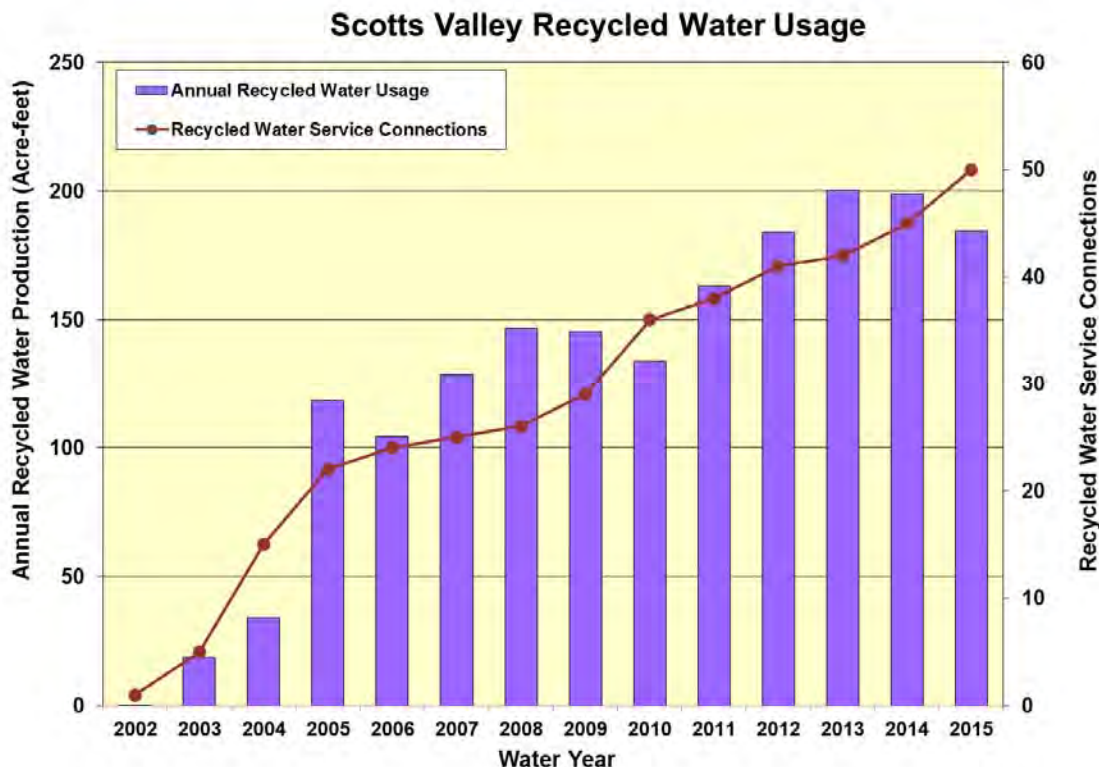
Notes:

- (1) Treatment Level: "Secondary, Disinfected" 23" indicates that wastewater is treated to the standards specified in the California Code of Regulations (CCR) Section 60301.225 (oxidized and disinfected wastewater). "Tertiary" indicates that wastewater is treated to the standards specified in CCR Section 60301.230 (oxidized, filtered, and disinfected wastewater to achieve both bacterial and virus removal).
- (2) Here are small portions of the City of Scotts Valley that are not in the SVWD service area
- (3) From metered RW deliveries

6.5.3 Recycled Water Demands

Figure 6-6 illustrates the historical recycled water use and meter connections since the program's inception. Although the number of meter connections has continuously increased over time, the annual recycled water demands have been decreasing since the peak demands of 2013 due to drought response and conservation measures.

Figure 6-6: Recycled Water Demands and Service Connections



As discussed in Section 4, the future water demand in the SVWD service area will increase as development continues; thus, SVWD recognizes that recycled water will continue to be an important and reliable source of additional water. The FPR was prepared under a grant from the State Water Resources Control Board and positions SVWD to obtain other grants to further expand recycled water use in Scotts Valley and the region.

As described in the draft 2016 FPR (Kennedy/Jenks, 2016b), SVWD completed detailed evaluations of existing and future recycled water demands throughout the service area and region. SVWD's unique situation where groundwater is limited and imported water is not available indicate that recycled water is an important element of the District's water portfolio. Some of the potential alternatives developed as part of the recycled water evaluation and key findings are relevant to the future projections of recycled water use.

6.5.4 Current and Planned Uses of Recycled Water

For the period of July 2014 through June 2015, the District served 50 recycled water customers with a total of 136 AF (0.12 MGD annual average). Recycled water is available for irrigation of a range of facilities including parks, common landscape in commercial and residential properties, medians, and schools. Nearly 90% of recycled water is delivered during the seven-month irrigation season, April through October. SVWD is also considering interior reuse of recycled water for toilet flushing for some new developments.

Expansion of Nonpotable Recycled Water System

As discussed in the Santa Margarita Groundwater Basin Regional Groundwater Replenishment Program Draft Facilities Planning Report (Kennedy/Jenks, 2016b), up to 286 AFY of additional recycled water demand for irrigation exists in the SVWD service area. However, much of that demand is not likely to be served due to distance from recycled water infrastructure. Based on recent trends with recycled water customers and demands, the SVWD has established a planning-level assumption that recycled water use within the SVWD service area may increase a total of 15% over the peak annual demands experienced in 2013 (the highest demand on record), in which the total demand was 217 AFY. Therefore, for planning the availability of effluent for recycled water in future years, the recycled water demand for irrigation in SVWD is estimated to eventually reach 250 AFY by 2035.

Up to 282 AFY of additional recycled water demand exists outside the District's service area, including Pasatiempo Golf Club and other irrigation sites in the City of Santa Cruz. Pasatiempo Golf Club is the largest single potential new customer, with a potential future demand of approximately 108 AFY. The City of Scotts Valley is currently negotiating an agreement to serve Pasatiempo Golf Club with recycled water for irrigation. However, SVWD's recycled water sale to the Golf Club would be used for irrigation in the Golf Club, which is outside of SVWD's service area. Thus, Pasatiempo demands are not included in the water supply tables herein.

Indirect Potable Reuse

The Conjunctive Use Project (Kennedy/Jenks, 2011b) evaluated potential types of recharge and locations for aquifer recharge. The analysis performed in the Conjunctive Use Project indicates that the volume of lost groundwater recharge due to urbanization is on the order of 500 to 1,000 AFY (Kennedy/Jenks, 2011). Groundwater replenishment with advanced purified water could help to replace a significant portion of this lost recharge water. Based on the draft 2016 FPR recharge study, approximately 550 to 650 AFY of purified recycled water is estimated to be available for replenishing the Lompico aquifer of the SMGB (Kennedy/Jenks, 2016b).

Table 6-7 summarizes current and projected recycled water use.

Table 6-7: Current and Projected Recycled Water Direct Beneficial Uses within Service Area (DWR Table 6-4)

Beneficial Use	Description of 2015 Uses	Level of Treatment	2015	2020	2025	2030	2035	2040
Landscape Irrigation	Residential, Commercial	Disinfected Tertiary	200	210	220	230	240	250
Golf Course Irrigation	None	Disinfected Tertiary						
Commercial Use	None	Disinfected Tertiary						
Industrial Use	None	Disinfected Tertiary						
Groundwater Recharge*	None	Advanced Treatment						
Total			200	210	220	230	240	250

* SVWD is currently evaluating groundwater recharge but will require funding assistance to implement a project.

6.5.4.1 Planned Versus Actual Use of Recycled Water

The 2010 UWMP reported that SVWD served 36 recycled water meters with a demand totaling 149 AFY. The 2010 UWMP projection for 2015 was an expansion on the recycle water system to serve up to 55 meters and a demand of 191 AFY. As summarized in Table 6-8, as of 2015, SVWD reports that there was a total of 184 AFY of irrigation delivered to 50 recycled water meters with an additional 16 AFY of usage from customers via a truck fill station, as well as internal uses to the WRF. The number of customers has increased significantly since 2010 and the actual demand in 2015 exceeded the projected demand of 191 AFY.

Recycled water demand has decreased in the recent two years, despite the greater number of customers, likely due to ongoing conservation measures in Scotts Valley, including replacement of high-demand landscaping with drought-tolerant landscaping and public awareness of drought conditions. Because recycled water availability is limited in the summer irrigating months, efficient use of recycled water for irrigation is as important as efficient use of potable water.

Table 6-8: 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual (DWR Table 6-5)

Use Type	2010 Projection for 2015 (AF)	2015 Actual Use (AF)
Landscape Irrigation	191	200
Total	191	200

6.5.5 Actions to Encourage and Optimize Future Recycled Water Use

9 lists actions taken by SVWD to promote recycled water use and planned actions that are expected to further encourage the use of recycled water as a viable water source. SVWD has been involved with public outreach and coordinating with local cities and wastewater agencies, and other planning agencies to discuss the feasibility of using recycled water in lieu of potable groundwater that is currently used for irrigation.

In the case of SVWD, funding availability, securing grant funding, and financial incentives are among the factors that will play a big role in the future implementation of recommended recycled water projects. SVWD has completed detailed evaluations of potential alternatives and projects to use recycled water, but implementation of such alternatives, at this time, is pending funding availability. State and federal funding, if available, could offset the cost imposed during project construction which typically makes the project cost-prohibitive. Obtaining funding, as SVWD has done, also helps build community support for a project because it results in reduced taxpayer contribution.

Table 6-9: Methods to Encourage Recycled Water Use (DWR Table 6-6)

Actions	Planned Implementation Year	Use Projected to Result From This Action (AF)				
		2020	2025	2030	2035	2040
Local/Regional Planning	On-going	210	220	230	240	250
Public Outreach	On-going					
State and Federal Funding	As available	*	*	*	*	*
Financial Incentives	--					
Total		210	220	230	240	250

* SVWD is currently evaluating groundwater recharge but will require funding assistance to implement a project

Another limitation on recycled water use in SVWD is availability of effluent as a supply source. Effluent flows have experienced a gradual downward trend since 2010, generally attributable to increased awareness of water usage and corresponding conservation, installation of low-flow plumbing fixtures, and the replacement of existing water-dependent appliances, such as washing machines and dishwashers, with more efficient units. Furthermore, current recycled water use is limited to irrigation, which corresponds with periods of lowest effluent flow. Production at the Scotts Valley WRF currently is adequate to meet irrigation demands. However, buildout of the SVWD irrigation demands combined with demands at Pasatiempo Golf Club will use nearly all available summertime effluent. Implementation of the SMGB groundwater replenishment program will optimize the use of effluent available in months when irrigation demands are low. The groundwater replenishment program would be sized to make use of all available effluent, year-round.

As described earlier, SVWD has already completed the necessary studies to identify both existing and future potential recycled water demands that could be potentially supplied by

recycled water source. Implementation of the identified recycled water projects is currently pending funding assistance.

6.6 Desalinated Water Opportunities

SVWD has limited opportunities for the development of desalinated water, given its geographical location relative to the ocean and lack of a brackish groundwater resource and has no current plans to pursue groundwater or seawater desalination. Therefore, these water supply options are not included in the supply summaries in this Plan. Other water suppliers in the region such as the SCWD and Soquel Creek Water District have studied ocean desalination as an alternative water resource during dry years. SVWD could potentially benefit from desalination if the agencies proceed and if a regional intertie project is constructed with future grant and/or local funding.

6.7 Exchanges, Transfers and Groundwater Banking

Additional water supplies can be purchased from other water agencies and sources. An important element to enhancing the long-term reliability of the overall water supply to meet the needs of the service area is the use of transfers, exchanges, and groundwater banking programs

6.7.1 Transfers and Exchanges

An opportunity available to SVWD to increase water supplies is to participate in voluntary water transfer and exchange programs. Since the drought of 1987-1992, the concept of water transfer has evolved into a viable supplemental source to improve supply reliability. The initial concept for water transfers was codified into law in 1986 when the California Legislature adopted the “Katz” Law (California Water Code, Sections 1810-1814) and the Costa-Isenberg Water Transfer Law of 1986 (California Water Code, Sections 470, 475, 480-483). These laws help define parameters for water transfers and set up a variety of approaches through which water or water rights can be transferred among individuals or agencies.

One of the most important aspects of any resource planning process is flexibility. A flexible strategy minimizes unnecessary or redundant investments (or stranded costs). The voluntary purchase of water between willing sellers and buyers can be an effective means of achieving flexibility. However, not all water transfers have the same effectiveness in meeting resource needs. Through the resource planning process and ultimate implementation, several different types of water transfers could be undertaken.

In 2008, SVWD evaluated a long-term recycled water and potable water exchange program that involves Pasatiempo Golf Club and the SCWD. Currently, the Golf Club is receiving water for irrigation from the SCWD. A cooperative effort took place with SVWD, the SCWD, and Pasatiempo Golf Club to plan the infrastructure that would give Pasatiempo Golf Club access to recycled water for irrigation, thus reducing the demand for SCWD potable water during the summer months. The agreement currently under negotiation between City of Scotts Valley and Pasatiempo Golf Club is for approximately 108 AFY. Effluent flow at the Scotts Valley WRF is the limiting factor on availability of recycled water during irrigation months.

In 2007, the SCWD approved a Resolution, expressing desire to participate in this joint effort by providing potable water to SVWD when it is available from surface sources in exchange for an equal volume of recycled water provided by SVWD to the Golf Club to meet the Golf Club's irrigation needs. Through the exchange program, SVWD would provide about 120 AFY of recycled water to the Golf Club beginning in 2020 and in exchange, receive potable water from SCWD when it is available from surface sources, particularly in the winter months, thereby reducing groundwater pumping rates at those times. The potable water exchange is not currently being considered.

An MOU was signed in 2008 between SVWD and Pasatiempo Golf Club to ensure a long-term availability of recycled water supply to Pasatiempo Golf Club. More recently, Pasatiempo has entered into negotiations with the City of Scotts Valley for delivery of secondary recycled water.

The potential for multiple and mutual benefits of the Pasatiempo program, including but not limited to improved Golf Club water supply reliability and price stability, lesser peak irrigation season demand on the SCWD potable water system, and overall more efficient use of regional water supplies for long-term sustainability and environmental enhancement. In the future, if an intertie pipeline to allow a potable water exchange between SVWD and SCWD were to be constructed, reduced SVWD groundwater demand providing in-lieu recharge could result to the benefit of the groundwater basin.

In addition, there are a series of emergency intertie pipelines with SLVWD that are completing construction in 2016 which provide for emergencies arising in either district. The intertie is used primarily for water shortage emergencies and is not considered as regular water transfer option for SVWD; thus, it is not considered as part of water supply projections. A smaller intertie has been used several times to date, each time for flow from SVWD to SLVWD.

6.7.2 Groundwater Banking Programs

With recent developments in conjunctive use and groundwater banking, significant opportunities exist to improve water supply reliability in the Santa Margarita Basin. Conjunctive use is the coordinated operation of multiple water supplies to achieve improved supply reliability. Most conjunctive use concepts are based on storing groundwater supplies in times of surplus for use during dry periods and drought when surface water supplies would likely be reduced. Currently, SVWD is pursuing the study of feasibility of the SMGB groundwater replenishment project described previously.

In addition to these ongoing efforts, SVWD will continue to use the numerical model to identify enhanced potential recharge locations to evaluate the long-term sustainability of groundwater production. SVWD has included this item as part of its groundwater management program annual budget and will use the results to identify methods of minimizing potential losses in groundwater storage within the basin. The draft FPR analyzes groundwater banking options using advanced purified water.

6.8 Future Water Projects

SVWD has planned for water supply projects and programs as described previously in this section. Future planned delivery from each program or project is difficult to quantify, with the exception of anticipated recycled water supply, as noted in Table 6-10. Water supply programs and projects that are not listed in Table 6-10 are briefly described below as these programs and projects will add further reliability to SVWD's existing water supply portfolio and add robustness to its system.

Table 6-10: Expected Future Water Supply Projects or Programs
(DWR Table 6-7)

Name/Type	Planned Delivery (AFY)	Date Supply Available
Recycled Water System Expansion ^(a)	250	2015

^(a) SVWD's Recycled Water Program is anticipated to expand gradually to provide 250 AFY of irrigation demand by 2035. The supply is currently available

The SVWD is currently evaluating a SMBG groundwater recharge project to utilize remaining available effluent; a date to provide supply is not currently available.

The recycled water system will continue to expand to serve growth and infill of new customers within its existing distribution system. The draft SMGB Groundwater Replenishment Project Facilities Planning Report (Kennedy/Jenks, 2016b) provides an updated market assessment to identify potential recycled water customers within the SVWD service area and regionally. New pipeline expansion will allow for potential new customers to be added to the program to further expand recycled water usage. SVWD anticipates submitting future grant proposals to fund additional extensions of recycled water pipelines into other key areas within the SVWD service area. Grant funding for this construction will be sought through for recycled water through continued efforts to expand the Recycled Water Program, SVWD anticipates to increase recycled water delivery to 250 AFY by 2040.

Implementation of the SMGB groundwater replenishment project is pending approval of the SVWD Board of Directors and establishing financing for the project.

6.9 Summary of Existing and Planned Sources of Water

Table 6-11: Water Supplies — Actual (DWR Table 6-8)

Water Supply	Additional Detail on Water Supply	2015	
		Actual Volume (acre-feet)	Water Quality
Groundwater	Santa Margarita Groundwater Basin	1,133	Potable
Subtotal of Groundwater		1,133	--
Recycled Water	Recycled Water produced by City of Scotts Valley	200	Recycled Water
Subtotal of Recycled Water		200	--
Total		1,333	

Table 6-12: Water Supplies — Projected (DWR Table 6-9)

Water Supply	Additional Detail on Water Supply	Projected Supply – Reasonably Available Volume (acre-feet)				
		2020	2025	2030	2035	2040
Groundwater	Santa Margarita Groundwater Basin	1,348	1,364	1,380	1,395	1,411
Subtotal – Subtotal of Groundwater		1,348	1,364	1,380	1,395	1,411
Recycled Water	City of Scotts Valley	210	220	230	240	250
Subtotal – Recycled Water		210	220	230	240	250
Total		1,558	1,584	1,610	1,635	1,661

Section 7: Water Supply Reliability

The Act requires urban water suppliers to assess water supply reliability that compares total projected water use with the expected water supply over the planning period in five year increments. The Act also requires an assessment for a single dry year and multiple dry years. This chapter presents the reliability assessment for the SVWD service area.

7.1 Constraints on Water Sources

The main constraint to the SVWD groundwater supply, are long –term reductions in recharge as a result of reductions in precipitation. Table 7-1 shows the precipitation assumptions for normal, single dry, and multiple dry years based on the period of record of 1947- 2015.

Table 7-1: Supply Based on Precipitation

	Normal Water Year	Single Dry Year	Multiple-Dry Water Years				
			Year 1	Year 2	Year 3	Year 4	Year 5
Year	2002	2014	1987	1988	1989	1990	1991
Inches of Rain	42.33	19.78	23.42	23.81	30.67	20.58	26.64
Percent of Normal	100%	47%	55%	56%	72%	49%	63%
Percent of Average Pumping	100%	85%	90%	90%	85%	85%	80%

Annual groundwater reports prepared by SVWD indicate that changes in groundwater level are not always as immediate as changes in precipitation and can lag by over a year. SVWD closely monitors groundwater levels and precipitation and works with customers to reduce demand in periods of low precipitation to preserve groundwater in storage.

7.2 Reliability by Type of Year

For purposes of assessing reliability, DWR defines Average Year, Single-dry Year, and Multiple-dry Year Period as follows:

- **Average (Normal) Year:** The year, or an averaged range of years, that most closely represents the average water supply available to the agency. It may also be referred to as a Normal Year.
- **Single-dry Year:** The year that represents the lowest water supply available to the agency.
- **Multiple-dry Year Period:** The period that represents the lowest average water supply availability to the agency for a consecutive multiple year period of three years or more.

As discussed in Section 7.1, pumping groundwater in excess of recharge in a single year may not show up immediately as a decline in water level but has clear detrimental impacts over the long-term. Based on the precipitation records in Table 7-1, the assumptions made regarding potable water supply in normal and dry years are found in Table 7-2. It is assumed that recycled water is 100% reliable.

Table 7-2: Bases of Water Year Data (DWR Table 7-1)

Year Type	Base Year	Available Supply if Year Type Repeats		Notes
		% of Average Supply	Volume Available	
Average (Normal) Year	2002	100%	1,560	SVWD's portion (60%) of 2,600 AFY sustainable yield under average rainfall conditions
Single-Dry Year	2014	85%	1,326	
Multiple-Dry Years 1st Year	1987	90%	1,404	
Multiple-Dry Years 2nd Year	1988	90%	1,404	
Multiple-Dry Years 3rd Year	1989	85%	1,326	
Multiple-Dry Years 4th Year	1990	85%	1,326	
Multiple-Dry Years 5th Year	1991	80%	1,248	

7.3 Supply and Demand Assessment

Based on the year supply availability assumptions presented in Table 7-2 and the demand assumptions presented in Table 4-1, the comparison of supply and demand for a normal year are found in Table 7-3, for a single dry year is found in Table 7-4, and for multiple dry years is found in Table 7-5.

Table 7-3: Normal Year Supply and Demand Comparison (AFY) (DWR Table 7-2)

	2020	2025	2030	2035	2040
Supply subtotal – Groundwater	1,560	1,560	1,560	1,560	1,560
Supply subtotal – Recycled Water	210	220	230	240	250
Supply totals	1,770	1,780	1,790	1,800	1,810
Demand subtotal – Potable/Raw Water	1,348	1,364	1,380	1,395	1,411
Demand subtotal – Recycled Water	210	220	230	240	250
Demand totals	1,558	1,584	1,610	1,635	1,661
Difference (Supply minus Demand)	212	196	180	165	149

Table 7-4: Single Year Supply and Demand Comparison (AFY) (DWR Table 7-3)

	2020	2025	2030	2035	2040
Supply subtotal – Groundwater	1,326	1,326	1,326	1,326	1,326
Supply subtotal – Recycled Water	210	220	230	240	250
Supply totals	1,536	1,546	1,556	1,566	1,576
Demand subtotal – Potable/Raw Water*	1,213	1,228	1,242	1,256	1,270
Demand subtotal – Recycled Water	210	220	230	240	250
Demand totals	1,423	1,448	1,472	1,496	1,520
Difference (Supply minus Demand)	113	98	84	71	56

* Assumes 10% reduction in potable demand to reflect loss in normal year recharge

Table 7-5: Multiple Dry Years Supply and Demand Comparison (DWR Table 7-4)

		2020	2025	2030	2035	2040
First year	Supply totals	1,614	1,624	1,634	1,644	1,654
	Demand totals ^(a)	1,491	1,516	1,541	1,565	1,590
	Difference	123	108	93	79	64
Second year	Supply totals	1,614	1,624	1,634	1,644	1,654
	Demand totals ^(a)	1,491	1,516	1,541	1,565	1,590
	Difference	123	108	93	79	64
Third year	Supply totals	1,536	1,546	1,556	1,566	1,576
	Demand totals ^(b)	1,423	1,448	1,472	1,496	1,520
	Difference	113	98	84	71	56
Fourth Year	Supply totals	1,536	1,546	1,556	1,566	1,576
	Demand totals ^(b)	1,423	1,448	1,472	1,496	1,520
	Difference	113	98	84	71	56
Fifth year	Supply totals	1,458	1,468	1,478	1,488	1,498
	Demand totals ^(c)	1,356	1,379	1,403	1,426	1,449
	Difference	102	89	75	62	49

All volumes are in acre-feet per year.

(a) Assumes 5% reduction in potable water demand

(b) Assumes 10% reduction in potable water demand

(c) Assumes 15% reduction in potable water demand

7.4 Regional Supply Reliability

As discussed in Section 6.7, emergency intertie pipelines are nearing completion between SVWD and SLVWD that can be used to transfer water during emergencies. These interties improve regional supply reliability by allowing SVWD access to SLVWD surface water source in an emergency.

Section 8: Water Shortage Contingency Planning

This section summarizes the SVWD's plan for dealing with water shortages, including the stages of action during a shortage, prohibitions on users, penalties or other enforcement of prohibitions, methods to reduce consumption, determining reductions, impacts to District revenues and expenditures, ordinances/resolutions that formalize the water shortage contingency plan and planning for a catastrophic supply interruption.

8.1 Overview

Water supplies may be interrupted or reduced significantly in a number of ways, such as a drought which limits supplies, an earthquake which damages water delivery or storage facilities, a regional power outage, or a toxic spill that affects water quality. This section of the Plan describes how SVWD plans to respond to drought-related shortages. Section 8.9 briefly describes the SVWD Emergency Response Plan which addresses catastrophic interruptions such as loss of wells, earthquake, and/or regional power outages so that emergency needs are met promptly and equitably.

Of the current supplies, water from the Santa Margarita Basin is vulnerable to drought due to the reliance on rainfall for recharge. Rainfall varies based on the hydrologic conditions of a given year. The SMBAC and implementation of the SVWD's GMP are critical to monitoring the water balance within the basin. The basin serves over 20,000 people amongst various purveyors. Active implementation of recycled water and water conservation efforts have stabilized historic long-term declines in groundwater levels.

Overdraft of the basin especially in time of drought presents a concern for reliability over extended periods of time. The estimated sustainable yield for the Scotts Valley and Pasatiempo Groundwater Sub areas, a portion of the Santa Margarita Basin, was 2,600 AFY. In 2014, 2,260 AF was pumped by the various users of which 1,377 AF was by SVWD according to the 2015 Annual Groundwater Report (Kennedy/Jenks, 2016). In 2015, SVWD's pumping was reduced 17.7 % to 1,133 AFY.

An update of the groundwater model completed in 2015 estimated sustainable yield of the entire Santa Margarita Groundwater Basin to be between 3,000 to 3,400 AFY and subdivided by aquifer rather than sub basin. Updated sustainable yield estimates for the Scotts Valley and Pasatiempo Groundwater subbasins were not developed but the 2,600 AFY for the 2 subbasins appears to continue to be valid. It should be noted that 2009 and 2010 represent the first two years since 1995 that total groundwater pumping has been below the estimated sustainable yield. Safe yields for the basin have been developed through modeling for SVWD and the SMGBAC and serve as the basis for planning and pumping within the Basin. Drought and water shortage conditions ultimately influence the purveyors that utilize water within the Santa Margarita Basin.

A Water Shortage Contingency Plan was prepared and presented in the 2010 UWMP (Kennedy/Jenks, 2011) and is updated in this section. Prohibitions, penalties and financial impacts of shortages have been developed by SVWD and are summarized in this section.

8.2 Stages of Action

Stages of action for many water agencies are defined by available storage in a surface water reservoir or by the annual allotment provided by a water wholesaler. The District's distinction from these other agencies is the considerable groundwater storage which the District overlies. The amount of storage enables the District to endure periods of drought without a drastic shortfall in supply. Water agencies manage water supplies to minimize the social and economic impact of water shortages.

The Plan is designed to provide a minimum 50 percent of normal supply during a severe or extended water shortage. As the water purveyor, SVWD must provide the minimum health and safety water needs of the community at all times as detailed in Section 8.9. The Stages of WSCP triggering levels described in Table 8-1 were established to ensure that this goal is met. Regardless of the storage capability of the aquifer, the District implements water rationing practices during drought and other emergency conditions to protect the health of the aquifer and ensure acceptable well production rates.

The amount of rainfall in a given year or series of years is the basis for defining the stages of action. Rainfall, the ultimate source of recharge to the Basin, is readily monitored and is recognized as the basis for defining drought. During a shortfall in annual rainfall, the District could take the appropriate response, such as mandating conservation measures near the beginning of the high demand period when such actions are most likely to have a positive impact on water supplies.

SVWD has developed a four stage demand reduction plan to be invoked during declared water shortages including up to 50 percent reduction in supply resulting from precipitation < 50% of average. The conservation stages vary depending on the causes, severity, and anticipated duration of the water supply shortage. Table 8-1 presents the four-stage rationing and demand reduction targets for SVWD as well as the number of occurrences of the water supply condition based on a review of precipitation data from 1947-2015. SVWD's WSCP includes both precipitation based triggers as well as ground water level adjustments to the triggers.

Table 8-1: Stages of WSCP (DWR Table 8-1)

Stage	Water Supply Condition	System Demand Reduction ^(b)	# of Occurrences 1947-2015 ^(a)
1 ^(a)	Cumulative rainfall over 2 years < 80% of average and/or Single year rainfall < 75% of average	10% demand reduction	8 Occurrences (1947, 1948, 1954, 1956, 1960, 1966, 1994, 2013)
2 ^(a)	Cumulative rainfall over 2 years < 70% of average and/or Single year rainfall < 60% of average	15% demand reduction	8 Occurrences (1961, 1962, 1971, 1972, 1987, 1988, 2007, 2008)
3 ^(a)	Cumulative rainfall over 3 years < 50% of average and/or Single year rainfall < 50% of average ^(c)	20% demand reduction	8 Occurrences (1976, 1977, 1989, 1990, 1991, 1992, 2014, 2015)
4 ^(a)	Stage 3 water supply conditions based on precipitation with groundwater levels below historic low range	25% demand reduction	--

Note:

- (a) SVWD Board may adjust stages and system demand reduction up or down based on annual review of average of spring groundwater levels from up to 5 wells relative to historic low from WY 2003-WY2013.
- (b) System Demand Reduction is based on a baseline of average demand from the last 5 years where precipitation was > 80% of average. SVWD Board may require mandatory measures, including rationing, if necessary to achieve the desired conservation level.
- (c) Single year rainfall < 50% of average is representative of water shortage of 50%.

Precipitation data are readily available, are collected continually and provide system demand reduction basis that is easy to analyze and explain. The first three stages of demand reduction rely primarily on precipitation data. As noted earlier, measurement of groundwater levels occur less frequently and are a less immediate indicator of losses in aquifer storage than precipitation as there can be a year or more lag for groundwater levels to reflect reduced recharge from precipitation. SVWD has modified its WSCP to reflect both precipitation and groundwater level evaluations as detailed below.

8.2.1 Precipitation –based Evaluation

Stage one demand reduction of 10 percent may be merited if precipitation in a single water year is < 75 percent of average precipitation and/or cumulative rainfall precipitation is < 80 percent of average for two consecutive years. The system demand reduction of 10 percent reflects the District's proactive approach to addressing the possibility of an extended drought and to acknowledge the loss of recharge associated with reduced precipitation and therefore maintain water in storage. The 10 percent reduction decreases the loss of storage associated with a two-year drought, and raises public awareness of drought conditions. By raising public awareness, additional voluntary conservation by customers is more likely, and further demand reduction increases, if needed, will not be unexpected.

Stage two demand reduction of 15 percent may be merited when the District service area receives average precipitation less than 60 percent of normal, and/or a cumulative 2-year precipitation less than 70 percent of normal. Stage two would impose additional conservation measures intended to achieve 15 percent demand reduction. This is also a proactive measure to decrease the loss in storage in the aquifer in anticipation of additional years of drought and ensure a stable supply for the District for the future.

A stage three demand reduction of 20 percent represents emergency conditions in the District which would occur as the result of an extended drought with single year precipitation averaging less than 50 percent of normal and/or cumulative three year precipitation averaging less than 50 percent of average. This stage could trigger additional conservation measures intended to achieve 20 percent reduction in consumption from customers. Customer rationing would be considered. Although this is a steep reduction, it is necessary to ensure a continuous water supply in the event of a catastrophe. Although the 20 percent reduction is not absolutely necessary during an extended drought to ensure a continuous water supply, it represents the level of conservation required to protect the health of the aquifer and ensure a water supply for the future.

A stage four demand reduction of 25 percent is included in case significant reductions in groundwater levels are identified as described in Section 8.2.2.

8.2.2 Spring Water Level Data Evaluation

For all stages, precipitation data will be reviewed in conjunction with spring groundwater levels in up to 5 wells to evaluate the water levels relative to historic lows between WY2003 and WY2013. Demand reduction stages may be adjusted up or down based on this evaluation.

8.3 Prohibitions on End Uses

In 1983, SVWD enacted Ordinance 74-83, which lists mandatory prohibitions against specific water activities at all times. Ordinance 149-09, adopted by SVWD in July 2009, established recycled water use only for construction. SVWD Ordinances are found in Appendix G.

Following notification of all customers of a water shortage during Stage 1, additional measures are adopted during times of water shortages, especially during droughts. The potential prohibitions include specific changes in water use. The levels are additive and the higher levels of drought response are inclusive of the lower levels requirements (Table 8-1). All prohibitions on end uses and the stages at which they apply are summarized in Table 8-2.

Table 8-2: Restrictions and Prohibitions on End Uses (DWR Table 8-2)

Stage	Restrictions and Prohibitions on End Users	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement?
On-going and Stages 1-4	- Unauthorized use of water from any fire hydrant. - Adjust sprinklers and irrigation systems to avoid overspray, runoff, and waste. - Repair leaks within 48 hours - Use bucket and a hand-held hose with a positive shut-off nozzle, mobile high-pressure/low-volume wash system to wash vehicles - Use re-circulated water to operate decorative fountains, ponds, lakes - Indiscriminate running of water or washing with water not otherwise prohibited which is wasteful and without reasonable purpose - Recycled water only for construction (requirement established in 2009 by Ordinance 149-09)	Per Ordinance 74-83	Per Ordinance 150-09
1,2,3	Prohibit use of potable water for washing hard surfaces	Requires SVWD Board Approval	Per Ordinance 150-09
1,2,3	Display by restaurants and hotels of water conservation signs		
2,3	- Irrigate residential and commercial landscape before dawn - Landscape irrigation restricted to designated watering days. - Time limits on automatic irrigation systems		
2,3	Pool and Spa Cover Installation		
2,3	Water served upon request at restaurants		

Stage	Restrictions and Prohibitions on End Users	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement?
3,4	Prohibit operating of non-water conservation pre-rinse nozzle in a food preparation establishment such as a restaurant or cafeteria		
3,4	No filling of pools or aesthetic water features		
3,4	Require large landscapes to adhere to water budgets.		
3,4	Require large users to audit premises and repair leaks.		

8.4 Penalties, Charges, Other Enforcement of Prohibitions

If excessive use (water leaks and/or waste pursuant to Ordinance 74-83 or other Board actions) is detected from any water user, the following enforcement plan instituted in 2009 through Ordinance No. 150-09 will apply.

Any customer found repeatedly violating District water conservation restrictions in a given calendar year shall be assessed penalties to be applied to the customer's next water bill as set forth below.

- First offense: Explanation of restrictions is provided to customer
- Second offense: Written notice of violation
- Third offense: One hundred dollar (\$100.00) penalty.
- Fourth offense: Two hundred and fifty dollar (\$250.00) penalty.
- Fifth offense: Five hundred dollar (\$500.00) penalty.

Noncompliance with Ordinance 74-83 may be enforced by discontinuing service to the property at which the violation occurs with 48-hour written notice.

8.5 Consumption Reduction Methods

Once a water shortage stage has been declared, consumption reduction measures from Table 8-2 will be implemented to meet water conservation goals which are summarized in Table 8-1 above. The District's actual response to a water shortage emergency will require specific action by the Board of Directors.

The District will provide suggested water saving measures to its customers. Water conservation measures should be directed toward conserving potable water supplies. Use of recycled water need not be curtailed, although waste is never encouraged. Consumption reduction methods, many of which have been recently implemented by the District, are summarized in Table 8-3. Customer response to outreach during 2014 and 2015 resulted in a 29.75% reduction from the

2013 baseline water use in excess of the 16% requested by the State and 20% requested by the Board of Directors.

Table 8-3: (DWR Table 8-3) Consumption Reduction Methods

Stage	Consumption Reduction Methods by Water Supplier
1, 2, 3 & 4	Expand Public Information Campaign re Water Shortage such as website, e-mails, presentations, business placards, school education
Ongoing	Water shortage pricing
1, 2, 3 & 4	Provision of Technical Information to customers on means to promote water use efficiency including customer scorecard, residential assistance and surveys
Ongoing	Convert landscape to recycled water
Ongoing	Provide Rebates on Plumbing Fixtures and Devices
Ongoing	Provide Rebates for Landscape Irrigation Efficiency
Ongoing	Provide Rebates for Turf Replacement
1, 2, 3 & 4	Decrease Line Flushing
Ongoing	Reduce System Water Loss
3 & 4	Implement Water Waste Patrols

8.6 Determining Water Shortage Reductions

District staff will analyze precipitation data on a monthly basis, and groundwater level data on a quarterly basis to evaluate whether a water shortage stage should be considered by the Board of Directors. Once a water shortage stage has been declared, consumption reduction measures will be implemented to meet water conservation goals which are summarized in Table 8-1 above. The District's actual response to a water shortage emergency will require specific action by the Board of Directors.

To evaluate progress on reducing water demand, bi-monthly meter data will be analyzed by District staff to assess the actual water demand reduction being achieved by the customers. Depending on the results, District staff will recommend to the Board of Directors the range of measures described in Table 8-2 and Table 8-3.

The District can provide suggested water saving measures to its customers including rebate opportunities and changes to irrigation practices which will have the most immediate benefit. Water conservation measures should be directed toward conserving potable water supplies. Use of recycled water need not be curtailed, although waste is never encouraged. Nothing in this plan is intended to limit the District's available options in defining a specific response to any future water shortage.

8.7 Revenue and Expenditure Impacts

Successful implementation of water conservation measures results in a decrease in water demand, with the unintended effect of reducing a water purveyor's revenues. Accordingly, the

water code requires analysis of fiscal impacts of the water shortage contingency plan on revenues and expenditure, and discussion of measures to reduce impacts. SVWD has a conservation based water rate that generates about 70% of revenue from volumetric charges which may impact revenues during periods of reduced water sales.

For the District, effective implementation of the Water Shortage Contingency Plan could result in a decline in potable water sales by as much as 10 to 20 percent in terms of numbers of gallons of demand. Because of the steep tiers for usage charges, the impacts on revenues would be even greater. In addition, recycled water sales during a water shortage could also decline slightly, reflecting the community's overall reaction to the water shortage, as occurred in 2014 and 2015. This impact could be minimized through public information.

Revenues from connection fees could also decline, but only if a moratorium were placed on new service connections during the water shortage.

Revenues derived from penalties, if implemented, for excessive water use or water wasting during the water shortage would not effectively offset lost revenues. These presumably limited revenues should be applied toward administration of the water shortage contingency plan.

Declining water demands would be offset to a small degree by a decline in operating expenses related to the amount of water provided, such as pumping (energy) and water treatment chemicals. Nonetheless, to offset short-term revenue decline without raising water rates, the District may need to rely on financial reserves and/or decrease its expenditures. A decrease in expenditures could entail deferring planned capital improvements.

8.8 Resolution or Ordinance

In 1983, SVWD enacted Ordinance 74-83, which lists mandatory prohibitions against specific water activities at all times. Ordinance 149-09, adopted by SVWD in July 2009, established recycled water use only for construction. In addition, Ordinance 150-09 describes penalties related to non compliance with water waste ordinances. Appendix G contains SVWD Ordinances as well as sample water emergency ordinances.

8.9 Catastrophic Supply Interruption

In addition to drought-related shortages, the District's Emergency Response Plan (ERP) provides the District with a standardized response and recovery protocol to prevent, minimize, and mitigate injury and damage resulting from emergencies or disasters of man-made or natural origin. The ERP describes how the District will respond to potential threats or actual terrorist scenarios identified in the vulnerability assessment, as well as additional emergency response situations. The goals of this ERP are to:

- Rapidly restore water service after an emergency.
- Ensure adequate water supply for fire suppression.
- Minimize water system damage.
- Minimize impact and loss to customers.
- Minimize negative impacts on public health and employee safety.
- Provide emergency public information concerning customer service.

- A copy of the District's ERP is presented in Appendix H.

As described earlier, the greatest catastrophic threats to SVWD's water supply are a major seismic event resulting in a regional power outage and/or an environmental/water quality emergency, either of which could take wells out of service and damage distribution and storage facilities.

As a contingency to this scenario, SVWD has implemented back-up power at Orchard Run and El Pueblo Water Treatment Plants and has mobile generators available for use at all wells, booster pumps, and other key facilities. However, if there are significant pipeline breakages, operation of the full water system will be limited by the location and the extent of pipeline damage. It is likely that smaller service areas served by individual wells can be valved off and served while more extensive pipeline repairs are performed. Furthermore, SVWD's reservoirs totaling 4.32 million gallons of storage provide dedicated emergency water supply equal to 240 percent of maximum day demand (maximum daily demand in 2010 was 1.8 MGD), in addition to supply reserved to meet fire flow, and peak demands. During a catastrophic interruption, the public would be asked to reduce consumption until groundwater production facilities can be restored.

8.9.1 Water Sources

The SVWD currently has seven production wells, four of which provide the primary supply for the service area leaving three wells for redundancy. All existing water supply storage, treatment, and distribution facilities are now inspected daily in preparation for emergencies. Generators are tested monthly for preparedness. In addition, a canvassing to identify specific water-critical customers (including individual customers with medical conditions dependent on continuous water availability) was performed; distribution of water to these water-critical facilities will occur on a priority basis.

SVWD has 2 emergency intertie pipelines to the SLVWD as an additional source of water. Water storage facilities are capable of serving each of the pressure zones within the service area if groundwater pumping becomes unavailable. Redundancies including generators, multiple pressure zones, storage reservoirs, and interties within the service region will facilitate the delivery of water to customers in cases of power outages and earthquakes.

In addition to an intertie and storage, Table 8-4 summarizes the actions SVWD has discussed in preparation for a water supply catastrophe. Coordination with other agencies and emergency response teams are key elements to the preparative actions SVWD has undertaken.

SVWD has coordinated efforts in the past to meet water shortages on several levels which include coordination within the groundwater Basin with adjacent water and emergency services agencies and coordination with the City of Scotts Valley in emergency planning.

SVWD's Water System Emergency Response Plan, of which this water shortage contingency is an element, is consistent with the activities of the City's Office of Emergency Services. The Emergency Response Plan contains procedures for the distribution of potable water in a disaster; which procedures are consistent with guidelines prepared by the California State Office of Emergency Services

Table 8-4: Preparative Actions for Catastrophic Interruption

Action	Actions taken
Determined what constitutes a proclamation of a water shortage	✓
Stretch existing water storage	✓
Obtain additional water supplies	✓
Develop alternative water supplies.	✓
Determine funding sources	✓
Contact and coordinate with other agencies	✓
Created an Emergency Response Team/Coordinator	✓
Created a catastrophe preparedness plan	✓
Put employees/contractors on-call	✓
Developed methods to communicate with the public.	✓
Developed methods to prepare for water quality interruptions	✓

8.10 Minimum Water Supply Available During Next Three Years

As discussed earlier, the most significant impact of the drought scenarios is the increased loss of storage predicted during particular low precipitation scenarios. These scenarios continue to address Water Code §10632(b) by presenting the minimum water supply available over the next five years. The model scenarios were performed in 2005 using the driest five-year sequence, which also includes the driest three year sequence as required by the water code. Analyzing the precipitation data from 2011-2015 indicate that the driest five year period remains 1987-1992 as shown in Table 7-1.

Overall, the District has the storage capacity and production ability to withstand drought conditions as defined by Water Code §10632 (b). The sustainable yield of 2,600 AFY for the Scotts Valley and Pasatiempo Subbasins of the Santa Margarita Basin is shared between the SVWD and SLVWD (Kennedy/Jenks, 2011) and is augmented by the SVWD recycled water projected for use in the Basin. As shown in Table 8-5, the total supplies range from approximately 2,802 AFY to 2,806 AFY during the next three years (2016 – 2018). When comparing these supplies to the demand projections provided in Sections 2 and 6 of this Plan, SVWD has adequate supplies available to meet projected demands should a multiple-dry year period occur during the next three years.

Table 8-5: Three-Year Estimated Minimum Water Supply (AFY) (DWR Table 8-4)

Water Supply Sources	2016	2017	2018
Santa Margarita Basin: Scotts Valley and Pasatiempo Subbasins ^(a)	1,176	1,219	1,262
Recycled Water (projected use)	202	204	206
Total	1,378	1,423	1,468

Note:

^(a) SVWD accounts for about 60% of the 2,600 AFY sustainable yield of the Scotts Valley and Pasatiempo Subbasins.

8.10.1 Minimum Water Supply Needs

Priorities for use of available water, based on Section 3 of the California Water Code, are:

- Health and Safety: Interior residential, sanitation and fire protection
- Commercial, Industrial, and Governmental: Maintain jobs and economic base
- Existing Landscaping: Especially trees and shrubs
- New Demand: Projects with permits when shortage declared

Based on the California Water Code, priorities specific to SVWD's service area for use of available potable water during shortages were based on input from SVWD and legal requirements set forth in the California Water Code, Sections 350-358. Water allocations are established for all customers according to the following ranking system:

- Minimum health and safety allocations for interior residential needs (includes single family, multi-family, hospitals and convalescent facilities, retirement and mobile home communities, and student housing, and firefighting and public safety)
- Commercial, industrial, institutional/governmental operations (where water is used for manufacturing and for minimum health and safety allocations for employees and visitors), to maintain jobs and economic base of the community (not for landscape uses)
- Existing landscaping
- New customers, proposed projects without permits when shortage declared.

Water quantity calculations used to determine the interior household GPCD requirements for health and safety are provided in Table 8-6. As developed in Table 8-6, the California Water Code Stages 2, 3, and 4 health and safety allotments are 68 GPCD, or 33,100 cubic feet (CCF) units per person per year. When considering this allotment and the 2015 population of 10,309, as presented in Table 3-2, the total annual water supply required to meet the first priority use during a water shortage is approximately 785 AFY based on a 68 GPCD allotment.

Table 8-6: Per Capita Health and Safety Water Quantity Calculations per California Water Code

	Non-Conserving Fixtures		Habit Changes		Conserving Fixtures	
Toilets	5 flushes x 5.5 gpf =	27.5	3 flushes x 5.5 gpf =	16.5	5 flushes x 1.6 gpf =	8.0
Showers	5 min x 4.0 gpm =	20.0	4 min x 3.0 gpm =	12.0	5 min x 2.0 gpm =	10.0
Washers	12.5 GPCD (1/3 load) =	12.5	11.5 GPCD (1/3 load) =	11.5	11.5 GPCD (1/3 load) =	11.5
Kitchens	4 GPCD =	4.0	4 GPCD =	4.0	4 GPCD =	4.0
Other	4 GPCD =	4.0	4 GPCD =	4.0	4 GPCD =	4.0
Total GPCD		68.0		48.0		37.5
GPC per year ^(a)		24,800		17,500		13,700

Note:

^(a) SVWD bills on 1,000 gallons units.

Section 9: Demand Management Measures

This section details the SVWD efforts to promote conservation and to reduce demand on water supply. Specific demand management measures (DMMs) are addressed, and this section also includes implementation of these measures since the previous UWMP and how the measures are planned to be implemented to achieve water use targets.

SVWD recognizes that conserving and using water efficiently as integral components of a responsible water management strategy and is committed to providing education, tools, and incentives to help its customers manage the amount of water they use.

SVWD's water demand has already shown significant decline in recent years, which is attributed to SVWD's ongoing water conservation activities in conjunction with the expansion of recycled water use for large landscape irrigation.

As of 2010, the District's water demand was lower than its SBx7-7 2020 target of 143.9 GPCD, and in December 2015, with the continuance of the drought and the Governor's Emergency Drought Regulations, potable demand was reduced to just 93 GPCD.

9.1 Implementation over the Past Five Years

The District is subject to the Urban Water Management Planning Act, AB1420 and SBX7-7 requirements. Demand management is addressed at the local (retail agency) level and still primarily addresses the areas outlined in the DMMs, including Utility Operations (metering, water loss control, pricing, conservation coordinator, wholesale agency assistance programs, and water waste ordinances), and Public Education (public outreach and school education programs).

The following sections describe the various programs and conservation activities implemented by the District and provide an implementation plan for compliance with the UWMP Act, including DMMs and SBX7-7 requirements. This section provides an overview of the following topics:

- Water Waste Prevention Ordinance
- Metering
- Conservation Pricing
- Public Education and Outreach
- Programs to Assess and Manage Distribution System Real Loss
- Water Conservation Program Coordination and Staffing Support

9.2 Water Waste Prevention Ordinance

The District actively pursues incidents of water waste by investigating, recommending corrective action, providing follow-up documentation of resolution, and administering penalties. Fines and water service disconnection can be enforced per the Water Waste Policy if excessive and unabated leaks and/or water waste occur.

Water Waste Ordinances have evolved over time, beginning with Ordinance 74-(19)83, followed by Ordinance 150-(20)09, that established penalties for violation of water conservation restrictions. The Regulations to Promote Water Conservation and Minimize Water Waste were approved in April of 2012, and most recently the Policy on Water Waste (May 2015) was approved by the Board, that incorporated the Governor's Emergency Drought Mandates of the same year.

The District has also updated its Water Shortage Contingency Plan as described in Section 8. The plan is designed to facilitate implementation of water shortage response measures.

9.2.1 Metering with Commodity Rates for All New Connections and Retrofit of Existing Connections

All potable water use in the District is metered and customers are billed by volume of usage on a bi-monthly basis. An increasing block rate structure has been in place in the District for several years. Recycled water is also metered and billed by volume of usage on a monthly basis, at a 20% cost reduction from potable water.

The District's billing system keeps record of the following meter data: size, type, year installed, customer class served. An abnormal meter read automatically creates a work order for meter testing and repair or replacement when necessary. An abnormal read would include exceptionally high or low reads, zero reads, or non-reads.

Meter inventory data is compiled according to size, type, customer class and date of installment. The District in September 2010 implemented a meter testing, repair, and replacement plan. The plan includes testing meters prior to installation and replacement of meters over 10 years old.

The largest incentive for retrofitting mixed use accounts is conversion to recycled water. Recycled water costs 20% less than potable water and there is no basic service fee for a recycled water meter. The District continues to pursue this option and has 51 recycled accounts as March 30th, 2016.

9.2.2 Retail Conservation Pricing

The revenue from volumetric rates for the District was approximately 70 percent of total for fiscal year 2008-2009, meeting the requirements for the Conservation Pricing BMP. The District will continue to monitor its volumetric revenues as compared to fixed charges but it should be recognized that declining potable water demands are at least, in part, attributable to the rate structure regardless of the actual proportion of volumetric revenues as compared to fixed charges.

The District began using a six-tier inclining block rate structure for all potable water customers in 1992. Rate studies are done approximately every three years to set rates for three years thereafter. Rates from the 2010 UWMP and current rates are found in Table 9-1. Due to Proposition 218, rate structures are being studied differently, and it is likely that the District will reduce its number of tiers in the future.

Table 9-1: Water Rates

Rates for 02/15/2009 - 02/15/2010			Rates for 02/15/15 - 02/15/2016	
Usage (gallons)	Rate per 1,000 gallons		Usage (gallons)	Rate per 1,000 gallons
0-6,000	\$3.19		0-6,000	\$3.70
6,001-14,000	\$5.35		6,001-14,000	\$6.21
14,001-30,000	\$6.50		14,001-24,000	\$8.01
30,001-50,000	\$7.69		24,001-36,000	\$9.66
50,001-10,000	\$9.66		36,001-50,000	\$12.36
Over 100,000	\$10.31		Over 50,000	\$13.97

In February 2010, the District began offering a flat rate to qualifying non-single family residential customers. In order to qualify for the flat rate, the customer must fulfill flat rate guidelines which require a water conservation audit for both indoor and outdoor water use, and invest in any needed conservation upgrades or maintenance.

In response to a customer request, the Board approved a Qualifying Medical Flat Rate for residential accounts in 2014.

The District also has an inclining block rate for all recycled water customers with rates 80 percent of the potable rates.

9.2.3 Public Education and Outreach Education

The District has conducted a variety of public education activities over the past five years. Several activities aimed to motivate customers to respond to a drought situation, while others were more general in scope. The following is a list of activities that the District has undertaken:

9.2.3.1 Websites, eNewsletter and Email Notifications

The District website existed in minimal form prior to March 2007. At that time the District hired a part-time intern to revamp the website which included the addition of a section dedicated to Conservation and Recycled Water. In 2015, the District logo and website were re-designed and replaced under the direction of contractor Ryan Forest+Hayes. The District website is used to promote new and existing water use efficiency and recycled water programs, and is updated regularly.

In addition, the services of a local public relations contractor Miller Maxfield were enlisted during 2015, allowing water use efficiency staff to have a more consistent and professional media presence. With their assistance, the District also posts with and to other websites, such as the Scotts Valley Chamber of Commerce, My Scotts Valley, and the Santa Cruz County Water Conservation Coalition, and Facebook.

Staff also began utilizing an email management application (Mail Chimp) in 2015 that allows email notifications to be sent out to interested customers and regional community members. Notifications such as a (new) District eNewsletter, Board Meetings, Events/Workshops,

Media/Press, Santa Margarita Groundwater Basin Advisory Committee, and Recycle Fill Station News, all include water use efficiency and conservation-related news.

9.2.3.2 Print Advertising

The District prints bi-weekly advertisements in the weekly Scotts Valley Press Banner newspaper and in 2013 began purchasing display advertising in the monthly Scotts Valley Times, promoting water conservation and water use efficiency programs.

9.2.3.3 Bill Messages and Inserts

Several bill messages and bill inserts promoting water conservation have been delivered to customers, via their bi-monthly potable water bills. The messages and inserts inform customers of drought conditions and promote water conservation, use efficiency and rebate programs. Bills were re-designed with an upgrade to the billing system (from Continental to Springbrook) in 2015, with messages no longer appearing on the statements, but within inserts and e-newsletters.

9.2.3.4 Signage

Fleet signage, bumper stickers, lawn signs and District office signs have educated customers about drought mandates, the Monterey Bay Friendly Landscape Certification and Recycled Water Programs, and the District low-water demonstration garden. The new agency logo will replace old lamppost banners from 2008.

9.2.3.5 Water Use Efficiency Presentations & Community Events

Presentations:

Presentations to the general public and professional organizations regarding water supply and water use efficiency include:

- SVWD Water Wednesday Speakers Series- Four presentations held over a 4-week period in January of 2013-2015, featured the WUE Coordinator and regional experts regarding topics such as efficient plumbing and irrigation, rainwater and greywater harvesting, stormwater management, sheet mulching, and lawn removal and low-water plants.
- - Informational tours of the District's Water-Smart Demonstration Garden
- Scotts Valley City Council regarding Retrofit Upon Resale
- CA/NV American Water Works Association (AWWA)
- California Landscape Contractors Association
- Resource Conservation District & the Coastal Watershed Council
- Monterey Bay Master Gardeners
- Watsonville Regional Water Quality Conference
- Local HOAs: Country Terrace, Granite Creek Estates, Scotts Valley and Monte Valle Mobile Home Parks.

Promotion of On-site Alternative Water Supplies

During FY 2012-2014, the District sponsored a rain barrel promotion, offering 50 gallon “Ivy” Rain Barrels, at a reduced price. Orders were 30, 60 and 90 respectively. The promotion was held in order to educate customers about rainwater harvesting, giving them firsthand experience regarding the amount of stormwater that falls on their roof surfaces, and how quickly water is consumed for irrigation purposes. However, the highest use of the barrels was to provide a surge tank for stormwater run-off, in order to promote aquifer recharge and soil saturation (to delay irrigation in the spring).

District Drought Response Program - With the continuance of the drought, the governor’s mandate, a dry spring, increased media outreach, a district and regional communication campaign, and enhanced rebates, an increase in information inquiries, rebates, leak investigations and house calls were addressed during the 2014 and 2015 drought years.

Specific efforts included:

Think Twice Campaign featured a customer “scorecard” letter was delivered to residential accounts based on additional meter reads done during the months of July, September, and November; as well as a campaign webpage, bumper stickers and lawn signs, reminding customers of the voluntary drought targets of 75 gallons per person per day and the two-day per week watering restrictions. Scorecard letters generated more inquiries regarding leaks and water use efficiency, with a total of 53 leak investigations or house calls for the period.

Water Waste Watch and Two-Day/Week Watering Days with temporary contract help for 3 months, created a total of 37 verbal or written customer contacts.

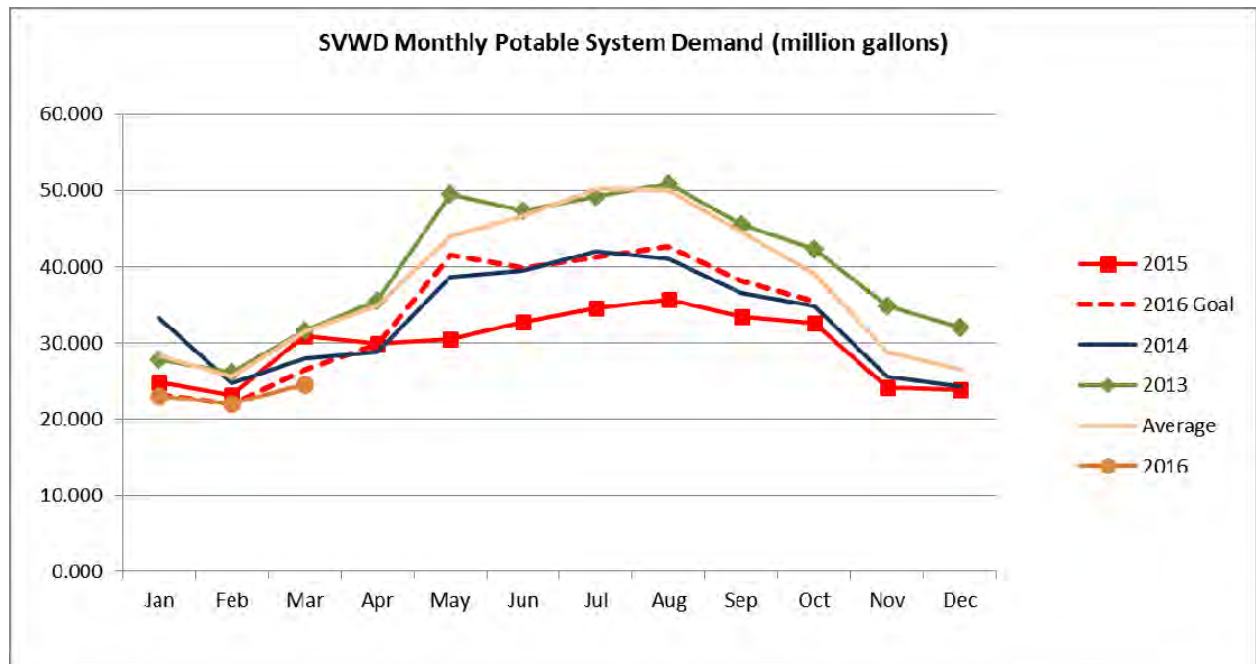
Enhanced Rebates, especially for lawn and overhead spray irrigation, increased customer participation. Pre-inspections for rebates numbered 79, and post inspections 43.

State-mandated hotel and food service placards were distributed to all hotels and restaurants.

Responses to over 800 customer phone, email and walk-ins were completed.

Customer response to drought outreach was very positive, with a 29.75% savings as compared to 2013 baseline, with only a 16% reduction requested by the State and 20% requested by the Board of Directors. Monthly results are found on Figure 9-1 below.

Figure 9-1: System-wide Demand Graph 2013-2015



9.2.3.6 Community Event Sponsorship: The Scotts Valley Garden Faire

The District has been sponsoring The Smart Gardening Faire since 2006. The Faire is held annually in June at Sky Park in Scotts Valley. It is a free admission, educational event that includes: speakers and demonstrations regarding ecological gardening; informative and educational exhibits by local groups; and vendors of plants and garden-related products.

SVWD offers fiscal sponsorship, has assisted in recruiting keynote speakers and has been invited to speak at the event on Greywater and Rainwater Harvesting, Sheet Mulching and Low Impact Development. The District also shares and staffs a booth with the Santa Cruz County Water Conservation Coalition at the event.

9.2.3.7 Participation in County-Wide & Regional Programs

Drought Response 2014 and 2015: Regional Drought Planning and Collaboration- Worked with Ecology Action, County Environmental Health and other water agencies in the Santa Cruz County Water Conservation Coalition. Assisted in re-vamping the county-wide WaterSavingTips.org website, creating and promoting the drought pledge. Collectively, over 2,000 people were trained in water conservation actions and the goal of 5 million gallons in pledged water savings was surpassed. Scotts Valley had the most pledges of any community with the Music at Skypark as the most successful outreach event. Talks were given at Scarborough Gardens on water-wise landscaping and the Mt. Hermon Shell Station served as a demonstration site for a lawn retrofit workshop. Collaborated with Cabrillo Extension regarding

promotional discounts for landscape water efficiency classes. Contributed to the planning and content of the first printed Santa Cruz County Water Conservation Guide.

Green Gardener and Monterey Bay Friendly Programs

The District began promoting and sponsoring the Monterey Bay Green Gardener Program in the summer of 2007 and the Monterey Bay Friendly Program in 2014.

The Green Gardener Program provides a 10-week, 29-hour professional training and certification in ecological landscaping. Program goals are to reduce reliance on synthetic fertilizers and pesticides, reduce water pollution and encourage water conservation. The Water Use Efficiency (WUE) Coordinator is a graduate of the program and has also been actively involved in the re-design of the Green Gardener Program website that was combined with the Monterey Bay Friendly Landscape Certification Program website in 2014.

The Monterey Bay-Friendly Rated Landscapes is a rating system that recognizes excellence in sustainable landscape design, construction and maintenance practices in the Monterey Bay Area.

This voluntary, third-party verified rating system applies to new construction or renovations of landscapes. It provides property owners and landscape professionals with a regionally consistent framework for creating healthy, environmentally sound landscapes. Property owners and landscape industry professionals that design and maintain a landscape to Monterey Bay Friendly standards are provided public recognition, educational signage and incentives. The WUE Coordinator is a rater for the program.

Prop 84 Low-Impact Development Incentives Grant

The WUE Coordinator was selected to be part of the Strategic and Technical Resources Advisory Groups for Ecology Action's Regional sponsorship of the Prop 84 Low Impact Development (LID) Incentives Grant. Staff provided input on rater criteria for the landscape certification program and the structuring of the grant reporting. WUE Coordinator also awarded grant incentives to SVWD customers who made stormwater management improvements to their properties, with strategies such as Rainwater Harvesting, Lawn and Hardscape Removal, and Stormwater Retention Methods, such as swales and rain gardens

Green Business

The WUE Coordinator serves as the rater for the (indoor and outdoor) water portion of the Green Business Certification in Scotts Valley.

Greywater Challenge

Greywater installation trainings were offered by the WUE Coordinator- three in 2014 and one in the 2015 irrigation season. The full day trainings included 2 hours of class lecture and an installation at a Scotts Valley residence. These trainings were part of the regional Monterey Bay Greywater Challenge, where local municipalities, water agencies and non-profits are promoting the use of residential greywater.

Brooknoll, Vine Hill School and Scotts Valley Chamber of Commerce Auctions

The District sponsors local fund-raising auctions by donating ultra-high efficiency toilets or

sustainable landscaping supplies in order to be good community citizens and raise awareness regarding the importance of our water-efficient rebates.

9.2.3.8 Cooperative Agency Program

The District participates in a cooperative water agency committee, the Water Conservation Coalition of Santa Cruz County, consisting of Santa Cruz County Water Resources, Ecology Action, Soquel Creek Water District, Pajaro Valley Water Management Agency, the Cities of Watsonville and Santa Cruz Water Departments, Central Water District and the San Lorenzo Valley Water District. This committee contributes funds for community awareness campaigns to better inform the public about conservation methods and practices. Some of the accomplishments include:

- Sponsors its own website: watersavingtips.org
- Pays for water conservation advertisements on local radio, newspapers and buses
- Presented water conservation materials at local events such as the County Fair and Earth Day Festival, the County Fair and Redwood Mountain Festival, and purchases materials to give away for these events. Brands materials with its logo.
- Created and edited in 2014, an educational workbook for all 5th grade students in the County which teaches about local water resources
- Created and distributed table cards for drought conditions, asking restaurants to serve water only upon request and hotels to ask patrons to re-use linens at least once before washing
- Supports the Green Gardener Program and the EPA Annual Fix-a-Leak Week.
- Due to the need for increased outreach during drought years of 2014 and 2015, the Coalition created a budget and had Ecology Action be the fiscal agent for the group. This enabled the group to be more nimble in hiring graphic designers, web contractors and interns.

9.2.3.9 School Education Programs

The District has water conservation promotional materials for grades K-8. Additionally, a booklet was created by the Water Conservation Coalition of Santa Cruz County that promotes water awareness specifically in the local region. This booklet is appropriate for grades 5-8 and is available upon teacher request or during visits to classrooms.

The Coalition has also sponsored a Water Conservation poster, advertising and video contests in local schools.

WUE Coordinator was certified as a Project WET facilitator in 2013 from the Water Education Foundation and has provided educational talks for Scotts Valley High School freshmen biology classes each spring. These talks last for two days and have been done collaboratively with either the Green Schools Program or the Coastal Watershed Council staff. SVWD staff cover

the water cycle, local water sources and challenges, and conservation and water use efficiency, whereas other agency staff discuss water quality and pollution prevention

9.2.4 Water Loss Control

Estimates for unaccounted-for water prior to 2009 did not include several acre feet of water delivered due to a computer programming error. In 2009, it was discovered that approximately 40 customer accounts had been under-billed dating back to 2002. The billing errors had caused an increase in unaccounted-for water estimates by approximately 3.5 percent. After adjusting for billing errors, unaccounted-for water measurements were between 9 percent and 16 percent for water years 2010-2015 as shown in Table 9-2 below. As described below, SVWD has initiated significant efforts in the past two years that aimed to reduce the amount of unaccounted-for water. These included conducting a full system-wide water audit and full system leak detection, and running the AWWA M36 software. SVWD plans to use the results of these efforts to direct efforts to reduce and maintain the amount future unaccounted-for water estimates less than 10 percent.

Table 9-2: Unaccounted-for Water Estimates WY2010-WY2015

	WY2010	WY2011	WY2012	WY2013	WY2014	WY 2015
Groundwater Produced	1,358	1,302	1,362	1,400	1,377	1,133
Potable Water Delivered	1,240	1,160	1,208	1,248	1,157	995
Percent Water Loss	9%	11%	11%	11%	16%	12%

Key: WY: Water Year

In 2016, District staff used AWWA M36 software to calculate an updated Water Audit Data Validity Score. The District received 68 out of 100. Worksheets for determining the District's Water Audit Data Validity Score can be found in Appendix D. Priority areas that were identified for attention included meter data from own sources, estimation of variable production cost and customer metering inaccuracies as described below. The District's efforts in water loss in the past several years are effective and will be continued on an as-needed basis.

Full system leak detection was completed in 2015. The leak detection consultant, M.E. Simpson, report indicated some minor distribution leaks that were repaired immediately. A significant percentage of District losses are potentially the result of meters that are under reporting deliveries. The District is planning a 3 year small meter change out program of meters over 6 years old beginning in 2016 coupled with an AMI system wide deployment. The plan includes random verification testing of the new meters prior to installation and replacement.

In addition to system leaks, the District has operated a leak detection program for customers since 1996. Customers who have spikes in water consumption are sent a courtesy "leak letter" informing them of an increase in water usage and suggesting that there may be a leak at the customer's property. In addition, customers who fix leaks may be eligible for a leak adjustment on their water bill. In February of 2016, the Leak Adjustment Policy was changed to a Leak Adjustment Program, simplifying the increasing staff efficiency for implementation.

In November 2008, the District was awarded a grant to perform a full system wide audit in order to reduce the amount of unaccounted-for water. A full system-wide audit includes testing meter accuracy and detecting water leaks in the distribution system. Meter analysis began in early November 2009. The consultant, Advanced Flow Measurement, initiated the program to establish and maintain maximum flow measurement accuracy and precision from meters used for groundwater extraction, potable water treatment and distribution, recycled water treatment, and recycled water distribution. Twenty-nine meter installations were field tested and catalogued by photo, location, size, brand, model, type, serial number, and year of manufacture. The District has initiated replacement of those meters recommended for replacement and have replaced 2 meters to date with the balance planned for the next several years.

9.2.5 Conservation Coordinator

The District hired a 50% FTE Water Conservation Coordinator in April 2007 which evolved into a 75% percent time position as of 2009. In July of 2012, the Conservation Coordinator became a 100% time and the position title was eventually changed to Water Use Efficiency (WUE) Coordinator, as the preferred emphasis was on efficient use and permanent behavioral changes versus implied curtailment or austerity.

9.2.6 Other Demand Management Measures

The District administers several other demand management programs that benefit both residential and commercial customers.

9.2.6.1 Residential Programs

The largest customer class in the District service area is residential, accounting for approximately 79 percent of connections and 55 percent of total demand, for a total of 4,194 total meters in District, therefore, the District has focused the majority of its conservation efforts on residential use.

Residential Assistance Program and Landscape Water Surveys

SVWD first introduced its Water-Wise House Call program in the spring of 2008. The District reaches about 1 percent of its customers each year, with an estimated potential water savings of 6 AFY. The District Water-Wise House Call program began in the spring of 2008 and is available upon customer request or in response to identified high use. House Calls include toilet testing, pressure and meter checks, testing of aerator flow and distribution of free replacement aerators for sinks and showers and water budgeting upon request. House calls average 1% of the customer base (41 out of 4100).

The District will continue this program by targeting the top tier users and upon customer request.

In July of 2007, the District began offering low-flow aerators (.5 and 1.0 gpm) and (1.5 gpm) showerheads free of charge to District customers. These are also distributed during Water Wise House (or Business) Calls. Approximately 1 AFY savings is estimated per these devices.

Water Use Efficiency for New Residential Development

The City of Scotts Valley Planning and Building Departments enforces the CA Green Building Code for new and retrofit construction. New landscape construction in California is also subject to the Model Water Efficient Landscape Ordinance (MWELO) and all agencies are required to enforce it even if they do not formally adopt it. The District only provides a fixture review for meter sizing, it does not review indoor fixture flow rates or irrigation plans.

The District does offer reduced connection and impact fees for new Water Efficient Units that are able to connect to recycled water landscape irrigation service.

9.2.6.2 High-Efficiency Clothes Washers

The District granted rebates (in the form of account credits) of \$100 for each non-Energy Star approved washing machine that is replaced with an Energy Star approved washing machine for residential application and \$200 for each commercial application.

As of May 2015 rebates for HECW were discontinued by the District due to already meeting this BMP, community saturation (the majority of customers have higher efficiency washers), and market saturation (most washers on the market are now high efficiency).

9.2.6.3 Water Sense Specification (WSS) Toilets

The District began a ULFT (ultra-low flow toilet) rebate program in 1999. At that time, customers replacing a toilet flushing greater than 1.6 gallons per flush (gpf) with a toilet that flushes 1.6 gpf or less, then in November 2007, the program was changed to replace high efficiency toilets (HET). HETs flush on average 1.28 gpf or less. Within a few months of implementing the HET retrofit credit program, the City of Scotts Valley began a rebate program that matched the District's. As funds allow, they still offer a cash rebate for the remaining cost of a toilet up to an additional \$200 for replacing a toilet flushing greater than 1.6 gpf with one that flushes 1.28 (or lower)

In 2015 rebates for new 1.6 gpf toilets were discontinued (as state law in 2014 prohibited sales of 1.6 gpf toilets) leaving only rebates for replacing low efficiency toilets (over 1.6 gpf) with 1.28 gpf (or lower) toilets.

Direct Install Toilet Program 2014

As part of the 2014 Drought Response Program, SVWD embarked up an unusual project to quickly reduce the number of low efficiency toilets (flushing greater than 1.6 gpf) with the lowest flow toilets on the market, the Niagara Conservation Stealth (.8gpf). Stealth toilets and installation by three vetted, local plumbers were free to customers. Publicity was created and 176 toilets were requested and 170 installed, an estimated 13% reduction in the number of remaining inefficient toilets.

9.2.6.4 Landscape

The District's primary goal for large landscape water users is conversion to recycled water. It is estimated that 13% of total system demand is currently being supplied by recycled water.

The largest irrigators in the District are the Enterprise Technology Center, Scotts Valley High School and City parks – all of which have been converted to recycled water. New development is also utilizing recycled water as access to mains are possible

The primary incentive for customers to convert to recycled water is the lower cost of the water. Recycled water customers pay 80 percent of potable rates with no basic service fee. As well, the California Water Code Section 13551 states that potable water shall not be used for irrigation if recycled water is available.

A conservation incentive built into the recycled water pricing system encourages existing recycled water customers to conserve water. In addition, recycled water use site permits mandate periodic checks and assurances that no water is running offsite.

Large landscape customers still using potable water have a strong incentive to audit themselves due to conservation pricing. The top tier water rate is now \$13.97 per 1,000 gallons of water used, compared to \$3.70 per 1,000 gallons for the first tier.

The Water Conservation in Landscaping Act of 2006 (Assembly Bill 1881, Laird) required cities and counties, including charter cities and charter counties, to adopt landscape water conservation ordinances by January 1, 2010. In accordance with this law, DWR prepared an updated Model Water Efficient Landscape Ordinance (MWELO) to serve as an example ordinance for local agencies. All local agencies had until January 1, 2010, to adopt DWR's updated MWELO or their own local water efficient landscape ordinance. If a local agency did not adopt its own ordinance on or before January 1, 2010, the MWELO still applies. The District is still pursuing the passage of a MWELO for the City of Scotts Valley, now based on the updated 2015 state MWELO.

As of March 2016, the City of Scotts Valley has not adopted a water efficient landscape ordinance from 2010 or the revised 2015 version. Therefore, the updated state MWELO applies within the City limits. At this time, the law is not being enforced due to lack of staff and funding. The District has communicated to the City regarding the creation of a water efficient landscape ordinance within the District boundaries and there is discussion of adopting ordinances in parallel in the future.

The District introduced a new Landscape Water Conservation Pilot Program funded by the 2008 Urban Drought Assistance Grant Program. The program was offered to all customers and consisted of rebates for lawn removal, irrigation controllers and cisterns.

9.2.6.5 Commercial, Industrial and Institutional (CII) Accounts

The District has been categorizing CII customers for almost 20 years. CII customers are eligible for the same rebate programs as residential customers. The District conducts "house calls" as appropriate to CII customers, water audits through the Monterey Bay Area Green Business Program, and flat rates for qualifying CII customers.

The District now has 51 recycled accounts, most of these being CII customers with mixed use meters that converted landscape irrigation to recycled water.

9.3 Planned Implementation to Achieve Water Use Targets

The following conservation and water use efficiency programs have and are planned to continue to maintain demand reductions:

- Financial Incentives such as rebates, grant awards and free fixtures and aerators
- Social recognition programs that appeal to community norms
- Disincentives of penalties in the Water Waste Policy and any drought mandates
- Individual on-site help with water use efficiency, with Water-Wise House Calls, Leak Investigations, and AMI (automatic meter reading)
 - The District will continue the Water Wise program by targeting the top tier users and upon customer request.
- Community Education and Outreach
- Tiered conservation rate pricing
- Reduced connection and impact fees for new Water Efficient Units that are able to connect to recycled water landscape irrigation service.

9.3.1 Program Outcomes

Where possible, the District provides an estimate of expected conservation savings and expects to track savings as the water use efficiency program further develops. Additional conservation efforts are expected to reduce demand as the service area has not achieved saturation of water conserving devices. District programs are represented in Table 9-3.

Table 9-3: Summary of Conservation Rebates 2011-2015

	2011	2012	2013	2014	2015
Toilets	66	94	74	101*	98
Washers	56	76	93	80	139
Lawn	6	12	15	16	59
Lo Vol Irrigation	2	2	4	47	19
Controllers	3	2	2	1	1

* In addition, 170 free toilets were distributed in the summer of 2014 outside of the rebate program.

Section 10: Plan Adoption, Submittal, and Implementation

This section describes the steps taken by SVWD to adopt and submit the UWMP to the CA DWR and to make it publicly available. This section also includes a discussion of the SVWD plan to implement the UWMP.

10.1 Inclusion of all 2015 Data

As required, the District's 2015 UWMP includes the water use and planning data for the entire water year of 2015.

10.2 Notice of Public Hearing

The District is required to hold a public hearing prior to adopting the UWMP. The public hearing provides an opportunity for the public to provide input to the UWMP before it is adopted. The governing body (the Board of Directors) must consider all public input.

As described below, the District has provided notices of the public hearing to any city or county within which the District provides water (i.e. Scotts Valley) as well as to the public. Please also refer to Section 3 regarding the coordination and outreach conducted by the District as part of the UWMP update process.

10.2.1 60 Day Notification

The District has notified the cities and county listed in Table 10-1 that the District will be reviewing the UWMP and considering amendments to the UWMP at least 60 days prior to the public hearing (see Appendix B for the notification letter).

10.2.2 Notice of Public Hearing

The District has provided notice of the time and place of the public hearing to the cities and county listed in Table 10-1 (see Appendix B for the notification letter).

Table 10-1: (DWR Table 10-1) Notification to Cities and Counties

City Name	60 Day Notice	Notice of Public Hearing
City of Scotts Valley	☒	☒
City of Santa Cruz	☒	☒
County Name	60 Day Notice	Notice of Public Hearing
Santa Cruz County	☒	☒
Other notified entities	60 Day Notice	Notice of Public Hearing
SLVWD	☒	☒
Mount Hermon	☒	☒
Santa Cruz LAFCO	☒	☒
Soquel Creek Water District	☒	☒
Scotts Valley Fire District	☒	☒

10.2.3 Notice to the Public

The District has provided a notice of the public hearing in a local newspaper as prescribed in Government Code 6066. This notice included the time and place of hearing, as well as the location where the UWMP is available for public inspection. A copy of the newspaper notice is included in Appendix B.

10.3 Public Hearing and Adoption

Before submitting the UWMP to DWR, the Board of Directors must formally adopt the plan. The public hearing may take place at the same meeting as the UWMP adoption hearing of the Board of Directors. If the public hearing and the UWMP adoption hearing are combined into one meeting, the agenda must include the public hearing as an agenda item, and the public hearing portion must take place before the adoption portion. This allows the Board of Directors the opportunity to modify the UWMP in response to public input before adoption.

As part of the public hearing, the Board of Directors will provide information on the District's baseline values, water use targets, and implementation plan required in the Water Conservation Act of 2009 as presented in Section 5.

The District has included the adoption resolution document in the UWMP as Appendix C and the resolution is posted online at <http://www.svwd.org/resources/board-meetings>.

10.4 Plan Submittal

10.4.1 Submittal of UWMP to DWR

The District must electronically submit the 2015 UWMP to DWR within 30 days of adoption and by July 1, 2016. Amendments, if any, will also be submitted electronically. After the UWMP has been submitted, DWR will review the plan and make a determination as to whether or not the UWMP addresses the legal requirements. The DWR reviewer will contact the water supplier as needed during the review process. Upon completion of the UWMP review, DWR will issue a letter to the agency with the results of the review.

10.4.2 Submittal of UWMP to the California State Library

No later than 30 days after adoption, the District will submit a CD or hardcopy of the adopted 2015 UWMP to the California State Library at:

California State Library
Government Publications Section
914 Capitol Mall
Sacramento, CA 95814
Attention: Coordinator, Urban Water Management Plans

10.4.3 Submittal of UWMP to Cities and Counties

No later than 30 days after adoption, the District will submit a copy of the adopted 2015 UWMP to any city or county to which the supplier provides water.

10.5 Public Availability of Adopted UWMP

The adopted UWMP is available for public review during normal business hours at District offices.

References

- California Department of Water Resources (DWR), 2003, California's Groundwater Bulletin 118.
- ETIC Engineering, Inc., 2007, Scotts Valley Water District Groundwater Management Program Annual Report 2006 Water Year, Prepared for: Scotts Valley Water District, July 2007.
- ETIC Engineering, Inc., 2006, Groundwater Modeling Study of the Santa Margarita Groundwater Basin Final Report, Prepared for: Scotts Valley Water District, May 2006.
- Kennedy/Jenks, 2008, 2007 Annual Report, Scotts Valley Water District Groundwater Management Program, Prepared for: Scotts Valley Water District, May 2008.
- Kennedy/Jenks, 2011a, 2010 Urban Water Management Plan, Prepared for: Scotts Valley Water District, July 2011.
- Kennedy/Jenks, 2011b. Phase 1 Conjunctive Use and Enhanced Aquifer Recharge Project, Prepared for County of Santa Cruz, August 2011.
- Kennedy/Jenks, 2015, Santa Margarita Basin Groundwater Modeling Technical Study, Prepared for: Scotts Valley Water District, June 2015
- Kennedy/Jenks, 2016a, 2015 Annual Report, Scotts Valley Water District Groundwater Management Program, Prepared for: Scotts Valley Water District, February 2016.
- Kennedy/Jenks, 2016b, Santa Margarita Groundwater Basin Regional Groundwater Replenishment Program Interim Draft Facilities Planning Report, Prepared for: Scotts Valley Water District, February 2016.
- Todd Engineers, 1994, Scotts Valley Groundwater Management Plan (AB 3030), report prepared for Scotts Valley Water District, 94 p.

Appendix A: DWR Checklist

Appendix A

UWMP Checklist

This checklist is developed directly from the Urban Water Management Planning Act and SB X7-7. It is provided to support water suppliers during preparation of their UWMPs. Two versions of the UWMP Checklist are provided – the first one is organized according to the California Water Code and the second checklist according to subject matter. The two checklists contain duplicate information and the water supplier should use whichever checklist is more convenient. In the event that information or recommendations in these tables are inconsistent with, conflict with, or omit the requirements of the Act or applicable laws, the Act or other laws shall prevail.

Each water supplier submitting an UWMP can also provide DWR with the UWMP location of the required element by completing the last column of either checklist. This will support DWR in its review of these UWMPs. The completed form can be included with the UWMP.

If an item does not pertain to a water supplier, then state the UWMP requirement and note that it does not apply to the agency. For example, if a water supplier does not use groundwater as a water supply source, then there should be a statement in the UWMP that groundwater is not a water supply source.

Checklist Arranged by Water Code Section

CWC Section	UWMP Requirement	Subject	Guidebook Location	UWMP Location (Optional Column for Agency Use)
10608.20(b)	Retail suppliers shall adopt a 2020 water use target using one of four methods.	Baselines and Targets	Section 5.7 and App E	Section 5.5.1.
10608.20(e)	Retail suppliers shall provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.	Baselines and Targets	Chapter 5 and App E	Section 5.5.2. Tables 17 and 18
10608.22	Retail suppliers' per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use of the 5 year baseline. This does not apply if the suppliers base GPCD is at or below 100.	Baselines and Targets	Section 5.7.2	Section 5.4. Table 16.
10608.24(a)	Retail suppliers shall meet their interim target by December 31, 2015.	Baselines and Targets	Section 5.8 and App E	Section 5.5.2.
10608.24(d)(2)	If the retail supplier adjusts its compliance GPCD using weather normalization, economic adjustment, or extraordinary events, it shall provide the basis for, and data supporting the adjustment.	Baselines and Targets	Section 5.8.2	Not Applicable
10608.26(a)	Retail suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets.	Plan Adoption, Submittal, and Implementation	Section 10.3	Section 2.3. Table 5.
10608.36	Wholesale suppliers shall include an assessment of present and proposed future measures, programs, and policies to help their retail water suppliers achieve targeted water use reductions.	Baselines and Targets	Section 5.1	Not Applicable
10608.40	Retail suppliers shall report on their progress in meeting their water use targets. The data shall be reported using a standardized form.	Baselines and Targets	Section 5.8 and App E	Section 5.6. Table 5-8.
10620(b)	Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.	Plan Preparation	Section 2.1	Section 1.1.
10620(d)(2)	Coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	Plan Preparation	Section 2.5.2	Section 2.2. Table 2-4.

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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 1.2.
10621(b)	Notify, at least 60 days prior to the public hearing, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan.	Plan Adoption, Submittal, and Implementation	Section 10.2.1	Section 2.2. Table 2-4.
10621(d)	Each urban water supplier shall update and submit its 2015 plan to the department by July 1, 2016.	Plan Adoption, Submittal, and Implementation	Sections 10.3.1 and 10.4	Section 10.4.1
10631(a)	Describe the water supplier service area.	System Description	Section 3.1	Section 3.1.
10631(a)	Describe the climate of the service area of the supplier.	System Description	Section 3.3	Section 3.3.1. Table 3-1.
10631(a)	Indicate the current population of the service area.	System Description and Baselines and Targets	Sections 3.4 and 5.4	Section 3.4.1. Table 3-2.
10631(a)	Provide population projections for 2020, 2025, 2030, and 2035.	System Description	Section 3.4	Section 3.4.1. Table 3-2.
10631(a)	Describe other demographic factors affecting the supplier's water management planning.	System Description	Section 3.4	Section 3.4.2.
10631(b)	Identify and quantify the existing and planned sources of water available for 2015, 2020, 2025, 2030, and 2035.	System Supplies	Chapter 6	Section 6. Table 6-1.
10631(b)	Indicate whether groundwater is an existing or planned source of water available to the supplier.	System Supplies	Section 6.2	Section 6.2.
10631(b)(1)	Indicate whether a groundwater management plan has been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	System Supplies	Section 6.2.2	Section 6.2.2.
10631(b)(2)	Describe the groundwater basin.	System Supplies	Section 6.2.1	Section 6.2.3.
10631(b)(2)	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 6.2.2	Section 6.2.1.
10631(b)(2)	For unadjudicated basins, indicate whether or not the department has identified the basin as overdrafted, or projected to become	System Supplies	Section 6.2.3	Section 6.2.1.

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	overdrafted. Describe efforts by the supplier to eliminate the long-term overdraft condition.			
10631(b)(3)	Provide a detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years	System Supplies	Section 6.2.4	Section 6.2.4. Table 6-3.
10631(b)(4)	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	System Supplies	Sections 6.2 and 6.9	Section 6.2.3. Table 6-2.
10631(c)(1)	Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage.	Water Supply Reliability Assessment	Section 7.1	Section 8.1.
10631(c)(1)	Provide data for an average water year, a single dry water year, and multiple dry water years	Water Supply Reliability Assessment	Section 7.2	Section 7.3. Tables 7-3, 7-4, 7-5.
10631(c)(2)	For any water source that may not be available at a consistent level of use, describe plans to supplement or replace that source.	Water Supply Reliability Assessment	Section 7.1	Section 8.1.
10631(d)	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	System Supplies	Section 6.7	Section 6.7.1.
10631(e)(1)	Quantify past, current, and projected water use, identifying the uses among water use sectors.	System Water Use	Section 4.2	Section 4.2. Table 4-1.
10631(e)(3)(A)	Report the distribution system water loss for the most recent 12-month period available.	System Water Use	Section 4.3	Section 4.3. Table 4-2.
10631(f)(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	Sections 9.2 and 9.3	Section 9.1.
10631(f)(2)	Wholesale suppliers shall describe specific demand management measures listed in code, their distribution system asset management program, and supplier assistance program.	Demand Management Measures	Sections 9.1 and 9.3	Not Applicable
10631(g)	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 multiple-dry years.	System Supplies	Section 6.8	Section 7.4.
10631(h)	Describe desalinated water project opportunities for long-term supply.	System Supplies	Section 6.6	Section 6.6.
10631(i)	CUWCC members may submit their 2013-2014 CUWCC BMP annual reports in lieu of, or in addition to, describing the DMM implementation in their UWMPs. This option is only allowable if the supplier has been	Demand Management Measures	Section 9.5	Section 9.3.

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	found to be in full compliance with the CUWCC MOU.			
10631(j)	Retail suppliers will include documentation that they have provided their wholesale supplier(s) – if any - with water use projections from that source.	System Supplies	Section 2.5.1	Not Applicable- No wholesale supplier
10631(j)	Wholesale suppliers will include documentation that they have provided their urban water suppliers with identification and quantification of the existing and planned sources of water available from the wholesale to the urban supplier during various water year types.	System Supplies	Section 2.5.1	Not Applicable
10631.1(a)	Include projected water use needed for lower income housing projected in the service area of the supplier.	System Water Use	Section 4.5	Section 4.5. Table 4-4.
10632(a) and 10632(a)(1)	Provide an urban water shortage contingency analysis that specifies stages of action and an outline of specific water supply conditions at each stage.	Water Shortage Contingency Planning	Section 8.1	Section 8.2. Table 8-1.
10632(a)(2)	Provide an estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency.	Water Shortage Contingency Planning	Section 8.9	Section 8.10. Table 8-5.
10632(a)(3)	Identify actions to be undertaken by the urban water supplier in case of a catastrophic interruption of water supplies.	Water Shortage Contingency Planning	Section 8.8	Section 8.9.
10632(a)(4)	Identify mandatory prohibitions against specific water use practices during water shortages.	Water Shortage Contingency Planning	Section 8.2	Section 8.3. Table 8-2.
10632(a)(5)	Specify consumption reduction methods in the most restrictive stages.	Water Shortage Contingency Planning	Section 8.4	Section 8.5. Table 8-3.
10632(a)(6)	Indicated penalties or charges for excessive use, where applicable.	Water Shortage Contingency Planning	Section 8.3	Section 8.4.
10632(a)(7)	Provide an analysis of the impacts of each of the actions and conditions in the water shortage contingency analysis on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts.	Water Shortage Contingency Planning	Section 8.6	Section 8.7.
10632(a)(8)	Provide a draft water shortage contingency resolution or ordinance.	Water Shortage Contingency Planning	Section 8.7	Section 8.8. Appendix G.
10632(a)(9)	Indicate a mechanism for determining actual reductions in water use pursuant to the water shortage contingency analysis.	Water Shortage Contingency Planning	Section 8.5	Section 8.6.

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10633	For wastewater and recycled water, coordinate with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.1	Section 6.5.1.
10633(a)	Describe the wastewater collection and treatment systems in the supplier's service area. Include quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.	System Supplies (Recycled Water)	Section 6.5.2	Section 6.5.2. Table 6-5 and 6-6.
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 6.5.2.2	Section 6.5.2. Table 6-5 and 6-6.
10633(c)	Describe the recycled water currently being used in the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.3 and 6.5.4	Section 6.5.4.
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 6.5.4	Section 6.5.4.
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 a description of the actual use of recycled water in comparison to uses previously projected.	System Supplies (Recycled Water)	Section 6.5.4	Section 6.5.4. Table 6-7.
10633(f)	Describe the actions which 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 6.5.5	Section 6.5.5. Table 6-9.
10633(g)	Provide a plan for optimizing the use of recycled water in the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.5	Section 6.5.5.
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 7.1	Section 6.2.2.2
10635(a)	Assess the water supply reliability during normal, dry, and multiple dry water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years.	Water Supply Reliability Assessment	Section 7.3	Section 7.3. Tables 7-3, 7-4 and 7-5.
10635(b)	Provide supporting documentation that Water Shortage Contingency Plan has been, or will be, provided to any city or county within which it provides water, no later than 60 days after the submission of the plan to DWR.	Plan Adoption, Submittal, and Implementation	Section 10.4.4	Section 8.8.
10642	Provide supporting documentation that the water supplier has encouraged active	Plan Preparation	Section 2.5.2	Section 2.2. Table 2-4.

Appendix A Checklist

	involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan.			
10642	Provide supporting documentation that the urban water supplier made the plan available for public inspection, published notice of the public hearing, and held a public hearing about the plan.	Plan Adoption, Submittal, and Implementation	Sections 10.2.2, 10.3, and 10.5	Section 2.3. Table 2-5. Appendix B.
10642	The water 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	Sections 10.2.1	Appendix B.
10642	Provide supporting documentation that the plan has been adopted as prepared or modified.	Plan Adoption, Submittal, and Implementation	Section 10.3.1	Appendix C.
10644(a)	Provide supporting documentation that the urban water supplier has submitted this UWMP to the California State Library.	Plan Adoption, Submittal, and Implementation	Section 10.4.3	Appendix C.
10644(a)(1)	Provide supporting documentation that the urban water supplier has submitted this 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 10.4.4	Section 2.3. Table 2-5. Appendix B.
10644(a)(2)	The plan, or amendments to the plan, submitted to the department shall be submitted electronically.	Plan Adoption, Submittal, and Implementation	Sections 10.4.1 and 10.4.2	Section 10.4.1
10645	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the supplier has or will make the plan available for public review during normal business hours.	Plan Adoption, Submittal, and Implementation	Section 10.5	Appendix B.

Appendix B: Public Notices



SCOTTS VALLEY
WATER DISTRICT

March 1, 2016

Chuck Comstock
Interim City Manager
City of Scotts Valley
1 Civic Center Drive
Scott Valley, CA 95066

Re: 2015 Urban Water Management Plan Update

Dear Mr. Comstock:

The Scotts Valley Water District (SVWD) is undertaking review, update and revision of its Urban Water Management Plan (UWMP) as required by State law. The UWMP is a planning document in which water suppliers evaluate and compare water supply and reliability to existing and projected demands. The 2015 UWMP will include an update of anticipated water demands in the District service area.

SVWD is encouraging participation by land use agencies, water use agencies, and other interested parties in the UWMP. SVWD would like to extend to your agency an opportunity to meet with us to go over the various elements of the UWMP, including assumptions about future population, future water demand, future water supplies, and upcoming water conservation programs.

We anticipate that a draft UWMP will be available for public review early April 2016, and a public hearing will be held in May 2016, prior to adoption of the UWMP.

If your agency would like to learn more about the Urban Water Management Plan, please contact Piret Harmon, General Manager, (831) 600-1902, pharmon@svwd.org.

Sincerely,

Piret Harmon
General Manager



SCOTTS VALLEY
WATER DISTRICT

March 1, 2016

Susan A. Mauriello
County Administrative Officer
County of Santa Cruz
701 Ocean Street Room 520
Santa Cruz, CA 95060

Re: 2015 Urban Water Management Plan Update

Dear Ms. Mauriello:

The Scotts Valley Water District (SVWD) is undertaking review, update and revision of its Urban Water Management Plan (UWMP) as required by State law. The UWMP is a planning document in which water suppliers evaluate and compare water supply and reliability to existing and projected demands. The 2015 UWMP will include an update of anticipated water demands in the District service area.

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Sincerely,

Piret Harmon
General Manager



SCOTTS VALLEY
WATER DISTRICT

March 1, 2016

Daniel Grebil
Fire Chief
Scotts Valley Fire District
7 Erba Lane
Scotts Valley, CA 95066

Re: 2015 Urban Water Management Plan Update

Dear Mr. Grebil:

The Scotts Valley Water District (SVWD) is undertaking review, update and revision of its Urban Water Management Plan (UWMP) as required by State law. The UWMP is a planning document in which water suppliers evaluate and compare water supply and reliability to existing and projected demands. The 2015 UWMP will include an update of anticipated water demands in the District service area.

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Sincerely,

Piret Harmon
General Manager



SCOTTS VALLEY
WATER DISTRICT

March 1, 2016

Brian Lee
District Manager
San Lorenzo Valley Water District
13060 Highway 9
Boulder Creek, CA 95006

Re: 2015 Urban Water Management Plan Update

Dear Mr. Lee:

The Scotts Valley Water District (SVWD) is undertaking review, update and revision of its Urban Water Management Plan (UWMP) as required by State law. The UWMP is a planning document in which water suppliers evaluate and compare water supply and reliability to existing and projected demands. The 2015 UWMP will include an update of anticipated water demands in the District service area.

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Sincerely,

Piret Harmon
General Manager



SCOTTS VALLEY
WATER DISTRICT

March 1, 2016

Mike Romberger
President/CEO
Mt. Hermon
PO Box 413
Mt. Hermon, CA 95041-0413

Re: 2015 Urban Water Management Plan Update

Dear Mr. Romberger:

The Scotts Valley Water District (SVWD) is undertaking review, update and revision of its Urban Water Management Plan (UWMP) as required by State law. The UWMP is a planning document in which water suppliers evaluate and compare water supply and reliability to existing and projected demands. The 2015 UWMP will include an update of anticipated water demands in the District service area.

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If your agency would like to learn more about the Urban Water Management Plan, please contact Piret Harmon, General Manager, (831) 600-1902, pharmon@svwd.org.

Sincerely,

Piret Harmon
General Manager



SCOTTS VALLEY
WATER DISTRICT

March 1, 2016

Rosemary Menard
Director of Water Department
City of Santa Cruz Water Department
212 Locust Street STe A
Santa Cruz, CA 95060

Re: 2015 Urban Water Management Plan Update

Dear Ms. Menard:

The Scotts Valley Water District (SVWD) is undertaking review, update and revision of its Urban Water Management Plan (UWMP) as required by State law. The UWMP is a planning document in which water suppliers evaluate and compare water supply and reliability to existing and projected demands. The 2015 UWMP will include an update of anticipated water demands in the District service area.

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If your agency would like to learn more about the Urban Water Management Plan, please contact Piret Harmon, General Manager, (831) 600-1902, pharmon@svwd.org.

Sincerely,

Piret Harmon
General Manager



SCOTTS VALLEY
WATER DISTRICT

March 1, 2016

PatMcCormick
Executive Director
Santa Cruz LAFCO
701 Ocean Street #318D
Santa Cruz, CA 95060

Re: 2015 Urban Water Management Plan Update

Dear Mr. McCormick:

The Scotts Valley Water District (SVWD) is undertaking review, update and revision of its Urban Water Management Plan (UWMP) as required by State law. The UWMP is a planning document in which water suppliers evaluate and compare water supply and reliability to existing and projected demands. The 2015 UWMP will include an update of anticipated water demands in the District service area.

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If your agency would like to learn more about the Urban Water Management Plan, please contact Piret Harmon, General Manager, (831) 600-1902, pharmon@svwd.org.

Sincerely,

Piret Harmon
General Manager



SCOTTS VALLEY
WATER DISTRICT

March 1, 2016

RonDuncan
General Manager
Soquel Creek Water District
P O Box 1550
Capitola, CA 95010

Re: 2015 Urban Water Management Plan Update

Dear Mr. Duncan:

The Scotts Valley Water District (SVWD) is undertaking review, update and revision of its Urban Water Management Plan (UWMP) as required by State law. The UWMP is a planning document in which water suppliers evaluate and compare water supply and reliability to existing and projected demands. The 2015 UWMP will include an update of anticipated water demands in the District service area.

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If your agency would like to learn more about the Urban Water Management Plan, please contact Piret Harmon, General Manager, (831) 600-1902, pharmon@svwd.org.

Sincerely,

Piret Harmon
General Manager

Scotts Valley Water District
NOTICE OF PUBLIC HEARING
2015 URBAN WATER MANAGEMENT PLAN

NOTICE IS HEREBY GIVEN that on Thursday, June 9, 2016 in the District Board Room at 2 Civic Center Drive, Scotts Valley, CA 95066, the Scotts Valley Water District (SVWD) Board of Directors will conduct a public hearing pursuant to California Water Code sections 10642 and 10608.26 to consider and receive comments and input on the *2015 Urban Water Management Plan for Scotts Valley Water District* to allow community input regarding the District's implementation plan for complying with Part 2.55 of the Water Code, to consider the potential economic impacts of the implementation plan, and to provide information on SVWD's baseline water use, water use targets, and implementation plan required by the Water Conservation Act of 2009 (Water Code section 10608.20(b)).

A copy of the *Draft 2015 Urban Water Management Plan for Scotts Valley Water District* will be available for public review on or before May 17, 2016 Monday through Friday, during normal business hours in the District Offices located at 2 Civic Center Drive, Scotts Valley, CA 95066. In addition, an electronic version of the plan will be accessible at www.svwd.org.

In summary, the *2015 Urban Water Management Plan for Scotts Valley Water District* has been developed for implementation in accordance with the requirements of the California Urban Water Management Planning Act, Water Code sections 10610 through 10657, and the Water Conservation Act of 2009, Water Code sections 10608 through 10608.64. Public input from diverse social, cultural and economic elements of the population is encouraged and will be considered as part of the urban water management planning process. Input from and coordination with the County of Santa Cruz and other public agencies is also encouraged and will be considered (Water Code §§ 10620(d) (2); 10621(b); 10642.). Any written comments regarding the *Draft 2015 Urban Water Management Plan for Scotts Valley Water District* should be submitted by the close of business on June 8, 2016 to the address set forth above, attention Piret Harmon, General Manager. Public comments can also be made at the public hearing at the time and place first set forth above. Upon conclusion of the public hearing, SVWD Board of Directors may revise, change, modify, and/or adopt the *2015 Urban Water Management Plan*. Questions regarding the public hearing or the plan should be directed to Piret Harmon, General Manager at 831-600-1902. If you are disabled in any way and need accommodation to participate in the public hearing, please call the District Office at 831-600-1919 for assistance at least three (3) working days prior to the hearing so the necessary arrangements can be made.

Date: May 23, 2015
May 30, 2016

Appendix C: UWMP Adoption Resolution

RESOLUTION No. 04-16

RESOLUTION OF THE BOARD OF DIRECTORS
OF THE SCOTTS VALLEY WATER DISTRICT
ADOPTING THE 2015 URBAN WATER MANAGEMENT PLAN
FOR THE SCOTTS VALLEY WATER DISTRICT

WHEREAS:

1. The California Urban Water Management Planning Act , Water Code section 10610 et seq, requires every urban water supplier to prepare an Urban Water Management Plan (UWMP), the primary function of which is to describe and evaluate reasonable and practical efficient water uses and conservation activities;
2. The California Urban Water Management Planning Act requires periodic review and update of the UWMP every five years;
3. The Water Conservation Bill of 2009, (SBX7-7) requires every urban water supplier as part of its UWMP to reduce per capita water consumption 20% by the year 2020 and provide baseline targets in the 2015 UWMP.

AND WHEREAS:

1. The Scotts Valley Water District Board of Directors has reviewed, discussed and considered the 2015 UWMP and has determined that the 2015 UWMP is consistent with the California Urban Water Management Planning Act and the California Department of Water Resources 2015 Urban Water Management Plan Guidebook for Urban Water Suppliers (January 2016) and an accurate representation of the water system, current and projected water uses; current and projected sources of water available to the District; water supply reliability, water shortage contingency planning and demand management measures;
2. On May 17, 2016 the Scotts Valley Water District issued a notice of public hearing (in accordance with Government code section 6066) and availability of the Draft 2015 UWMP for review and comment;
3. On June 9, 2016 the Board of Directors of the Scotts Valley Water District conducted a public hearing pursuant to California Water Code sections 10642 and 10608.26 to consider and receive comments and input on the Draft 2015 UWMP for Scotts Valley Water District.

THEREFORE BE IT RESOLVED THAT:

1. The Scotts Valley Water District Board of Directors hereby adopts the 2015 UWMP for the Scotts Valley Water District and authorizes it to be filed with the California Department of Water Resources.

RESOLUTION No. 04-16

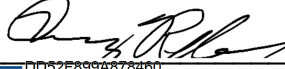
PASSED AND ADOPTED this 09 day of June 2016, by the following vote:

AYES: Hodgin, Kannegaard, Reber, Perri and Stiles.

NOES: None.

ABSENT: None.

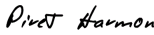
DocuSigned by:



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Danny Reber, President
Board of Directors

DocuSigned by:



1C230EFF40B44D1...

Attest:

Piret Harmon, General Manager

Appendix D: AWWA Method 2015 Water Loss Calculation



AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0
American Water Works Association
Copyright © 2014, All Rights Reserved.

[?](#) Click to access definition
[+](#) Click to add a comment

Water Audit Report for: **Scotts Valley Water District (CA4410013)**
Reporting Year: **2015** **7/2014 - 6/2015**

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: MILLION GALLONS (US) PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

WATER SUPPLIED

Volume from own sources: [+](#) [?](#) [7](#) 376.245 MG/Yr
Water imported: [+](#) [?](#) [n/a](#) 0.000 MG/Yr
Water exported: [+](#) [?](#) [n/a](#) 0.000 MG/Yr

WATER SUPPLIED: 385.892 MG/Yr

Master Meter and Supply Error Adjustments

Pcnt: [+](#) [?](#) [7](#) -2.50% [●](#) [○](#) Value: [+](#) [?](#) [n/a](#) MG/Yr
[+](#) [?](#) [n/a](#) 0.000 MG/Yr
[+](#) [?](#) [n/a](#) 0.000 MG/Yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

AUTHORIZED CONSUMPTION

Billed metered: [+](#) [?](#) [8](#) 343.851 MG/Yr
Billed unmetered: [+](#) [?](#) [n/a](#) 0.000 MG/Yr
Unbilled metered: [+](#) [?](#) [10](#) 0.000 MG/Yr
Unbilled unmetered: [+](#) [?](#) [7](#) 4.824 MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

AUTHORIZED CONSUMPTION: 348.675 MG/Yr

Click here: [?](#)
for help using option
buttons below

Pcnt: [+](#) [?](#) [1.25%](#) [●](#) [○](#) Value: [+](#) [?](#) [n/a](#) MG/Yr

Use buttons to select
percentage of water supplied
OR
value

WATER LOSSES (Water Supplied - Authorized Consumption)

37.218 MG/Yr

Apparent Losses

Unauthorized consumption: [+](#) [?](#) [n/a](#) 0.965 MG/Yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies: [+](#) [?](#) [6](#) 7.915 MG/Yr
Systematic data handling errors: [+](#) [?](#) [6](#) 0.860 MG/Yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: 9.739 MG/Yr

Pcnt: [+](#) [?](#) [0.25%](#) [●](#) [○](#) Value: [+](#) [?](#) [n/a](#) MG/Yr

[+](#) [?](#) [2.25%](#) [●](#) [○](#) [+](#) [?](#) [n/a](#) MG/Yr
[+](#) [?](#) [0.25%](#) [●](#) [○](#) [+](#) [?](#) [n/a](#) MG/Yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: [?](#) **27.479 MG/Yr**

WATER LOSSES: 37.218 MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: 42.041 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains: [+](#) [?](#) [8](#) 53.6 miles
Number of active AND inactive service connections: [+](#) [?](#) [7](#) 3,797
Service connection density: [?](#) **71** conn./mile main

Are customer meters typically located at the curbstop or property line? [?](#) **Yes**

Average length of customer service line: [+](#) [?](#) (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure: [+](#) [?](#) [8](#) 110.0 psi

COST DATA

Total annual cost of operating water system: [+](#) [?](#) [10](#) \$5,429,168 \$/Year
Customer retail unit cost (applied to Apparent Losses): [+](#) [?](#) [7](#) \$13.92 \$/1000 gallons (US)
Variable production cost (applied to Real Losses): [+](#) [?](#) [4](#) \$430.00 \$/Million gallons ☒ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 68 out of 100 *****

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

- 1: Volume from own sources
- 2: Variable production cost (applied to Real Losses)
- 3: Customer metering inaccuracies

Appendix E: SBX7-7 Compliance Tables

SB X7-7 Table 0: Units of Measure Used in UWMP*

(select one from the drop down list)

Acre Feet

**The unit of measure must be consistent with Table 2-3*

NOTES:

SB X7-7 Table-1: Baseline Period Ranges			
Baseline	Parameter	Value	Units
10- to 15-year baseline period	2008 total water deliveries	1,670	Acre Feet
	2008 total volume of delivered recycled water	182	Acre Feet
	2008 recycled water as a percent of total deliveries	10.92%	Percent
	Number of years in baseline period ^{1, 2}	10	Years
	Year beginning baseline period range	1995	
	Year ending baseline period range ³	2004	
5-year baseline period	Number of years in baseline period	5	Years
	Year beginning baseline period range	2003	
	Year ending baseline period range ⁴	2007	
¹ If the 2008 recycled water percent is less than 10 percent, then the first baseline period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first baseline period is a continuous 10- to 15-year period.			
² The Water Code requires that the baseline period is between 10 and 15 years. However, DWR recognizes that some water suppliers may not have the minimum 10 years of baseline data.			
³ The ending year must be between December 31, 2004 and December 31, 2010.			
⁴ The ending year must be between December 31, 2007 and December 31, 2010.			
NOTES: Per SVWD meter records for potable water delivery			

SB X7-7 Table 2: Method for Population Estimates**Method Used to Determine Population**
(may check more than one)☐**1. Department of Finance (DOF)**DOF Table E-8 (1990 - 2000) and (2000-2010) and
DOF Table E-5 (2011 - 2015) when available☒**2. Persons-per-Connection Method**☐**3. DWR Population Tool**☒**4. Other**

DWR recommends pre-review

NOTES: SVWD commissioned Association of Monterey Bay Area Governments to provide a 2010 SVWD service area population estimate based on 2010 Census data since SVWD service area is not

SB X7-7 Table 3: Service Area Population

Year		Population
10 to 15 Year Baseline Population		
Year 1	1995	8,797
Year 2	1996	8,994
Year 3	1997	9,191
Year 4	1998	9,388
Year 5	1999	9,585
Year 6	2000	9,782
Year 7	2001	9,835
Year 8	2002	9,887
Year 9	2003	9,940
Year 10	2004	9,993
Year 11		
Year 12		
Year 13		
Year 14		
Year 15		
5 Year Baseline Population		
Year 1	2003	9,940
Year 2	2004	9,993
Year 3	2005	10,046
Year 4	2006	10,098
Year 5	2007	10,151
2015 Compliance Year Population		
2015		10,774
NOTES: 2015 population calculated by using number of accounts and 2010 census population to estimate persons per account and multiplying by number of accounts in 2015		

SB X7-7 Table 4: Annual Gross Water Use *

Baseline Year <i>Fm SB X7-7 Table 3</i>		Volume Into Distribution System <i>This column will remain blank until SB X7-7 Table 4-A is completed.</i>	Deductions				Annual Gross Water Use
			Exported Water	Change in Dist. System Storage (+/-)	Indirect Recycled Water <i>This column will remain blank until SB X7-7 Table 4-B is completed.</i>	Water Delivered for Agricultural Use	
10 to 15 Year Baseline - Gross Water Use							
Year 1	1995	1,535	-		-		- 1,535
Year 2	1996	1,831			-		- 1,831
Year 3	1997	2,052			-		- 2,052
Year 4	1998	1,909			-		- 1,909
Year 5	1999	1,878			-		- 1,878
Year 6	2000	1,952			-		- 1,952
Year 7	2001	2,007			-		- 2,007
Year 8	2002	2,022			-		- 2,022
Year 9	2003	2,078			-		- 2,078
Year 10	2004	1,975			-		- 1,975
Year 11	0	-			-		- -
Year 12	0	-			-		- -
Year 13	0	-			-		- -
Year 14	0	-			-		- -
Year 15	0	-			-		- -
10 - 15 year baseline average gross water use							1,924
5 Year Baseline - Gross Water Use							
Year 1	2003	2,078			-		- 2,078
Year 2	2004	1,975			-		- 1,975
Year 3	2005	1,613			-		- 1,613
Year 4	2006	1,834			-		- 1,834
Year 5	2007	1,764			-		- 1,764
5 year baseline average gross water use							1,853
2015 Compliance Year - Gross Water Use							
2015		1,133	-		-		- 1,133
* NOTE that the units of measure must remain consistent throughout the UWMP, as reported in Table 2-3							
NOTES:							

SB X7-7 Table 4-A: Volume Entering the Distribution System(s)

Complete one table for each source.

Name of Source		Groundwater		
This water source is:				
☒	The supplier's own water source			
☐	A purchased or imported source			
Baseline Year <i>Fm SB X7-7 Table 3</i>	Volume Entering Distribution System	Meter Error Adjustment* <i>Optional (+/-)</i>	Corrected Volume Entering Distribution System	
10 to 15 Year Baseline - Water into Distribution System				
Year 1	1995	1534.6		1,535
Year 2	1996	1830.5		1,831
Year 3	1997	2051.9		2,052
Year 4	1998	1908.9		1,909
Year 5	1999	1878.2		1,878
Year 6	2000	1952.0		1,952
Year 7	2001	2007.2		2,007
Year 8	2002	2021.8		2,022
Year 9	2003	2078.3		2,078
Year 10	2004	1975.2		1,975
Year 11	0			-
Year 12	0			-
Year 13	0			-
Year 14	0			-
Year 15	0			-
5 Year Baseline - Water into Distribution System				
Year 1	2003	2078.3		2,078
Year 2	2004	1975.2		1,975
Year 3	2005	1612.6		1,613
Year 4	2006	1834.3		1,834
Year 5	2007	1763.9		1,764
2015 Compliance Year - Water into Distribution System				
2015	1,133			1,133
<i>* Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document</i>				
NOTES: Water Year is Sept 30 to Oct 1				

SB X7-7 Table 6: Gallons per Capita per Day*Summary From Table SB X7-7 Table 5*

10-15 Year Baseline GPCD	180
5 Year Baseline GPCD	165
2015 Compliance Year GPCD	94

NOTES:

SB X7-7 Table 7: 2020 Target Method*Select Only One*

Target Method		Supporting Documentation
☒	Method 1	SB X7-7 Table 7A
☐	Method 2	SB X7-7 Tables 7B, 7C, and 7D <i>Contact DWR for these tables</i>
☐	Method 3	SB X7-7 Table 7-E
☐	Method 4	Method 4 Calculator

NOTES:

SB X7-7 Table 7-A: Target Method 1
20% Reduction

10-15 Year Baseline GPCD	2020 Target GPCD
180	144

NOTES:

SB X7-7 Table 7-F: Confirm Minimum Reduction for 2020 Target

5 Year Baseline GPCD <i>From SB X7-7 Table 5</i>	Maximum 2020 Target ¹	Calculated 2020 Target ²	Confirmed 2020 Target
165	157	144	144

¹ Maximum 2020 Target is 95% of the 5 Year Baseline GPCD
 Target is calculated based on the selected Target Method, see SB X7-7 Table 7 and
 corresponding tables for agency's calculated target.

NOTES:

² 2020

SB X7-7 Table 8: 2015 Interim Target GPCD

Confirmed 2020 Target <i>Fm SB X7-7 Table 7-F</i>	10-15 year Baseline GPCD <i>Fm SB X7-7 Table 5</i>	2015 Interim Target GPCD
144	180	162

NOTES:

SB X7-7 Table 9: 2015 Compliance

Actual 2015 GPCD	2015 Interim Target GPCD	Optional Adjustments <i>(in GPCD)</i>					2015 GPCD <i>(Adjusted if applicable)</i>	Did Supplier Achieve Targeted Reduction for 2015?
		Enter "0" if Adjustment Not Used			TOTAL Adjustments	Adjusted 2015 GPCD		
		Extraordinary Events	Weather Normalization	Economic Adjustment				
94	162	<i>From Methodology 8 (Optional)</i>	<i>From Methodology 8 (Optional)</i>	<i>From Methodology 8 (Optional)</i>	-	94	94	YES

NOTES:

Appendix F: SVWD GWMP

Scotts Valley Water District
Scotts Valley, California

SCOTTS VALLEY
GROUNDWATER MANAGEMENT PLAN
(AB 3030)

July 1994

David Keith Todd
Consulting Engineers, Inc.
Berkeley, California

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EXECUTIVE SUMMARY

The Scotts Valley Water District (SVWD) holds the primary responsibility for the management and supply of water to the Scotts Valley area of Santa Cruz County. In recognition of this responsibility, SVWD has directed a Water Resource Management Plan since 1983. On January 1, 1993, California Assembly Bill 3030 (AB 3030) was codified into law. This law encourages local water agencies to manage groundwater resources within their jurisdictions and outlines guidelines for a groundwater management plan. In accordance with these guidelines, SVWD held a public hearing on September 9, 1993 to declare their intention to develop a groundwater management plan.

This report outlines the proposed Groundwater Management Plan for SVWD, and addresses two major areas of concern in Scotts Valley: (1) management of groundwater supplies to meet present and future demands, and to provide for downstream water rights and instream uses; and (2) protection of water quality and remediation of existing groundwater contamination. The report also includes a brief discussion of the hydrogeology of Scotts Valley. Major conclusions and recommendations are presented. If this report is adopted in accordance with the AB 3030 law as the Groundwater Management Plan for Scotts Valley Water District, the conclusions and recommendations would serve as guidelines for groundwater management by SVWD.

Major findings and recommendations of the report are summarized briefly in the paragraphs below, followed by a complete listing of the Conclusions and Recommendations.

Hydrogeology

The hydrogeologic investigations have revealed that the areal extent, thickness, and depth of the local aquifers are strongly affected by erosion and geologic folding and faulting, resulting in a complex and varied setting for groundwater storage and flow. As a consequence, groundwater and storage available to a given well could be limited. In such a situation, effective groundwater basin management must be based on extensive groundwater exploration and comprehensive but detailed hydrogeologic investigations. Accordingly, the Groundwater Management Plan recommends that groundwater exploration efforts and hydrogeologic studies should be undertaken in cooperation with the neighboring San Lorenzo Valley Water District (SLVWD) and Santa Cruz County to more fully evaluate the Scotts Valley groundwater basin as a whole.

Groundwater Supply

The groundwater supply section includes a summary of the current groundwater supply status of the basin. Although the basin is not in overdraft, localized groundwater level declines have resulted in adverse effects, including drying up of shallow private wells, loss of production and efficiency in wells, and locally decreased groundwater quality. Along with groundwater level declines, groundwater storage in the developed portion of the basin declined between April 1986 and April 1994 by an estimated 550 to 600 acre-feet per year (AFY), or about 10 percent of estimated total groundwater storage. Although the recent 1992-1993 season was wet, it resulted only in a moderation of the extent and severity of localized groundwater level declines. However, the major natural drain for the basin, Bean Creek, responded to the wet 1992-1993 season with increased baseflow during the summer of 1993.

The report also updates groundwater production in the basin. About 70 percent of the total groundwater production is metered, while the remainder had to be estimated, including groundwater production by landscape irrigators, private water purveyors, commercial and industrial firms, and domestic users. The total estimated groundwater production is 3,460 AFY, not accounting for return flows to the groundwater basin via percolation from irrigation and landscaping ponds, leakage from pipelines, and percolation from septic tanks. The perennial yield for the Scotts Valley groundwater basin had been estimated previously to be 4,200 AFY. Accordingly, estimated groundwater production amounts to over 80 percent of the estimated perennial yield. In addition, the preponderance of pumpage is concentrated in a small portion of the groundwater basin.

In response to concerns over the long-term groundwater supply, the report evaluates current groundwater basin management and makes recommendations for future action. The report summarizes the SVWD monitoring program, finding it to be comprehensive, with an appropriate focus on the developed portions of the basin. In addition, the existing Santa Margarita groundwater basin computer model is evaluated. Although requiring periodic updating and refinement, the model can be used to observe effects of proposed well locations and pumping configurations, and potential recharge projects, consequently aiding in groundwater management. In addition, the model can be supplemented by other computer programs for use in simulating migration of dissolved contaminants in groundwater.

The Groundwater Management Plan notes that the current estimate of perennial yield is an annual average value. Given the variability of rainfall and recharge in recent years, the perennial yield should be evaluated to provide more specific information on the effect of varied rainfall on groundwater recharge. Recommendations also are provided for more accurate evaluation of

basin-wide groundwater storage in light of increased knowledge of the hydrogeology of the area.

The efforts of SVWD to redistribute its pumpage have not been sufficient to mitigate localized groundwater declines. Accordingly, SVWD efforts should be supplemented by actions of SVWD and others to redistribute pumpage, minimize groundwater losses, and to initiate groundwater replenishment programs. Six conceptual projects for direct artificial recharge or wastewater irrigation are presented with possible yields ranging from 20 to 200 AFY each. More than one such project would be needed to mitigate the current groundwater level declines, and additional conservation, management, and replenishment efforts would be required for any additional increase in local water demands. Replenishment projects should be planned and implemented in the context of basin-wide groundwater resource management, and coordinated with SLVWD, Santa Cruz County, and major groundwater producers. Accordingly, roundtable meetings are recommended for the major groundwater producers in Scotts Valley to discuss and coordinate means to mitigate groundwater level decline problems. The report also recommends continued efforts toward water conservation and wastewater reclamation and reuse.

Groundwater Quality

The portion of the report addressing groundwater quality presents the regulatory framework for the identification and remediation of contamination problems, discusses existing contamination, and reviews groundwater contamination prevention programs. Recommendations are presented for specific action by SVWD and for cooperation with other agencies.

In brief, the agencies with regulatory responsibility for groundwater contamination in Scotts Valley are the United States Environmental Protection Agency (USEPA), the Department of Toxic Substance Control of the California Environmental Protection Agency (Cal-EPA), Regional Water Quality Control Board (RWQCB), and Scotts Valley Fire Protection District. SVWD does not have regulatory authority for the prevention, identification, or remediation of groundwater contamination. SVWD is responsible for monitoring of its water supply and provision of water satisfying state and federal drinking water standards. In addition, it holds responsibility for enforcement of standards for construction, abandonment, and destruction of water supply wells.

Areas of known groundwater contamination are described briefly in the report, including the benzene plume in the Camp Evers area, three problems in the El Pueblo Road area, and the Watkins-Johnson plume. Ten possible sources of the benzene contamination in Camp Evers have been investigated by the RWQCB. Of these, three service stations along Mount Hermon Road have been identified as possible

sources. Cal-EPA is the lead agency overseeing the investigation and remediation of contamination in the El Pueblo Road area, and is in the process of identifying possible sources of the trichloroethene (TCE) and chlorobenzene problems. Of seven possible sources, one site has been identified as a possible source of TCE contamination. A remedial investigation and feasibility study for the site has been prepared, while a remedial action plan remains to be drafted and approved. The USEPA is overseeing remediation at the Watkins-Johnson site, which has reduced groundwater contamination to within site boundaries.

The existence of potential sources of groundwater contamination in Scotts Valley are identified, including 64 facilities using hazardous materials and 37 active underground storage tanks (USTs), of which 22 are double-walled and meet new tank standards. Septic tanks also are potential sources of contamination.

Given the existence of contamination and the susceptibility of local aquifers to contamination, the report also reviews means to prevent groundwater contamination problems. These include well construction, abandonment, and destruction; hazardous materials management; regulation of underground storage tanks; sewerage of areas dependent on septic tanks; and city planning and zoning. In terms of standards for well construction, abandonment, and destruction, SVWD is encouraged to strengthen its enforcement of standards. This would involve updating the well inventory database, tracking the status of wells within SVWD, establishing a notification system to alert private groundwater users of contamination problems, and implementing well construction standards to prevent cross-contamination of aquifers.

In accordance with its responsibility to provide water satisfying state and federal drinking water standards, SVWD should continue its policy of siting new wells in areas and aquifers that are less susceptible to contamination. SVWD also should consider installation of monitor wells sited between possible contamination source areas and major municipal well fields to allow early identification of groundwater contamination problems.

The report notes that no single agency has a regional outlook on groundwater contamination. Given SVWD's existing role in monitoring and managing local water resources and its key role in providing safe drinking water, SVWD can help provide such a regional overview, through cooperation with the regulatory agencies and information sharing.

Conclusions

Hydrogeology

1. The areal extent, thickness, and depth of the local aquifers are strongly affected by erosion and geologic folding and faulting, resulting in a complex and varied setting for groundwater storage and flow. As a consequence, groundwater and storage available to a given well could be limited.
2. Much valuable information is available on the hydrogeology of the margins of the Scotts Valley groundwater basin. However, geologic data are relatively lacking for the central portion of the basin.

Groundwater Supply

3. The water resource monitoring program is comprehensive, with an appropriate focus on the developed portions of the basin.
4. Although the basin is not in overdraft, localized groundwater level declines have resulted in adverse effects, including drying up of shallow private wells, loss of production and efficiency in wells, and a somewhat lower groundwater quality.
5. The wet 1992-1993 season resulted only in a moderation of the extent and severity of localized groundwater level declines.
6. Although affected by recent drought, Bean Creek responded to the wet 1992-1993 season with increased baseflow during the summer of 1993.
7. Perennial yield for the Scotts Valley groundwater basin has been estimated to be 4,200 AFY. This is an annual average value and is relevant to the area of the Scotts Valley groundwater basin.
8. Groundwater storage in the developed portion of the basin has declined between April 1986 and April 1994 by an estimated 550 to 600 AFY, or about 10 percent of estimated total groundwater storage.
9. The Santa Margarita groundwater basin computer model can be used to observe effects of proposed well locations and pumping configurations, consequently aiding in optimization of the distribution of pumping.
10. The model can be supplemented by other computer programs for use in simulating migration of dissolved contaminants in groundwater.

11. About 70 percent of the total estimated groundwater production is metered by SVWD, SLVWD, Watkins-Johnson, and the Mount Hermon Association. Groundwater production was estimated for other groundwater users, including landscape irrigators, private water purveyors, commercial and industrial firms, and domestic users.

12. Total estimated groundwater production is 3,460 AFY, not accounting for return flows to the groundwater basin via percolation from irrigation and landscaping ponds, leakage from pipelines, and percolation from septic tanks.

13. The estimated total groundwater pumpage amounts to over 80 percent of the estimated 4,200 AFY of perennial yield for the Scotts Valley groundwater basin, and is concentrated in the southeast one-quarter of the groundwater basin.

14. The efforts of SVWD to redistribute its pumpage have not been sufficient to mitigate localized groundwater declines. SVWD efforts should be supplemented by actions of SVWD and others to redistribute pumpage, minimize groundwater losses, and to initiate groundwater replenishment programs.

15. More than one replenishment program will be needed to mitigate localized groundwater level declines and to ensure long-term groundwater supply.

16. Six conceptual projects for direct artificial recharge or wastewater irrigation are presented with possible yields ranging from 20 to 200 AFY each.

Groundwater Quality

17. The Scotts Valley Fire Protection District oversees the City of Scotts Valley's hazardous materials management program, implements state regulations of underground storage tanks, oversees monitoring and soil boring installation and destruction, and responds first to a hazardous material release.

18. The RWQCB regulates sites where groundwater contamination occurs from underground tanks or other sources.

19. The Cal-EPA oversees groundwater contamination sites where the potentially responsible party is not known or is not financially solvent.

20. The USEPA oversees sites that are on or proposed for the Superfund list.

21. SVWD does not have regulatory authority for the prevention, identification, or remediation of groundwater contamination. SVWD is responsible for monitoring of its water supply and provision of

water satisfying state and federal drinking water standards.

22. Ten possible sources of the benzene contamination in Camp Evers have been investigated by the RWQCB. Of these, three service stations along Mount Hermon Road have been identified as possible sources.

23. Cal-EPA is the lead agency overseeing the characterization and remediation of contamination in the El Pueblo Road area, and is in the process of identifying possible sources of the TCE and chlorobenzene problems. Of seven possible sources, Scotts Valley Circuits has been identified as a possible source of TCE contamination. A remedial investigation and feasibility study for the site has been prepared; a remedial action plan remains to be drafted and approved.

24. The USEPA is overseeing remediation at the Watkins-Johnson site, which has reduced groundwater contamination to within site boundaries.

25. Prevention of groundwater contamination in Scotts Valley is important because of the susceptibility of aquifers to contamination, difficulty in determining sources of contamination, extended time and high costs to remediate contamination, and added costs of wellhead treatment by water purveyors.

26. Improperly constructed or abandoned wells can provide conduits for downward migration of contaminants from the ground surface.

27. SVWD and Santa Cruz County share responsibility for enforcing standards for permitting, construction, abandonment, and destruction of water supply wells.

28. Sixty-four facilities using hazardous materials exist in Scotts Valley, located mostly along Scotts Valley Drive.

29. Thirty-seven active underground storage tanks have been identified in Scott Valley, of which 22 are double-walled and meet new tank standards.

30. Septic tanks represent other potential sources of contamination.

Recommendations

Hydrogeology

1. Groundwater exploration efforts and hydrogeologic studies should be undertaken in cooperation with SLVWD and Santa Cruz County to more fully evaluate the Scotts Valley groundwater basin as a whole.

Groundwater Supply

2. SVWD should continue data compilation on wells and geology and the program of climatic, surface water, and groundwater monitoring with annual reporting.

3. Groundwater level monitoring by all agencies should be coordinated so that the quarterly measurements occur within a small time period, such as one week.

4. SVWD in cooperation with other agencies should expand data compilation and monitoring as groundwater exploration and production are extended into new areas, or as needed for groundwater replenishment projects or for groundwater contamination investigations or remediation.

5. The perennial yield and groundwater storage of the Scotts Valley groundwater basin should be reevaluated in greater detail.

6. The computer model should be maintained, but revised as additional hydrogeologic data become available.

7. Information on wells and metered groundwater production should be compiled and updated regularly. Groundwater production by large groundwater users should be measured.

8. Following metering of major groundwater producers, consumptive use of groundwater should be analyzed.

9. SVWD should continue its efforts to redistribute its pumpage throughout its service area.

10. Roundtable meetings should be convened by the major groundwater producers to discuss means to analyze and mitigate groundwater level declines.

11. Replenishment projects should be planned and implemented in the context of basin-wide groundwater resource management, and coordinated when appropriate with SLVWD, Santa Cruz County, and major groundwater producers.

12. The conceptual replenishment projects, in addition to others that may be suggested, should be considered in greater depth. Additional investigations would include field work, computer modeling, cost/benefit analysis, and assessment of environmental impacts.

13. SVWD, SLVWD, and other groundwater producers should continue efforts to encourage conservation measures such as low flow plumbing fixtures and drought resistant vegetation.

14. SVWD should continue to work with the City of Scotts Valley to encourage appropriate recycling and reuse of wastewater.

Groundwater Quality

In order to aid in groundwater contamination prevention, SVWD should strengthen its enforcement of standards for construction, abandonment, and destruction of water supply wells, including the following:

15. Continue to update and maintain the well inventory database to include all wells within SVWD boundaries.

16. Conduct a survey to document the status of wells within SVWD boundaries, and to identify both active and destroyed wells.

17. Once the well survey is complete, establish a notification system to alert private groundwater users of contamination problems within the SVWD boundaries.

18. Given the existence of multiple aquifer systems within SVWD, implement well construction standards to prevent cross-contamination of aquifers.

19. Establish and enforce a permitting system for well destructions within the SVWD boundaries and track well destruction in the well database.

20. Establish a program to identify and encourage the proper destruction of abandoned wells within SVWD.

21. In accordance with its responsibility to provide water satisfying state and federal drinking water standards, SVWD should continue its policy of siting new wells in areas and aquifers that are less susceptible to contamination, and should consider installation of monitor wells sited between possible contamination source areas and major municipal well fields to allow early identification of groundwater contamination problems.

Overall, SVWD should encourage and cooperate fully with responsible agencies in the investigation and remediation of

contamination sites, identification of potentially responsible parties, and prevention of groundwater contamination. SVWD also can provide a regional groundwater management overview and can aid in information sharing among agencies. Accordingly, SVWD and other agencies should:

Hazardous Materials Management

- Establish a public/business education program emphasizing the importance of the proper disposal of hazardous materials.
- Institute programs encouraging reduced hazardous material use and waste minimization programs.
- Institute stricter regulations for sites which use hazardous materials.

Underground Storage Tanks

- Develop more stringent local standard for the use, monitoring, removal, and replacement of USTs.
- Eliminate exemptions to UST requirements such as residential tanks, farm tanks, and elevator vaults.
- Require replacement of single walled tanks or upgrade monitoring requirements.
- Evaluate feasibility of local regulation of UST cleanups to speed the process of source identification and remediation.
- Discourage additional installations of USTs in Scotts Valley.

Septic Tank Disposal Systems

- Review records of Scotts Valley City Finance Department to identify businesses and residences not currently connected to sanitary sewer system.
- Encourage hookup of all businesses and residences not currently connected to the sanitary sewer system.

City Planning and Zoning

- Limit future industrial and commercial service development to existing areas.
- Encourage consideration by City planners of groundwater protection issues in land use planning.

Section 1

INTRODUCTION

1.1 Background

The Scotts Valley Water District (SVWD) is a public agency responsible for management and supply of water to the Scotts Valley area. The SVWD service areas includes most of the City of Scotts Valley and some areas outside the city limits (Figures 1 and 2). The City of Scotts Valley is situated in the Santa Cruz Mountains along Highway 17 in Santa Cruz County, north of the City of Santa Cruz, California.

The Scotts Valley area is underlain by the Santa Margarita groundwater basin which was designated as a sole source aquifer by the U.S. Environmental Protection Agency (USEPA) in 1982. This means that the City of Scotts Valley and nearby communities use this aquifer as their sole or principal water supply. Therefore, it is deserving of special protection.

Extensive work toward groundwater management of the Scotts Valley groundwater basin (California Department of Water Resources, 1975) already has been accomplished. SVWD has directed a Water Resource Management Plan since 1983 (Todd Engineers, 1984-1994). In addition, a computer model of the basin was recently developed for a groundwater management study initiated by the Association of Monterey Bay Area Governments (Watkins-Johnson Environmental, Inc., September 1993). The adjacent San Lorenzo Valley Water District (SLVWD) also has conducted a program of groundwater monitoring and

specific studies for its portion of the groundwater basin.

Assembly Bill 3030 (AB 3030), codified into law on January 1, 1993, permits local agencies to adopt significant programs to manage groundwater. The purpose of AB 3030 is to "encourage local agencies to work cooperatively to manage groundwater resources within their jurisdictions". Accordingly the bill outlines a procedure to develop a groundwater management plan for any local public agency that provides water service to all or a portion of its service area. In accordance with guidelines for the development of a groundwater management plan, a public hearing was held by SVWD on September 9, 1993 to declare their intention to develop a groundwater management plan.

1.2 Purpose

The purpose of this groundwater management plan is to address two major areas of concern in Scotts Valley: (1) management of groundwater supplies to meet present and future demands, and to provide for downstream water rights and instream uses; and (2) protection of water quality and remediation of existing groundwater contamination. By implementation of a groundwater management plan for Scotts Valley, SVWD hopes to preserve and enhance the groundwater resource in terms of quality and quantity, and to minimize the cost of management by coordination of efforts among agencies.

1.3 Scope

The area served by SVWD is the focus of this study. However, it is necessary in some cases to extend the field of study to areas surrounding SVWD boundaries in order to provide a meaningful discussion of hydrogeologic processes and to support basin management planning strategies. Three differing study areas are depicted on Figure 1. The shaded area is within SVWD boundaries while the dotted line outlines the study area defined for the Water Resources Management Plan, which includes hydrogeologically significant regions. The third area is the area encompassed in a groundwater flow model developed for the Santa Margarita basin (Watkins-Johnson Environmental, Inc., September 1993).

This groundwater management plan begins with a brief review of the current understanding of hydrogeologic conditions encountered in the Santa Margarita basin. These hydrogeologic processes influence groundwater recharge and flow patterns, and the potential for groundwater contamination. The plan then proceeds to focus on the management of groundwater supply and groundwater quality.

The groundwater supply section begins by evaluating the monitoring programs in the Water Resources Management Plan. Following this is a description of groundwater level trends and subsequent storage volumes in the Santa Margarita basin. The application and uses of the Santa Margarita groundwater basin flow model for simulating future scenarios is discussed. A section on groundwater replenishment discusses various options for direct or in-lieu groundwater recharge.

The discussion of groundwater quality focusses on: (1) documenting existing groundwater contamination and the status of remediation, and (2) prevention of groundwater contamination in the future. Several items are discussed under the topic of prevention including: hazardous materials management program, underground storage tank programs, well construction and destruction standards, septic systems, and city planning and zoning.

Finally, the conclusions reached in the study are presented. Recommendations for improved management of groundwater supply and quality are suggested.

1.4 Acknowledgements

A number of agencies have been helpful in providing information for this report including: the Scotts Valley Water District, the City of Scotts Valley City Hall, the Scotts Valley Department of Public Works, the Scotts Valley Fire Protection District, The Scotts Valley Building Department, the Santa Cruz County Health Department, the California Regional Water Quality Control Board, the State Water Resources Control Board, the State Department of Water Resources, the California Environmental Protection Agency Toxic Substances Control Division, and the U.S. Environmental Protection Agency.

This report was prepared by Iris Priestaf, Peter Leffler, Sally McCraven, and Katherine White under the supervision of David Keith Todd.

Section 2

HYDROGEOLOGY OF SCOTTS VALLEY

2.1 Geologic Units and Structure

A detailed geologic cross-section has been prepared trending northeast-southwest through the most developed portion of Scotts Valley (see Figure 3). This cross-section shows seven major geologic units (Figure 4). The oldest unit consists of pre-Tertiary age granite that underlies Tertiary sedimentary units and Quaternary alluvium in the region. The Lompico sandstone is a major unit in the area with thicknesses of up to several hundred feet. The Monterey shale overlies the Lompico and consists primarily of shale with sandstone interbeds in the lower portion. As shown on Figure 4, the thickness of the Monterey shale varies from locally absent or very thin (less than 20 feet) to as much as 600 feet. This variation is due to structural folding and faulting and erosion of the Monterey shale, resulting in a surface with considerable relief.

The Santa Margarita sandstone was deposited subsequently on top of the irregular Monterey shale surface. As a result, the Santa Margarita tends to thin markedly and locally pinch out in areas where the underlying granite or shale forms a relative "high". The thickness of Santa Margarita ranges up to 350 feet. Overlying the Santa Margarita in some areas is the Santa Cruz mudstone. Deposits of Quaternary alluvium are present in the major valleys.

The major geologic structure in the area is Scotts Valley syncline, a gentle geologic downwarp that extends from Boulder Creek eastward through Scotts Valley. The syncline is characterized by gently dipping beds (0 to 6 degrees) on the south limb of the syncline and slightly steeper dips (0 to 20 degrees) on the northern limb. In the Scotts Valley area, the syncline becomes increasingly deep, and apparently flattens out to the east.

The location of the syncline is shown on Figure 3. In addition, the syncline is portrayed on Figure 4 as the downwarped geologic layers. As indicated, this downwarping has resulted in accumulation and preservation of the thickest part of the geologic formations along the synclinal axis with thinning along the limbs of the fold. This is particularly noticeable for the Monterey shale. Gentle folding in the overlying Santa Cruz mudstone indicates continued downwarping.

As indicated on Figure 4, the Scotts Valley syncline in this area is apparently broken by the two unnamed faults, which occur on either side of the syncline. The down-thrown side of each fault is located towards the synclinal axis, resulting in a down-thrown block. In addition, a second faulted and down-thrown block is apparent in the Camp Evers area. These faults significantly influence the thickness of the Monterey shale and depth to the Lompico sandstone. As shown, the down-thrown blocks are characterized by the thickest Monterey shale and the greatest depth to the Lompico sandstone. The up-thrown blocks are characterized by more extensively eroded and thinner Monterey shale and shallower

depths to the Lompico sandstone.

2.2 Hydrogeology

In essence, the Scotts Valley groundwater basin is like a bowl or bathtub, rimmed by granitic rocks and filled with sandstone and shale layers which contain groundwater. The two major aquifers in Scotts Valley are the Santa Margarita sandstone and the Lompico sandstone. Local groundwater exhibits unconfined conditions in the Santa Margarita aquifer, and semiconfined to confined conditions in the underlying Lompico sandstone. The two major aquifers are generally separated from each other by varying thicknesses of the Monterey shale. However, locally the Monterey shale is absent and the two sandstone units are not separated.

The Santa Margarita sandstone receives recharge from rainfall and streamflow where it crops out at the surface, plus subsurface inflow from overlying formations. The Monterey and Lompico formations are recharged at outcrops in northern portions of the basin, and also receive groundwater from overlying units.

According to groundwater level and flow maps, groundwater flow generally is from recharge areas toward Bean Creek, which serves as the basin's outlet. Available data suggest no other significant outlets except pumping wells, which have substantially altered local groundwater flow patterns. Carbonera Creek does not intersect the water table, and water table contours do not suggest subsurface outflow through the granitic rocks.

In recent years considerable hydrogeologic exploration and

assessment has been accomplished by SVWD, SLVWD, and private groundwater users. As a result, much valuable information now is available on the hydrogeology of the southeastern, southwestern, and western margins of the Scotts Valley groundwater basin. However, geologic data are relatively lacking for the central portion of the basin.

The hydrogeologic investigations have revealed that the areal extent, thickness, and depth of the local aquifers are strongly affected by erosion and geologic folding and faulting, resulting in a complex and varied setting for groundwater storage and flow. As a consequence, groundwater and storage available to a given well could be limited. In such a situation, effective groundwater basin management must be based on extensive groundwater exploration and comprehensive but detailed hydrogeologic investigations. In the future, groundwater exploration efforts and hydrogeologic studies should be undertaken in cooperation with SLVWD and Santa Cruz County to more fully evaluate the Scotts Valley groundwater basin as a whole.

Section 3

GROUNDWATER SUPPLY

3.1 Current Monitoring Programs

Todd (1980) defines a monitoring program as a scientifically designed surveillance system of continuing measurements, observations, and evaluations. As part of the Scotts Valley Water Resources Management Plan, SVWD maintains a comprehensive monitoring program to protect the long-term supply and quality of groundwater. Results of these monitoring programs are analyzed and presented in annual reports (Todd Engineers, 1984-1994). The current program includes collection of groundwater level data from over 40 wells and collection of water quality and pumpage data from SVWD wells. In addition, there are three streamflow gages, five rainfall gages, and one evaporation measurement station. Drillers logs of wells have been compiled for most of the Scotts Valley and surrounding area with over 400 wells identified and located on a base map. Locations of notable monitoring sites are depicted on Figure 5 while Table 1 is a summary of current Scotts Valley monitoring programs. These programs are described briefly below.

Precipitation. Precipitation is recorded automatically at least every 15 minutes at the El Pueblo Yard and at the City of Scotts Valley wastewater treatment plant (WWTP). The El Pueblo Yard gage has been in operation since 1985. Previously, a bucket gage was in operation at the El Pueblo facility between 1981 and

TABLE 1
SUMMARY OF SCOTTS VALLEY MONITORING PROGRAMS

MONITORING TYPE	LOCATION	MEASUREMENT TYPE	DATE STARTED	FREQUENCY/ MAINTAINER	HISTORIC MONITORING
PRECIPITATION	El Pueblo Yard	15-minute recording	Feb. 1985	Daily/District, Monthly/City	OTHER HISTORIC GAGES: 1) Blair site on Granite Ck. Rd. (Jan. 1975-Dec. 1980) 2) Hacienda Dr. (Jul. 1974-Mar. 1979) 3) El Pueblo Yard bucket gage (Jan. 1981-Jan. 1985)
	WWTP	5-minute recording	1990	Daily/City	
	Kaiser Sand and Gravel Co.	Bucket	Mar. 1985	Varies/Kaiser	
	Carbonera Ck. headwaters @ Scoppetone property	Bucket	Apr. 1985	Varies/Scoppetone	
	Near Lockhart Gulch @ Fabrin's Circle K	Bucket	Mar. 1985	Varies/G.W. Fabrin	
EVAPORATION	El Pueblo Yard	Pan	Jan. 1986	Daily/District	Evaporation pan raw data not compiled after Jul 1990
STREAMFLOW	Carbonera Ck. at Scotts Valley @ Carbonera Way Bridge (#11161300)	15-minute recording	Jan. 1985	Daily/USGS	OTHER HISTORIC GAGES: 1) Carbonera Ck. @ Santa Cruz (#11161400) 250 feet upstream from mouth (1974-1976 partial data) 2) Bean Ck. near Felton (#11160320) (1973-1978 partial data), low flows at same location (1983-1988)
	Carbonera Ck. @ Glen Canyon	5-minute recording	1990	Monthly/City	
	Bean Ck. near Scotts Valley @ Mt. Hermon Crossing (#11160430)	15-minute recording	Dec. 1988	Daily/USGS	
WELL INVENTORY	T10/R01 Sections 6-9, 16-20, 30 and T10/R02 Sections 1, 11-14, 23-26, 36	Over 400 wells: location, log, type, capacity, etc.	1950's	Logs from California DWR and others	-
GROUNDWATER LEVELS	~41 Santa Margarita aquifer and ~7 Lompico formation wells	Depth to water	1968	At least quarterly/ District and others	Data from over 75 wells, as early as 1968, bi-monthly 1983-1989
PUMPAGE	District wells in production and on standby	Metered, compiled monthly	1975	Monthly/District	Additional pumpage from other wells
GROUNDWATER QUALITY	District wells in production and on standby	Title 22 constituents	1963	At least semi-annually/ District and others	Data from over 80 wells, as early as 1963, monitoring frequency similar to groundwater level program
WASTEWATER OUTFLOWS	City of Scotts Valley WWTP @ Lundy Lane	Wastewater outflow volume and effluent quality	1965	Daily/City	Plant operational in 1965 (Septic systems pre-1965)

REF: Todd Engineers (1993)
 Todd Engineers (1989)
 Todd Engineers (1988)
 Handwritten monitoring notes from SVWD on El Pueblo evaporation pan and Kaiser, Scoppetone, and Fabrin rain gages
 Water Quality data sheets from various laboratories

1985. Before 1981, rainfall was measured at the Blair site on Granite Creek Road and along Hacienda Drive. The WWTP gage has been in operation since 1990. The rain gages at the El Pueblo Yard and WWTP are also read manually once a day by SVWD or City of Scotts Valley staff, respectively. Manually read data are kept on file at the yard or WWTP, while electronic data are sent to the local consulting firm of Linsley, Kraeger Associates. Data have not been compiled since 1993 due to lack of funding.

In addition, three bucket rain gages have been maintained since 1985 at the Kaiser Sand and Gravel site (Kaiser), on the Scopetone property near the headwaters of Carbonera Creek, and at the Fabrin's Circle K Ranch near Lockhart Gulch.

Evaporation. An evaporation pan has been maintained at the El Pueblo Yard since 1986. Current data have not been compiled into useable form because of lack of funding.

Streamflow. Two streamgages are monitored in cooperation with the United States Geological Survey (USGS); SVWD provides the funding for gage installation and maintenance. One gage is located on Carbonera Creek at the Carbonera Way Bridge (USGS #11161300) and was installed in early 1985. It has a punch paper tape and records water levels every 15 minutes. The other gage is on Bean Creek at the Mount Hermon crossing (USGS #11160430) and has been in operation since late 1988.

A third gage is located on Carbonera Creek at Glen Canyon. Data for this third gage are recorded every 5 minutes and manually read once a month by City of Scotts Valley staff. Data recorded at this gage has not been compiled because of lack of funding.

Well Inventory. Over 400 water well drillers' reports have been compiled from the California Department of Water Resources (DWR) and other sources. These wells are located throughout the Scotts Valley area. Compiled well data include location, well log, well use, capacity, depth, and ground surface elevation. It should be noted that these wells include all those drilled historically, many of which are now unused.

Groundwater Levels. The groundwater level monitoring program has included SVWD wells, SLVWD wells, other municipal wells, monitoring wells, and private wells. Between 1983 and 1989 groundwater levels were measured every two months. In 1989 it was determined that static groundwater levels and regional flow patterns did not change significantly over a two-month period, and that measurements of water levels on a quarterly basis would be sufficient. Consequently, water level measurements are taken on or about the first day of January, April, July, and October. Data are compiled into computer databases by Todd Engineers and made available to SVWD.

Water level contour maps are prepared for autumn and spring conditions for the regional Santa Margarita aquifer and for the

Lompico Formation; spring maps are presented in annual reports. Wells used to produce the Santa Margarita aquifer and the Lompico Formation water level contour maps are shown on Figure 5.

Pumpage. Pumpage is recorded daily for operating SVWD wells, and compiled on a monthly basis for management purposes. Available pumpage information from SLVWD is also compiled.

Groundwater Quality. Currently, groundwater quality samples are collected from SVWD wells in production and on standby as shown on Figure 5. These pumping wells are generally sampled semi-annually or more frequently if constituents of concern are detected.

Historically, analyses from over 80 wells are available in the database. Selected sites were originally sampled bi-monthly and analyzed for nitrate, chloride, and total dissolved solids (TDS). Due to the slow rate of change typical of groundwater quality and lack of significant regional trends, this program was revised in 1989 to focus on SVWD wells. Groundwater is sampled for the constituents required by Title 22, California Administrative Code, Chapter 15. Analyses include: general mineral, physical, inorganic, radiological, bacteriological, and regulated and unregulated organics. Since 1982 groundwater from the SVWD wells has also been analyzed for volatile organic compounds (VOCs).

Wastewater Outflows. Data are available from the City of Scotts Valley on wastewater outflow volumes and effluent quality; monthly flow data are compiled.

Recommendations

- The groundwater level and quality monitoring network is comprehensive and provides good areal coverage of Camp Evers and Scotts Valley. Accordingly it should be continued. Monitoring sites are relatively few and far between in the northern half of the study area and along the eastern margin; however, additional test or monitoring wells are planned for the latter area (see Figure 5).
- The quarterly groundwater level measurements should be coordinated so that they are conducted within a small time period, such as a week.
- Monitoring programs should be flexible and open to supplementary frequency and locations to document or understand site specific occurrences such as recharge rates or potential groundwater contamination.
- Data sharing with other agencies should continue and improve, and the processing of rainfall, evaporation, and streamflow data should be encouraged.

3.2 Groundwater Level Trends

Figure 6 depicts water level trends (hydrographs) for select wells in the vicinity of SVWD. The wells depicted on the figure

are El Pueblo Well 7, Businessmen's Well 10, monitoring Well 13, Well 7A, and the Estrella well which is not within SVWD boundaries. Seasonal fluctuations can be seen in these curves, with higher water levels in late winter and spring and lower levels in summer and fall. It is apparent from the figure that water levels have been steadily declining since the mid-1980's. The sharpest decline has occurred in Businessmen's Well 10 in the Camp Evers area, where levels have dropped over 150 feet between 1985 and 1993. Water levels have been recovering in this well since January 1994 because pumpage has been shifted to other SVWD wells, particularly Well 7A. El Pueblo wellfield and Estrella well water level elevations have both dropped over 100 feet since 1987. These three wells are in developed portions of the basin while monitoring Well 13 (destroyed) and Well 7A are in the less developed northern area. Recent water levels in Well 7A have declined sharply due to a shift of pumpage from the developed areas (Camp Evers area) to Well 7A.

A bar graph on the bottom of Figure 6 indicates the monthly Scotts Valley rainfall measured at the El Pueblo Yard. Comparison of the bar graph with the water level hydrographs demonstrates that periods of high rainfall cause water levels to rise while, conversely, periods of low rainfall or drought result in declining water levels. Clearly, the drought that occurred from the mid-1980's to the early 1990's contributed to the declining water levels due to less recharge and increased pumpage. However, the 1992-1993 rainfall season was marked by rainfall of 50 inches or

125 percent of average. Although this rainfall resulted in seasonal recovery of water levels in wells, the longer term effect was only a moderation of the extent and severity of the area's localized water level declines. This indicates that in the past decade the predominant factor in groundwater levels in the Camp Evers and Scotts Valley Drive areas is groundwater pumpage and not recharge.

As documented in the 1993-1994 Water Resources Management Plan (Todd Engineers, June 1994), baseflows of Bean Creek showed a noticeable response to the increased rainfall of the 1992-1993 season, despite the continued groundwater level declines in the Camp Evers area. This suggests that the baseflow (as measured at the Mount Hermon crossing) is maintained primarily by groundwater inflow from the northern part of the basin. In the short term, the intensive pumpage in the Camp Evers area has resulted primarily in localized groundwater storage depletion and not in depletion of stream baseflows.

Increased pumpage, reduction of recharge, and drought conditions have resulted in groundwater declines since the mid-1980's and the subsequent repercussions listed below.

- Water levels have dropped below well screens causing some shallow wells to dry up.
- Well screens across upper aquifers (i.e. Santa Margarita aquifer) are exposed when the aquifer locally goes dry.
- Well efficiency decreases due to pumping groundwater from deeper and less permeable aquifers.

- Groundwater quality may decline as a result of extracting water from a deeper aquifer of poorer quality.

Previous reports by Todd Engineers have concluded that despite localized groundwater declines, the groundwater basin as a whole is not in overdraft. This was corroborated by an extensive regional groundwater study, Santa Margarita Ground-Water Basin Management Plan (Watkins-Johnson Environmental, Inc., September 1993). This investigation considered an area of 111 square miles in the San Lorenzo River watershed, focusing on Scotts Valley, and entailed development of a computerized groundwater model of the Santa Margarita, Monterey, and Lompico aquifers. The report states that the groundwater basin is not considered to be in overdraft, and concluded that the safe yield of the basin may be defined as maintenance of flow in Bean Creek. Although streamflows are quite low because of the past drought, the long-term safe yield has not been exceeded.

3.3 Perennial Yield and Groundwater Storage

The perennial yield is defined as the rate at which water can be withdrawn perennially under specified operating conditions without producing an undesired result (Todd, 1980). Perennial yield was estimated at about 4,200 acre-feet per year (AFY) for the area within the dotted line on Figure 1 (Todd Engineers, 1987). The area used for the 4,200 AFY estimate is approximately three times the area within SVWD boundaries. Note that a constraint on available groundwater is the quality of the water and the presence

of contaminants in groundwater. Persistent contamination can not only limit the usable storage capacity of the aquifer and circumscribe areas of groundwater development, but also can adversely affect significant recharge areas. It should also be noted that perennial yield was estimated as an average annual value, and does not take into account annual or short-term variations in rainfall. Given the variability of rainfall and recharge in recent years, consideration should be given to a more detailed perennial yield study that would evaluate the effect of varied rainfall on groundwater recharge.

Figure 7 documents change in groundwater levels over the seven years between April 1986 and April 1993. Wells used to prepare the contour map are indicated with a solid black dot with a groundwater level change number by the well. The pattern of groundwater level decline is similar to annual water level declines depicted in Todd Engineers yearly management plan reports, although the magnitudes of the declines are greater. Minimal groundwater level changes have occurred throughout most of the area, with localized declines in the areas where flow converges into major pumping wells in the Scotts Valley Drive/El Pueblo area and Camp Evers area. Groundwater levels changes for the seven year period are on the order of 120 feet in the center of these depressions. Several minor isolated groundwater level changes have occurred outside these major depressions and are indicated but not contoured on the figure.

A storage volume change can be calculated by measuring the

volumetric change in groundwater between April 1986 and April 1993. Assuming a storage coefficient of 0.12, the amount of storage depletion was approximately 4,152 acre-feet (AF) or an average of 593 AFY over the seven year period. A loss of 565 AF was calculated for the storage depletion between April 1993 and April 1994 (Todd Engineers, June 1994). Thus, approximately 500 to 600 AF have been lost from groundwater storage each year since the mid-1980's. It should be noted that this change in storage has been computed using a consistent methodology as in previous years. However, estimates of total groundwater storage and change in storage should be revised to take into account increased knowledge of the extent, depth, and storativity of the Lompico aquifer and to take into account the decline in some areas of groundwater levels from the Santa Margarita aquifer into the Lompico aquifer.

Available water stored in the Santa Margarita has been estimated at 43,460 AF (Todd Engineers, 1987). Previously, a slightly larger value was used, but was revised following improved mapping of water levels in the vicinity of the Grace Way monitoring well. Thus, using the groundwater storage depletion number calculated above (4,152 AF), approximately 9.6 percent of the total storage volume has been depleted between April 1986 and April 1993.

3.4 AMBAG Model

A proposed management plan for the Santa Margarita groundwater basin was developed by Watkins-Johnson Environmental, Inc. for the Association of Monterey Bay Area Governments (AMBAG) (Watkins-

Johnson Environmental, Inc., September 1993). The purpose of the plan was to coordinate users of the Santa Margarita groundwater basin, establish groundwater and streamflow resource management, and prevent groundwater pollution.

A major accomplishment of the plan was development of a groundwater flow model for the Santa Margarita basin. This model can be used to study the effects of possible future development and environmental stresses on the groundwater basin. The model area of 24.3 square miles encompasses the Santa Margarita aquifer and major portions of the Monterey and Lompico aquifers as depicted on Figure 1 (Watkins-Johnson Environmental, Inc., July 1993). The model is a modified version of MODFLOW, developed by the USGS and simulates groundwater flow in the three aquifers (three layers). The model was calibrated using 1986 water levels and verified with 1991 data.

Model Simulations. The model was used to study the four simulations listed below.

- 5 years additional drought (60 percent recharge) and 1992 pumping.
- 5 years normal recharge and 1992 pumping.
- 5 years normal recharge, 1992 pumping quantities with a shift of pumpage to Well 7A.
- 25 years drought (80 percent recharge), increased pumpage of wells in simulation above for the estimated population in 2015 (almost 30 percent increase from 1993).

Results of these simulations indicate that pumping and drought

conditions have resulted in declining water levels and reduction of stream baseflow. Although the basin is not considered to be in overdraft, declining surface water quantities and future groundwater levels are a concern. The above scenarios also indicated that it would be advantageous to extract future groundwater from the Lompico aquifer rather than the Santa Margarita aquifer. The worst case simulation indicated that surface water flow would be substantially reduced and additional wells would need to be dispersed across the basin to support the estimated 2015 population due to a greater area of the Santa Margarita aquifer going dry.

Limitations. The MODFLOW program is widely used and accepted, and has been applied to the Santa Margarita basin with diligent regard for the considerable complexity of the groundwater basin. However, a model can only reflect data available at the time it was written. For example, the eastern boundary of the model was simulated as a groundwater divide between the Santa Margarita and Soquel-Aptos groundwater basins. However, the Lompico aquifer extends into the Soquel-Aptos basin in the area of Blackburn Gulch. To properly simulate the pumping of new wells in this area it may be necessary to revise the model by extending it to the east or changing the boundary conditions to reflect the possible influence of the adjoining groundwater basin.

General model limitations are listed in the Santa Margarita Groundwater Basin Management Plan report (Watkins-Johnson

Environmental, Inc., September 1993). These limitations include the problems inherent in the simplification, interpretation, and limited availability of field data. For instance, a single transmissivity value was used for the Lompico aquifer and a few average values of transmissivity were used for the Monterey aquifer. Future, more detailed transmissivity data could be incorporated into the model in the future, although the model would need to be recalibrated at that time.

Recent Simulations. Pre- and post-processor programs (MODEDIT and MODPOST) allow some modification of the program data packages, such as model timing for transient simulations, well locations and pumping rates, recharge rates, and solution criteria (i.e. how refined the solution will be). For example, the model can be used to simulate the effect of new wells or changing pumping rates of existing wells, various droughts, and/or changes in recharge.

Todd Engineers modified the program to run the four preliminary scenarios listed below.

- 6 years drought (60 percent recharge) and 1992 pumping.
- Same as above with one additional year of drought at 80 percent recharge.
- 5 years drought (80 percent recharge), drought pumping, 1986 starting heads, and Well 7A pumping at 32,000 cubic feet per day (ft³/d).
- Same as above with estimated Lompico fault location simulated as a barrier.

Preliminary results indicate that the pumping of Well 7A at 32,000 ft³/d (500 gallons per minute for 8 hours per day) did not appreciably increase drawdowns, although it is near the eastern edge of the model. Insufficient hydrogeologic data exist for this boundary; therefore the accuracy of the model response to pumping in this area is questionable. The simulated Lompico fault caused water levels to deepen on the southeast side of the fault resulting in greater groundwater drawdowns in the El Pueblo area.

In summation, the model can be used to observe effects of proposed well locations and pumping configurations, consequently aiding in optimization of the distribution of pumping. The model also would be useful in regional assessment of proposed replenishment or recharge projects. The AMBAG model is not designed for contaminant transport; nonetheless a program called MT3D, developed by S.S. Papadopoulos & Associates, Inc. can be used to model migration of dissolved substances in groundwater. MT3D utilizes MODFLOW groundwater level output and simulates contaminant transport taking into account advection, dispersion, and chemical reactions. Other codes, such as MODPATH and PATH3D, are designed for three dimensional particle tracking and can use groundwater levels from MODFLOW. These model codes can be used to track a contaminant "particle" back to its source or forward in time to a future position. The usefulness of these programs is limited to the availability and reliability of the hydrogeologic and chemical data for the area of interest.

Recommendations

- When additional hydrogeologic data become available, modifications to the basic model should be made, such as simulation of the presence of a fault in the Lompico formation northwest of the El Pueblo well field.
- Future model revisions should extend the model eastward to more accurately simulate the effects of pumping wells in that area.
- Current production data should be incorporated into the model.

3.5 Pumpage

The localized decline of groundwater levels raises concern about overall groundwater supply and the risk of overdraft. Previous groundwater studies conducted for SVWD have indicated that the groundwater basin is not in overdraft. This conclusion also was reached by the recent Santa Margarita aquifer study sponsored by AMBAG. However, this study rightly noted the need to update the amount of groundwater use. Accordingly, this section summarizes the updated inventory of wells and amount of groundwater production, and discusses groundwater consumption.

Well Inventory. The well inventory has been updated recently, as summarized in the 1994 annual report for the Water Resources Management Plan (Todd Engineers, 1994). This inventory was based largely on water well drillers' reports filed with the DWR. Accordingly, it provides only an approximation of wells currently

in use. The actual number of wells could be greater, because water well drillers' reports may not have been filed for all wells. Conversely, the number of wells in use could be smaller, because information on abandonment of wells is lacking.

Review of the database, which includes wells drilled as early as the 1950's, indicates that well drilling activities peaked in the 1970's and have since declined. In the 1970's, well drillers' reports were filed for production wells at rates exceeding 20 per year. During the 1980's and early 1990's, these rates declined to less than 10 per year.

The inventory indicates that over 400 known wells have been drilled in the Scotts Valley groundwater basin in addition to the numerous (over 70) monitor wells drilled at the Watkins-Johnson site. Of the 400, approximately 260 wells have been drilled for domestic purposes. Other use categories include wells drilled for municipal supply, landscape irrigation, industrial and commercial purposes, and groundwater remediation.

Groundwater Pumpage. Actual groundwater production data are available only for SVWD, SLVWD, Mount Hermon water system, and Watkins-Johnson remedial wells. Mount Hermon's groundwater production from both springs and wells amounted to 145 AF in 1993 (R. Jones, personal communication). The remedial pumpage amounts to about 200 AFY (Watkins-Johnson, Environmental, Inc., 1994). Historic groundwater production by the two districts is illustrated on Figure 8.

Data are available for SVWD from 1976 to present; note that groundwater pumpage in 1980 was estimated because of meter failure in that year. SLVWD data currently are being processed into an easily accessible, computerized form; and are available from 1987 to present. As indicated, SVWD groundwater pumpage increased 2.6 times from 537 AFY in 1979 to 1,400 AFY in 1989. However, in recent years, the rate of increase has slowed. In 1993, SVWD groundwater pumpage amounted to 1,505 AF.

SLVWD operates three well fields, including two in the Scotts Valley groundwater basin--the Olympia well field located near Zayante Creek and the southern wells, notably the Pasatiempo wells near Graham Hill Road. The third well field, Quail Hollow, was not considered here. As shown on Figure 8, groundwater pumpage by SLVWD from the Olympia and Pasatiempo wells during the past seven years has been fairly steady, averaging 675 AFY. In water year 1993, SLVWD pumpage was 645 AF, including about 335 AF from Olympia and 310 AF from Pasatiempo.

The remaining groundwater producers do not meter their wells. Accordingly, their pumpage can only be estimated. Previous estimates of pumpage were made for the AMBAG model (Watkins-Johnson Environmental, Inc., September 1993), and by Jacobvitz (1987), Todd Engineers (1987), and Luhdorff & Scalmanini (April 1984).

A significant amount of groundwater is pumped from the Scotts Valley groundwater basin by private well owners for landscaping purposes, including irrigation and maintenance of decorative ponds. Major landscaped areas include Valley Gardens golf course and the

landscaped commons of the Monteville, Spring Lakes, and Vista del Lago residential developments. Of these, only Monteville is located within SVWD boundaries; the others are located along the southern boundary. Other large landscaped areas, notably the new Borland campus, are supplied with SVWD water. As an indication, meters for the Borland site indicate water use of 38 AF from June 24, 1993 to May 5, 1994, or an estimated annual use of about 45 AF. Estimates of landscaping use for each of the other properties have ranged as high as 196 AFY (Todd Engineers, 1987). Accordingly, a rough estimate of 125 AFY for each of the four major landscapers was assumed, for a total of 500 AFY.

The Scotts Valley groundwater basin is also tapped by a number of privately owned water purveyors, listed below in Table 2 along with their number of connections.

Table 2
Private Water Purveyors

Water System	Number of Connections
Mount Hermon	462
Spring Lakes	223
Vista del Lago	202
Manana Woods	118
Mission Springs	100
Fern Grove Club	69
Hidden Meadows	11
Spring Brook Park	11
Fern Brook	9

As noted previously, water production is metered by Mount Hermon for its 462 connections and conference facility, and amounts to 145 AFY. Groundwater production for the remaining water purveyors was estimated by applying groundwater pumpage factors to

the number of connections. Based on the SVWD average groundwater production factor of 0.32 AFY per connection (288 gallons per day per connection), (J. Sansing personal communication), an approximate factor of 0.3 AFY per connection was assumed for most of the private purveyors (Manana Woods, Mission Springs, Fern Grove Club, Hidden Meadows, Spring Brook Park, and Fern Brook). Accordingly, the estimated total groundwater pumpage of these purveyors for their 318 connections is approximately 95 AFY (0.3 AFY per connection x 318 connections).

The Spring Lakes and Vista del Lago developments consist of relatively densely-spaced pre-fabricated homes with minimal individual landscaping. Accordingly, a pumpage factor of 0.15 AFY per connection was assumed, resulting in an estimated groundwater demand of 64 AFY (0.15 AFY per connection x 425 connections). However, in 1993 SLVWD supplied about 47 AF to the two water systems. For simplicity's sake and to avoid double-counting, this amount was assumed to be applied to domestic use. Consequently, groundwater pumpage in 1993 for domestic use by Spring Lakes and Vista del Lago is computed as 17 AF, or about 15 AF. Groundwater pumpage for their landscaped common areas was accounted for in the previous section.

In sum, total groundwater pumpage by the private water purveyors is estimated to be 255 AFY, including 145 AFY for Mount Hermon, 15 AF for Spring Lakes and Vista del Lago (not including landscaping or the SLVWD contribution), and 95 AFY for the remaining purveyors.

The updated well inventory indicates the existence of about 260 domestic wells in the Scotts Valley groundwater basin. It is assumed that most of these wells serve a single household with landscaping. Accordingly, assumption of the groundwater pumpage factor of 0.3 AFY yields a total estimated pumpage of approximately 80 AFY. Little of this pumpage occurs within SVWD boundaries.

Of the local industrial and commercial groundwater users, the largest is Kaiser Sand and Gravel. Previous estimates of Kaiser's groundwater pumpage has ranged from 106 AFY (Jacobvitz, 1987) to 268 AFY (Todd Engineers, 1987), with a more recent estimate of 200 AFY (Watkins-Johnson Environmental, Inc., September 1993). For this study, an approximate pumpage of 200 AFY was assumed for Kaiser.

Other industrial and commercial groundwater pumpers include such disparate businesses as food processing companies, lumber yards, computer-related fabrication plants, and retail stores. With such various activities, groundwater pumpage by each business could range from less than one AFY for a small business using the well for domestic purposes to 40 AFY (Jacobvitz, 1987). Less than 15 current small industrial/commercial well owners are known. Assuming an average groundwater pumpage of 5 AFY, the approximate total pumpage is 75 AFY, most of which occurs within SVWD bounds.

The groundwater pumpage by the Silverking aquaculture enterprise amounts to an additional 66 AFY (Watkins-Johnson, Environmental, Inc., September 1993). However, this pumpage represents essentially a groundwater diversion near the outlet of

the basin with minimal consumption. Accordingly, it is not included in the sum of groundwater pumpage.

Groundwater production estimates are summarized in Table 3 and on Figure 9, along with the 1993 pumpage totals for SVWD, SLVWD, Mount Hermon, and Watkins-Johnson remediation. It should be noted that this pumpage is summarized for the Scotts Valley groundwater basin, as defined for the Scotts Valley Water Resources Management Plan (see Figure 1). Pumpage occurring within SVWD boundaries amounts to about 1,880 AFY and includes pumpage by SVWD itself, Monteville landscaping use, Watkins-Johnson remedial pumpage, and most of the other commercial/industrial pumpage.

Table 3
Current Groundwater Pumpage, AFY
Scotts Valley Groundwater Basin

Municipal	
SVWD	1,505
SLVWD	645
Major Landscapers	500
Water Purveyors	255
Domestic	80
Watkins-Johnson Remedial	200
Kaiser Sand & Gravel	200
Other Industrial/Commercial	75
Total Estimated Pumpage	<u>3,460</u>

Summary of Pumpage. Approximately 3,460 AFY of groundwater are currently being pumped from the Scotts Valley groundwater basin. Of this amount, 2,495 AFY or 72 percent is metered by SVWD, SLVWD, Mount Hermon, and Watkins-Johnson. The remainder is estimated and subject to correction. Measurement of production by only six additional groundwater producers (Monteville, Valley

Gardens, Spring Lakes, Vista del Lago, Manana Woods, and Kaiser) would result in compilation of reliable data for over 90 percent of total pumpage.

This gross pumpage value does not account for return flows. Return flows represent pumped groundwater that is returned to recharge the groundwater basin. They include percolation from landscaping ponds and irrigation, leakage from water supply pipelines, and percolation from septic systems. In addition to return flows, gross pumpage also includes actual groundwater consumption, which results from evaporation and transpiration, wastewater export to the ocean outfall, and possibly through overflow of groundwater-supplied decorative ponds and waterways to streams leaving the groundwater basin. At this time, insufficient data are available to assess return flows and actual groundwater consumption. However, a preliminary review of return flows suggests that consumptive groundwater use probably is on the order of 60 to 70 percent of gross pumpage or 2,000 to 2,800 AFY. Accordingly, groundwater consumption is on the order of 50 to 65 percent of the perennial yield of 4,200 AFY.

The estimated total pumpage of 3,460 AFY amounts to over 80 percent of the estimated perennial yield of 4,200 AFY for the Scotts Valley groundwater basin. Even accounting for return flows, the groundwater pumpage and consumption represents a substantial portion of the perennial yield. As will be discussed in greater detail in later sections, successful maintenance of this groundwater production into the future will require intensive

management of the water resources of the entire groundwater basin.

Groundwater pumpage currently is focused on a small portion of the groundwater basin. Pumpage within SVWD boundaries amounts to about 1,900 AFY, including production by SVWD, Montevalle, Watkins-Johnson, and other industrial/commercial firms. In the contiguous areas bounding SVWD on the southwest, an additional 1,100 AFY is pumped by SLVWD, landscape irrigators, water purveyors, and Kaiser. Thus, 3,000 AFY or about 87 percent of the groundwater pumpage is being produced from the southeast one-quarter of the groundwater basin. Not surprisingly, these areas of focused pumpage coincide with localized groundwater level declines.

It should be acknowledged that SVWD has and is making a considerable effort toward redistribution of its pumpage out of the localized areas of groundwater decline. However, the efforts of a single, albeit major, pumper to redistribute pumpage will not be sufficient to mitigate the groundwater level declines. Current SVWD efforts should be supplemented by additional actions of SVWD and other major local groundwater producers to reduce or redistribute pumpage, to minimize groundwater losses from the basin, or to initiate groundwater replenishment programs.

Recommendations

- The well inventory should be maintained and updated periodically.

- Information on pumpage by SVWD and SLVWD should be compiled regularly, with periodic compilation of production data from Mount Hermon and Watkins-Johnson.
- The amount of groundwater production should be measured for the larger groundwater users including Monteville, Valley Gardens, Spring Lakes, Vista del Lago, Manana Woods, and Kaiser.
- An analysis should be made of return flows and consumptive use of groundwater in the basin.
- SVWD should continue its efforts to redistribute its pumpage throughout its service area to mitigate localized impacts of pumpage.
- Roundtable meetings should be convened by the major groundwater producers in Scotts Valley to discuss various means to analyze and mitigate groundwater level decline problems in the Camp Evers - Lockwood Lane - Mount Hermon area. Such means could include redistribution of pumpage, groundwater replenishment projects, minimization of outflows through the Camp Evers tributary, construction of interties among water systems, determination of operational groundwater levels ("target levels"), and development of joint drought contingency plans.

3.6 Replenishment of Groundwater

SVWD has sponsored or participated in a number of studies involving groundwater replenishment. These have included

consideration of treated groundwater, reclaimed wastewater, and local surface water as potential sources for groundwater recharge or irrigation use. No projects have yet been implemented because of regulatory or economic constraints. Nonetheless, groundwater replenishment remains an important management method to mitigate groundwater pumpage impacts and to ensure long-term groundwater supply. Accordingly, this section presents a re-evaluation of previous replenishment studies and an update of the potential for wastewater recycling.

Review of Previous Studies. In the early 1970's treated sewage effluent was being recycled in Scotts Valley for various uses. As part of this wastewater reuse effort, a study was conducted to evaluate percolation rates at Skypark Airport (Lowney, 1973). Nine percolation pits were drilled with a bucket auger rig to depths ranging from 28 to 55 feet. Two percolation tests were conducted and measured percolation rates were 0.67 feet/day for a seven foot deep pit with an average head of 1.3 feet and 13.4 feet/day for a 40 foot deep pit with an average head of 35 feet.

A 1974 study completed by Harding Lawson described the disposal of treated effluent to the Kaiser sand pit and Skypark Airport, and its use for irrigation at Valley Gardens golf course and other sites. At the time, the approximate treatment plant capacity was 100,000 gallons per day (gpd) with plans to expand to 400,000 gpd. The increased flow was to be discharged to Kaiser sand pit. Hydraulic conductivity values estimated for the Santa

Margarita sandstone in the vicinity of Kaiser sand pit ranged from 0.0016 to 0.16 feet/day. The estimated groundwater flow direction was northward from the sand pit towards Bean Creek.

A nitrate pollution study conducted in 1984 described the use of treated wastewater for irrigation at Valley Gardens golf course and discharge to Kaiser sand pit and Skypark (Luhdorff & Scalmanini, September 1984). Regulations adopted by the Regional Water Quality Control Board (RWQCB) in 1976 limited the quantity of wastewater disposal to 400,000 gpd at Kaiser and 80,000 gpd at Skypark. In 1978, the RWQCB adopted an order to stop wastewater disposal at Skypark in 1979 and at Kaiser upon completion of the Santa Cruz outfall in 1981. Average wastewater discharge rates were estimated to be 144,000 to 288,000 gpd for Kaiser sand pit for the period 1974 to 1975. Discharge rates at Skypark were unknown and essentially terminated by 1976. Treated wastewater also was sold to Scotts Valley Intermediate School and the California Department of Transportation for landscaping, and to construction companies for dust control. It was estimated that 12 to 95 AFY of treated wastewater were used for landscape irrigation and construction between 1981 and 1983.

In 1988, SVWD retained Todd Engineers to evaluate water reuse options for the Watkins-Johnson remediation system. Watkins-Johnson was pumping 250 gpm on a continuous basis and discharging most of the treated water to Bean Creek. Five alternatives under consideration for this study were artificial recharge, landscape irrigation, an upgradient injection barrier, a perimeter injection

barrier, and reuse at the fish hatchery. Options for artificial recharge included seasonal recharge through SVWD wells, surface recharge in Carbonera Creek channel, and year-round recharge in dedicated wells. Landscape irrigation options included four private organizations in the Camp Evers area, and a planned golf course in the Glenwood area. An evaluation of feasibility, costs, and benefits showed that the best alternative was to combine surface recharge of Carbonera Creek during dry months with recharge through SVWD wells during wet months.

In 1989, SVWD retained Todd Engineers to evaluate water recycling and conservation measures. Artificial recharge was considered from three sources: urban runoff, streamflow, and treated wastewater. The primary concern regarding urban runoff is water quality; therefore, this study proposed to use runoff only from residential and public land uses. It was estimated that 1,160 to 2,150 AFY of runoff was potentially available, although only a portion of this total could realistically be conserved. Streamflow was initially considered from both Bean and Carbonera Creeks. However Bean Creek was subsequently eliminated as a source of water due to high pumping lifts and potential environmental impacts. It was estimated that 4,335 AFY was potentially available from Carbonera Creek, although recharge rates and other factors limit the actual amount that can be retained. The recharge capability of the existing channel was estimated to be 176 AFY, with a potential increase to 312 AFY through construction of check dams. Estimates indicated that off-stream spreading basins could recharge an

additional 616 to 1,267 AFY of Carbonera Creek streamflow.

The quantity of treated wastewater available in 1988 was estimated to be 754 AFY. At that time only 100 AFY were being reused for golf course irrigation. Water quality is the primary concern for utilization of treated wastewater in artificial recharge, and its reuse for artificial recharge could require abandonment of water supply wells adjacent to a proposed recharge facility.

Four specific projects were considered in detail in the 1989 study for artificial recharge of surface water and treated wastewater: Whispering Pines, Valley Gardens golf course, Skypark Airport, and Carbonera Creek channel. Whispering Pines appeared to be the best site, and involved shallow spreading basins to obtain 1,750 AFY of recharge with a net wetted area of nine acres. This site has since been developed for commercial purposes. Skypark Airport also appeared to be a good site, with 590 to 980 AFY of water potentially being recharged over a net wetted area of four acres. This recharge estimate for Skypark was based on diversion of Carbonera Creek flows as the primary source water. The Carbonera Creek channel was suggested as another artificial recharge area with good potential. The evaluation of Valley Gardens golf course indicated poor potential for use in artificial recharge.

Todd Engineers conducted a very brief assessment in 1990 of recharge characteristics for a parcel located adjacent to Well 11 on Scotts Valley Drive at El Pueblo Road. This site encompassed an

abandoned sand quarry and included approximately five acres of level ground. In addition, a small unnamed channel, draining a watershed of approximately 45 acres, crosses the site and flows into Carbonera Creek. The site is underlain by permeable soils and the Santa Margarita sandstone. Potential recharge projects included check dams in the unnamed channel and percolation in the sand pit.

In 1990, SVWD requested that Todd Engineers evaluate potential artificial recharge basins at Skypark in more detail. Three possible conceptual designs were considered: a seasonal recharge basin, a perennial landscaping pond, and a dedicated recharge basin. The source of water would be local runoff diverted from the adjacent Dufours Tributary. A seasonal recharge basin was envisioned near the center of the site with potential to recharge approximately 120 AFY over a net wetted area of two acres. This seasonal recharge basin could serve as a softball field during the dry season. Alternatively, the basin could serve as a perennial landscaping pond if wet season runoff were supplemented by reclaimed wastewater/surface water during the dry season. A perennial pond would be capable of considerably more recharge than a seasonal facility. The third design involved a two-acre dedicated recharge basin along the eastern property line. Local runoff during the wet season would be supplemented by reclaimed wastewater during the dry season. Conclusions of this study indicated that artificial recharge at Skypark would not directly increase potable groundwater supplies to SVWD wells because of

groundwater flow patterns at the time. However, such recharge would mitigate impacts of urbanization on groundwater and Bean Creek streamflow. Furthermore, recharge at this site could help mitigate future increased pumpage in other areas of the basin.

Again in 1991, SVWD retained Todd Engineers to evaluate alternative methods of artificial recharge at Skypark. Other options besides spreading basins included modification of landscaping and infiltration trenches. Preliminary analyses indicated that considerably less recharge would be achieved by landscape modification or infiltration trenches compared to spreading basins. However, spreading basins would require considerably more land for construction.

Current and Future Status of Wastewater Treatment. The Scotts Valley wastewater treatment plant (WWTP) currently meets secondary discharge requirements. The treatment process includes organics removal, aeration/oxidation, and disinfection. Effluent from the plant is presently piped to Santa Cruz for discharge to the ocean. The average effluent volume is approximately 0.8 million gallons per day (mgd). The flow process includes an influent pumping station, aeration tank, secondary clarifier, and chlorine contact tank.

Future plans for the wastewater treatment plant would increase capacity to 1.5 mgd. In addition, expansion plans will upgrade the treatment process to meet secondary reclamation requirements. The treatment process would include additional disinfection needed for

wastewater recycling (S. Hamby, personal communication). This water could be reused for construction activities, irrigation, or blended for surface recharge basins (up to 20 percent of total source water). Facilities to be added or expanded upon include a new influent pumping station with mechanical barscreens, a new flow equalization structure, an additional secondary clarifier, modifications to the aeration tank, expansion of the chlorine contact tank, and expansion of the laboratory and buildings.

Additional funding is currently being pursued to add facilities necessary to achieve tertiary treatment standards. AMBAG is considering a feasibility study of costs and benefits for tertiary treatment of wastewater at the WWTP. In addition, an application was filed in 1993 with the State Water Resources Control Board to obtain funding for tertiary treatment. The WWTP was subsequently notified in 1994 that they have been placed on the state priority list for such funding.

Potential Replenishment Projects. Potential replenishment projects can be grouped into two categories:

- Indirect or in-lieu replenishment involving use of non-potable water for industrial/dust control or landscaping purposes, or
- Direct artificial recharge.

The indirect or in-lieu replenishment projects result in conservation of groundwater for potable use by satisfying industrial or irrigation water demands with untreated surface water or reclaimed wastewater in lieu of groundwater. Water for

industrial uses could be supplied by secondary reclaimed wastewater, but the quantity conserved in Scotts Valley would likely be small. Water for irrigation and landscaping may also be supplied by secondary reclaimed wastewater in place of groundwater.

Water for direct artificial recharge may be supplied by streamflow or reclaimed wastewater. Direct recharge of wastewater is highly regulated and constrained to protect public health. Current draft regulations for artificial recharge of reclaimed wastewater are shown in Table 4. For example, wastewater must account for less than 50 percent (with tertiary treatment including filtration) or 20 percent (with secondary treatment) of the total recharged water recovered in a well. In addition, nearby production wells within 500 to 2,000 feet of a recharge site may have to be abandoned as drinking water sources.

Specific potential sources of replenishment water include the following:

- Streamflow from Bean Creek,
- Streamflow from Carbonera Creek,
- Reclaimed wastewater,
- Local streamflow, and
- Watkins-Johnson remedial pumpage.

Bean Creek was eliminated as a source due to its sensitivity as a year-round fish and wildlife habitat. Watkins-Johnson was eliminated as a potential source because it is already being reused for other purposes. Therefore, the primary sources of water are Carbonera Creek (only during the wet season), reclaimed wastewater

TABLE 4
MINIMUM TREATMENT AND RECHARGE REQUIREMENTS
FOR WASTEWATER RECYCLING

RECHARGE METHOD:	SURFACE SPREADING				DIRECT INJECTION
PROJECT CATEGORY:	I	II	III	IV	V
Maximum % reclaimed water in extracted groundwater	50	20	20	20	50
Depth to groundwater (feet)					
Initial percolation rate:					
<0.20 inches/minute	10	10	20	50	NA
<0.33 inches/minute	20	20	50	100	NA
Underground retention time (months)	6	6	12	12	12
Horizontal separation* (feet)	500	500	1000	1000	2000
Level of treatment:					
Oxidation	X	X	X	X	X
Filtration	X	X			X
Organics removal	X				X
Disinfection**	X	X	X		X

* From edge of recharge/spreading operation to nearest domestic supply well.

** Disinfection level varies.

REF: Proposed Title 22 Groundwater Recharge Regulations

(year-round), and local streamflow (only during the wet season).

Chemical analyses of water from Carbonera Creek evaluated in previous studies indicate that it is probably of satisfactory quality. Evaluation and correlation of streamflow data indicate that the average annual Carbonera Creek streamflow quantity is approximately 4,000 AFY. Reclaimed wastewater is currently discharged at a rate of approximately 900 AFY and meets secondary discharge (water quality) requirements. Local streamflow is derived primarily from residential area runoff. No water quality analyses are available, and thus the quality for recharge is unknown. The initial major storms of the wet season tend to result in the poorest runoff water quality and would not be retained for artificial recharge purposes. However, water from subsequent storms typically is of higher quality and probably would be suitable for recharge. The total quantity of local streamflow is estimated to be 1,200 to 2,200 AFY, although only a fraction could potentially be retained for recharge due to its flashy nature.

Based upon our review of previous studies and an assessment of the current conditions in Scotts Valley, the following potential projects were identified:

- (1) Skypark basins,
- (2) Carbonera Creek check dams,
- (3) El Pueblo recharge wells,
- (4) Kaiser sand pit,
- (5) Bergstrom Cliffs check dams/El Pueblo sand pit, and
- (6) Valley Gardens golf course irrigation.

The preliminary replenishment projects are summarized in Table 5 and described in the paragraphs below.

(1) Skypark basins.

Skypark, slated for residential development in the near future, is one of few large flat parcels that are suitable for artificial recharge. Based upon a review of various options, it is proposed that two recharge basins be built. One basin would be located near the center of the site and dedicated to year-round recharge. The source of water during the rainy season would be local runoff generated within the new development and local streamflow diverted from the adjacent Dufuors tributary. Reclaimed wastewater could be recharged during the dry season. A second seasonal recharge basin would be located along the eastern boundary of the site. The source of water for this basin would be local runoff and streamflow.

Estimates of the quantity of recharge at Skypark were based on the following assumptions: a conservative percolation rate of 1 foot/day, a wetted area of two acres for each basin, a fully wetted basin for 60 days during the rainy season, and 20 percent wastewater usage in the dedicated basin. These assumptions yield estimates of 120 AFY for the seasonal basin and 170 AFY for the dedicated basin, for a total potential recharge of 290 AFY. This estimate of potential recharge is lower than previous estimates, which assumed Carbonera Creek streamflow would serve as a source of recharge water for Skypark.

The estimates of recharge should be compared to the estimated

TABLE 5
SUMMARY OF GROUNDWATER REPLENISHMENT ALTERNATIVES

GROUNDWATER REPLENISHMENT ALTERNATIVE	SOURCE WATER TYPE/ MAXIMUM QUANTITY	QUALITY OF SOURCE WATER	EXPECTED RECHARGE QUANTITY	COMMENTS	POTENTIAL FOR RECOVERY
Skypark Basins	Local Streamflow/280 to 495 AFY	Unknown	Less Than 200 AFY	Not compatible with Kaiser, basin siting critical.	Wells 9 and 10
	20% Reclaimed Wastewater/56 to 99 AFY	Secondary Treatment			
Carbonera Creek Check Dams	Carbonera Streamflow/4,300 AFY	Satisfactory	Less than 100 AFY	Narrowing channel since 1980's.	Well 11 and El Pueblo
El Pueblo Recharge Wells	Carbonera Streamflow/4,300 AFY	Treatment Necessary	Unknown	Requires upgrade of treatment facility.	Well 11 or El Pueblo
Kaiser Sand Pit	Local Streamflow/280 to 495 AFY	Unknown	200 AFY	Not compatible with Skypark, outside SVWD boundaries, large storage capacity.	New recovery well or Well 10
	20% Reclaimed Wastewater/56 to 99 AFY	Secondary Treatment			
Bergstrom Cliffs/ El Pueblo Sand Pit	Local Streamflow/30 AFY	Unknown	20 to 30 AFY	Check dams may alleviate flooding problems.	Well 11 and El Pueblo
	Carbonera Streamflow/4,300 AFY	Satisfactory	270 AFY		
Valley Gardens Golf Course Irrigation	Reclaimed Wastewater/up to 900 AFY	Secondary Treatment	100 AFY	Replaces groundwater pumpage, potential impact on Well 10.	NA

Notes:

AFY=Acre-feet per year

NA=Not Applicable

quantity of available water. Local streamflow generated from a portion of Camp Evers and central Scotts Valley amount to 280 to 495 AFY, although only a portion of this amount may realistically be retained for recharge. In addition, a portion of local streamflow generated from runoff within the future Skypark development could also be retained. The amount of recharge actually achieved will depend on stream discharge and duration, size of diversion works, and available storage and recharge rate in the basins. Reclaimed wastewater also could be available for recharge, amounting to 20 percent of retained streamflow. Based on the limited quantity of local recharge water that realistically can be diverted, it is estimated that the amount of water that can be percolated at Skypark probably is 200 AFY or less.

A portion of recharged water at Skypark may be recovered with Wells 9 and 10. Some of the recharged water would also flow towards the Watkins-Johnson pumping depression and Bean Creek. Alternately, a new recovery well could be sited northwest of Skypark. Basin siting will be crucial at Skypark to maintain an acceptable distance from recovery wells (due to recharge of reclaimed wastewater), while still allowing for recovery of an acceptable portion of recharged water.

(2) Carbonera Creek check dams.

Carbonera Creek channel consists of alluvium overlying the Santa Margarita sandstone along a 3,700 foot stretch between Highway 17 and Bob Jones Lane. The creek flows generally from October through June with an average annual discharge of approximately 4,300 AFY.

The average annual flow during the past eight water years from October 1, 1985 to September 30, 1993 was approximately 2,750 AFY. These recent flows have been below average due to drought. Average annual recharge in the existing stream channel was previously estimated to be 176 AFY. Previous studies also indicated that modification of the channel with three check dams could increase recharge in the channel by an additional 136 AFY.

Based upon a May 1994 preliminary survey of stream characteristics, suitable locations for check dams exist between Carbonera Way and Bob Jones Lane. However, the morphology of the channel has changed significantly in recent years with a build-up of rather large, vegetated sand/silt bars. This has reduced the wetted channel area and likely has caused a reduction in natural stream recharge. Accordingly, the previous estimates of recharge using check dams also would need to be reduced. It is now estimated that the amount of recharge to be gained by three check dams is less than 100 AFY unless the channel is scraped out. A vacant parcel at the Carbonera Way crossing should be considered as a potential site for an off-stream spreading basin.

Recharged water could be recovered by Well 11 and the El Pueblo well field. However, the impact of contaminants in groundwater locally should be considered.

(3) El Pueblo recharge wells.

Recharge wells inject water directly into the aquifer, and thus require high quality source water, such as treated surface water or tertiary treated wastewater. Wastewater can constitute only up to

50 percent of recharged water, so an additional source of high quality water is needed for blending (see Table 4). A source of high quality recharge water would be available if Carbonera Creek water could be diverted to the water treatment facility at El Pueblo well field. However, the treatment facility would likely have to be upgraded to handle a higher capacity of water and to filter sediment.

Carbonera Creek water could be diverted by imbedding a perforated diversion pipe several feet below the channel bed. This would allow some natural filtration to occur through the sand in the channel bed. The creek water would then flow through the pipeline to the El Pueblo treatment facility. Following treatment, the water could be injected into Well 3A, Well 7 or a new injection well, and subsequently extracted through Well 11. The quantity of recharged water would be dependent upon available flow in Carbonera Creek, the capacity of diversion, transmission, and treatment facilities, and recharge capacity of the injection well.

(4) Kaiser sand pit.

Kaiser sand pit previously served as a recharge/disposal site for treated wastewater in the 1970's and early 1980's. In 1974, the majority of the wastewater treatment plant capacity of 100,000 gpd was disposed of at Kaiser sand pit. A 1974 study (Harding Lawson Associates, 1974) indicated that as much as 400,000 gpd (or 450 AFY) of reclaimed wastewater could be disposed of in the sand pit.

The sources of water are the same as those for Skypark. As with Skypark, the use of reclaimed wastewater would require a

second source of water for blending. It is anticipated that local streamflow (amounting to 280 to 495 AFY) could serve as the other source of water unless it is diverted for other uses (such as Skypark). Based upon the available sources of water, it is estimated that the total quantity of recharge in Kaiser sand pit would potentially be greater than at Skypark because of the greater storage available in the sand pit. It is estimated to be approximately 200 AFY.

Although this site is located outside SVWD boundaries, a significant portion of recharged groundwater could be expected to flow north into SVWD boundaries. A portion of recharged water could potentially be recovered by Well 10 or a new recovery well located northwest of Well 10. Some recharged water would also be expected to flow toward Bean Creek.

(5) Bergstrom Cliffs check dams/El Pueblo sand pit. This site includes a small drainage watershed of about 45 acres and a relatively flat quarried area on Scotts Valley Drive at El Pueblo Road. It is estimated that an annual average runoff of 30 AFY would be available from the watershed. Check dams could be constructed along the drainage to retain water and percolate it into the permeable, underlying Santa Margarita sandstone. It is likely that much of the 30 AFY could be recharged.

A second phase of this project could involve construction of a three acre recharge basin, receiving water diverted from Carbonera Creek. Assuming the basin could remain wetted for 90 days per year with a conservative percolation rate of one foot per

day yields a recharge quantity of 270 AFY. Recovery of the recharged water would be achieved through Wells 11, 3A, or 7. Wastewater recharge was not considered, as it would entail abandonment of Well 11 as a drinking water source.

(6) Valley Gardens golf course irrigation.

Valley Gardens golf course consists of 33 acres including 1.5 acres of ponds and waterways. Groundwater is currently pumped into the ponds, which also serve as storage for irrigation water. A large portion of the irrigation needs of the golf course could be met with reclaimed wastewater. Valley Gardens has previously used on the order of 100 AFY of reclaimed wastewater for irrigation purposes. This conservation measure would indirectly benefit the water table by reducing pumpage in Valley Gardens' well. In addition, nearby residential developments with landscaped commons (i.e. Vista del Lago, Spring Lakes) may offer potential for irrigation with reclaimed wastewater. However, potential impacts on Well 10 would have to be considered.

Mitigation of Pumpage Impacts. In summation, groundwater storage declines in recent years have been on the order of 500 to 600 AFY. These declines are localized in the Camp Evers and Scotts Valley Drive areas, and reflect intensive pumpage from major municipal and private wells. Recovery of groundwater levels in these areas probably will require not only redistribution of groundwater production, but also increased conservation of water and active replenishment. Given the complexity of the local

hydrogeologic setting, such active groundwater management will need to be based on a comprehensive, but detailed understanding of the local hydrogeology.

As indicated, alternatives exist for mitigation of the pumpage impacts in the Camp Evers and Scotts Valley Drive areas. It is likely that more than one replenishment project would be needed to offset the groundwater declines of 500 to 600 AFY experienced in recent years. Additional management, conservation, and replenishment efforts would be needed to provide for any additional increase in local water demands.

Replenishment projects can entail significant costs, and for that reason should be planned and implemented in the context of basin-wide water resource management and in coordination with SLVWD, Santa Cruz County, and other major groundwater users. This is particularly true in the Camp Evers area. Replenishment projects also should be supplemented with continued efforts to encourage conservation measures (such as low flow plumbing fixtures and drought resistant vegetation) and efforts to encourage wastewater reclamation and recycling.

Recommendations

- More than one project should be considered to mitigate local impacts of groundwater pumpage and to ensure long-term groundwater supply.

- Each project described in this section has been presented in a preliminary and conceptual manner. More detailed investigations would need to be carried out to further evaluate the proposed projects. Additional studies should include:
 - 1) The discharge of the Camp Evers tributary of Carbonera Creek should be measured periodically to determine this flow out of the basin. The contribution of landscaping ponds and waterways to this outflow should be assessed. If the contribution is significant, SVWD and SLVWD should encourage local landscaping entities to develop a joint landscaping water management plan, including determination and implementation of measures to mitigate this loss of water.
 - 2) Field work to evaluate subsurface stratigraphy, percolation rates, stream discharge/duration, and water quality.
 - 3) Computer modeling to evaluate mounding effects, subsurface retention times, and the ultimate destination of water originating from recharge facilities.
 - 4) Cost/benefit analysis to evaluate the actual cost per acre-foot of recharge water.
 - 5) Assessment of environmental impacts.
- All projects discussed in this section warrant further consideration, in addition to others that may be proposed.
- Replenishment projects should be planned and implemented in

the context of basin-wide groundwater resource management, and coordinated when appropriate with SLVWD, Santa Cruz County, and major groundwater producers.

- SVWD, SLVWD and other groundwater producers should continue efforts to encourage conservation measures such as low flow plumbing fixtures and drought resistant vegetation.
- SVWD should continue to work with the City of Scotts Valley to encourage appropriate recycling and reuse of wastewater.

Section 4

GROUNDWATER QUALITY

The natural quality of groundwater in the Scotts Valley groundwater basin is typically high. However, the occurrence of volatile organic compounds in SVWD wells and the Manana Woods well has resulted in increasing concern over groundwater contamination and the lack of timely and effective source identification and remediation. The Santa Margarita aquifer is particularly vulnerable to contamination by leaks and spills at the surface due to the permeable nature of deposits which crop out at the ground surface. In 1982, the Santa Margarita groundwater basin was designated as a sole source aquifer by the USEPA. This means that the City of Scotts Valley and nearby communities use this aquifer as their sole or principal water supply. Therefore, it is deserving of special protection.

The discussion of groundwater quality presented here will focus on human-induced groundwater quality problems. This section will present the regulatory framework for the identification and remediation of contamination problems; areas of contamination identified in the Scotts Valley; and various groundwater contamination prevention programs and activities.

4.1 Regulatory Responsibilities

Several local, state, and federal agencies have responsibilities for preventing, identifying, and remediating

groundwater contamination problems in Scotts Valley. These agencies include: the USEPA; the California Environmental Protection Agency, Department of Toxic Substance Control (Cal-EPA); the Regional Water Quality Control Board, Central Coast Region (RWQCB); and the Scotts Valley Fire Protection District (SVFPD). Generally, responsibility for potential contamination sites, suspected contamination sites, and actual contamination sites are distributed between these various agencies. The criteria for distribution of sites between the various agencies is somewhat vague; however, there are some guidelines for the allocation of responsibility.

At the local level, the SVFPD oversees the City of Scotts Valley's hazardous materials management program; implements state regulations for the installation, monitoring, use, and removal of underground storage tanks; and is the first responder in the event of a hazardous material release. The SVFPD also oversees monitoring well and deep soil boring installations and destructions. At the state level, the RWQCB regulates sites where groundwater contamination from underground storage tanks or other sources has occurred. Generally, Cal-EPA oversees sites where groundwater contamination has been detected but the potentially responsible party (PRP) has not been identified or the identified PRP is not financially solvent. At the federal level, the USEPA commonly oversees sites that are on, or proposed for, inclusion on the National Priority List (NPL) of federal Superfund sites.

SVWD is responsible for monitoring of its water supply and

provision of water satisfying state and federal drinking water standards. Although SVWD does not have regulatory authority for the prevention, identification or remediation of contamination sites in Scotts Valley, several groundwater contamination problems have been discovered by SVWD through its regular monitoring of water supply wells. SVWD monitors the groundwater at its active water supply wells at least semi-annually, and monthly if constituents of concern are detected. Groundwater is sampled at the frequency specified and for the constituents required by Title 22, California Administrative Code, Chapter 15. Analyses which have been performed include: general mineral, physical, inorganic, radiological, bacteriological, and regulated and unregulated organics. Water quality data are compiled and analyzed by SVWD and its consultants; water quality concerns are discussed in the annual Scotts Valley Water Resources Management Plan reports (Todd Engineers, 1984 to 1994).

Identification of sources and remediation of groundwater contamination problems is often a slow and difficult process. As a result SVWD has been compelled to provide well head treatment for contaminated groundwater in order to provide water to its costumers which meets regulatory standards. To protect its production wells from the adverse effects of contamination SVWD has previously identified groundwater protection and management zones (Todd Engineers, 1988). Management and protection zones were delineated primarily on the basis of recharge areas, pumpage areas, and risk of contamination. Groundwater management and protection zones were

further refined in the AMBAG study (Watkins-Johnson Environmental, Inc., September 1993).

4.2 Groundwater Contamination

Several areas of groundwater contamination have been identified in Scotts Valley as shown on Figure 10. Groundwater contamination problems include: benzene and 1,2-dichloroethane (1,2-DCA) identified in the Camp Evers area; chlorobenzene, dichlorobenzene and other solvents found along Scotts Valley Drive; and trichloroethene (TCE) and other solvents under remediation at the Watkins-Johnson site.

Camp Evers. Volatile organic compounds (VOCs) have been detected in three water supply wells in the Camp Evers area including the SVWD's Hidden Oaks well and Well 9, and the Manana Woods Mutual Water Company well (Manana Woods well). The Hidden Oaks well has shown detectable concentrations of a variety of VOCs in past sampling events including: benzene, ethylbenzene, 1,4-dichlorobenzene, 1,1-dichloroethane, 1,2-DCA, and xylenes. Well 9 and the Manana Woods well have shown detections of benzene only, with the exception of a single detection of 0.6 parts per billion (ppb) of 1,2-DCA in Well 9 in March 1994. The highest concentration of benzene detected has been 1,300 ppb, 39 ppb, and 9.4 ppb in the Hidden Oaks well, Well 9, and the Manana Woods well, respectively.

The RWQCB has identified ten possible sources of the

contamination detected in these water supply wells (RWQCB, July 1993, September 1993, and April 1994). Figure 11 shows the wells that are monitored in the Camp Evers area, and the possible contamination source locations that have been investigated by the RWQCB. The highest concentration of benzene detected in wells along with the general groundwater flow direction are also indicated on the figure. The RWQCB has not yet found a definitive link between the contamination detected in water supply wells and any of the potential sources. Each of the potential sources is discussed below.

(1) Scotts Valley Middle School, 8 Bean Creek Road.

Two or three underground diesel tanks were removed from the site in 1988. Analyses performed on samples from a boring in the vicinity of the site showed no detected concentrations of VOCs. The RWQCB does not believe this site is a likely source of water supply well contamination.

(2) City of Scotts Valley, 370 Kings Village Road.

Two underground fuel tanks were removed from the Scotts Valley Old City Hall site. Soil samples taken during tank removal showed minor contamination (approximately 200 ppb total petroleum hydrocarbon). The RWQCB does not believe this site is a likely source of water supply well contamination.

(3) City of Santa Cruz, Skypark, Kings Village Road.

The Skypark Airport was operated in the past by the City of Santa Cruz. The Skypark property was recently annexed to the City of Scotts Valley. Four underground gasoline tanks were removed from

the site in 1984. Petroleum hydrocarbons were identified at elevated concentrations (6,400,000 ppb) in one of four soil borings at a depth of 15 feet. No gasoline hydrocarbons or benzene, toluene, ethylbenzene, or xylene (BTEX) compounds were detected in groundwater sampled from the Skypark Airport supply well. Petroleum hydrocarbons were detected at low levels (64 ppb) in a perched groundwater sample taken from a shallow soil boring (Weber, Hayes & Associates, 1994). The contamination associated with the underground tanks at Skypark appears to be localized. Remediation of soil contamination is being required. The RWQCB does not believe this site is a source of water supply well contamination.

(4) Hidden Oaks.

This site was used as an equipment storage yard in the past, and it is possible that petroleum products were spilled on the ground surface. No investigations have been performed at this site. The RWQCB has no evidence that this site is a source of water supply well contamination.

(5) Manana Woods.

The Manana Woods Mutual Water Company has at least two old wells on their site which could act as conduits to the aquifer. The RWQCB has no evidence that this site is a source of water supply well contamination.

(6) BP Service Station, 201 Mount Hermon Road.

Minor hydrocarbon soil contamination was detected at this site when fuel tanks were replaced with double walled tanks. Groundwater contaminated with petroleum hydrocarbons has been detected at the

site; however, higher levels of contamination have been detected upgradient of the site at the Unocal Service Station. The RWQCB does not consider this site a likely source of water supply well contamination.

(7) Unocal Service Station, 99 Mount Hermon Road.

Groundwater and soil contaminated with petroleum hydrocarbons were discovered at this site in October 1986. Remediation at the site has included replacement of four underground storage tanks and a waste oil tank in November 1990 with new double walled tanks, removal of 730 cubic yards of hydrocarbon affected soil around the tanks, installation of 18 monitoring wells, operation of a groundwater extraction and treatment system, and operation of a vapor extraction system. Recent sampling of wells downgradient from the Unocal site indicate that groundwater contamination is localized (RESNA, 1994). The RWQCB will consider the Unocal plume delineated and therefore not a source of water supply well contamination if additional monitoring confirms recent results.

(8) Shell Service Station, 90 Mount Hermon Road.

Groundwater and soil contaminated with petroleum hydrocarbons have been discovered at and downgradient of the site (Pacific Environmental Group, 1993). Three underground fuel tanks at the site were replaced with double walled tanks. A soil vapor extraction system has been proposed to remediate soil contamination at the site. A former Chevron Service Station, which shows higher levels of soil and groundwater contamination than the Shell site, is located downgradient. As this site is located upgradient of a

source with higher concentrations of contaminants, this site could be at most a minor contributor to water supply well contamination.

(9) Former Chevron Service Station, 200 Mount Hermon Road. Groundwater contaminated with petroleum hydrocarbons have been discovered at and downgradient of the site. 1,2-DCA has also been detected in onsite monitoring wells. One set of underground tanks located on the east side of the site were probably removed around 1963 when new tanks were installed on the west side of the property (Pacific Environmental Group, January 1994). These three newer underground fuel tanks and one waste oil tank were removed in 1982. Recent groundwater sampling indicated elevated levels of benzene detected downgradient of the site (Pacific Environmental Group, March 1994). The RWQCB considers this site a possible source of water supply well contamination.

(10) Former ARCO Service Station, 4253 Scotts Valley Drive. Preliminary investigations have found two previously unknown underground tanks still in the ground at this site. Soil samples have been taken at the site and the results are pending. Further investigation will be performed to determine if a gasoline release occurred at this site. The RWQCB currently has no evidence that this site is a source of water supply well contamination.

Figure 12 shows the highest concentration of benzene detected in 1993-1994 in monitoring wells located at the intersection of Mount Hermon Road and Scotts Valley Drive. As shown, the highest concentrations of benzene are detected in the vicinity of the former Chevron Station. General groundwater flow is to the west

and northwest, or in other words, from the vicinity of the Mount Hermon/Scotts Valley Drive intersection towards the affected wells. Accordingly, the groundwater flow direction and distribution of benzene in the area of the service stations indicate that this area probably is a source of contamination in the water supply wells. Accordingly, the Camp Evers benzene problem probably is a single extensive plume as illustrated on Figure 10.

El Pueblo Road. Three separate VOC problems have occurred in the El Pueblo Road area (between Scotts Valley Drive and Highway 17) affecting four SVWD water supply wells. The affected wells include Wells 6, 3A, 7 and 11. Tetrachloroethene (PCE) was detected first in Well 6 in 1984, and was consistently detected at low concentrations (less than 2.2 ppb) from 1984 to 1986. However, sampling performed in late 1986 and 1988 showed no detected concentrations of PCE. Well 6 is no longer in service. Second, TCE was detected in Wells 3A and 7 in 1984. However, VOCs have not been detected in these two wells since September 1991. A third problem was identified when chlorobenzene was detected in 1991 in Well 11. Chlorobenzene and dichlorobenzene were detected in varying concentrations in several other local wells during sampling performed in 1986 and 1988. Chlorobenzene was detected at 2.8 ppb in Well 11 during the most recent sampling event in March 1994. Figure 13 shows the approximate extent of the chlorobenzene plume based on the highest concentrations detected in Well 11 and other wells in the area.

Cal-EPA is the lead agency overseeing characterization and remediation of contamination detected in the El Pueblo Road area. Identification of possible sources of contamination in the El Pueblo Road area has been the focus of investigation for a number of years (California Department of Health Services (DHS), 1987 and 1988). The USEPA funded a study to identify current and past hazardous materials users in the area (Ecology & Environment, Inc., 1986). Priority sites were inspected for use and hazardous materials management practices. Several potential sources of contamination in the area have been identified; however, to date the source or sources of elevated chlorobenzene detected in Well 11 have not been determined (PRC Environmental Management, Inc., 1993). A discussion of potential sources of contamination detected in SVWD water supply wells is presented below.

(1) Scotts Valley Circuits, 66 El Pueblo Road.

VOCs have been detected in soil and groundwater at the Scotts Valley Circuits site. VOCs in soil were first detected at the site in December 1988 in the vicinity of an underground wastewater treatment sump, which is thought to be the primary source of contamination. Chemicals detected in perched groundwater at the site include: PCE, TCE, trichloroethane (TCA), dichloroethene (DCE), dichloroethane (DCA), benzene, toluene, and xylenes. Monitoring wells at the site are screened opposite this perched groundwater zone; however, deeper groundwater monitoring at the site has not been performed. Scotts Valley Circuits has completed a Remedial Investigation (On-Site Technologies, 1992 and 1993), and

a Feasibility Study (Cypress Environmental, 1993). The preferred remedial alternative is soil excavation, vapor extraction, and perched groundwater extraction and treatment. A final remedial action plan remains to be drafted and approved by the Cal-EPA following the results of a treatability study. The Scotts Valley Circuits site is a possible source of the contamination detected in Wells 3A and 7.

- (2) Former Technical Plastics (Currently Seagate Technology and Si-Fab Corporation), 19 and 27 Janis Way.

Hazardous materials may have been disposed onsite. Soil sampling conducted in 1990 found various chemicals in the soil including: toluene (less than 6 ppb), PCE (2 ppb), ethylbenzene (less than 450 ppb), xylene (less than 100 ppb), 4-methyl,2-pentanone (3 ppb), hexanone (14 ppb), and styrene (less than 980 ppb). This site has moderate potential for release of contaminants to groundwater.

- (3) J&E Machine (Currently Ashland Machines), 5998 Butler Lane.

The site was operated by J&E Machine from 1980 to 1986 and was cited by the RWQCB in 1984 for illegal discharge of TCE to Carbonera Creek and illegal hazardous waste storage. The site reportedly contained a 5,000 gallon underground storage tank. This site was given a high priority for further sampling by the Ecology and Environment, Inc. study; however, it appears that no further sampling has been performed at this site.

(4) Tate Western, 340-F El Pueblo Road.

Soil contamination with toluene (less than 6,300 ppb) was detected on an adjacent property due to Tate Western chemical handling activities. Approximately 36 cubic yards of affected soil and 3,000 gallons of contaminated rain water were removed from the site. No further sampling was recommended in the Ecology & Environment, Inc. study.

(5) Pettibone Signs, 17 Janis Way.

Small quantities of wastes may have been disposed onsite. This site was given a medium priority for further sampling in the Ecology & Environment, Inc. study. It does not appear that any additional sampling has been performed at this site.

(6) Carbonera Trailer Park, Disc Drive.

Chlorobenzene (76 ppb) and dichlorobenzene (1,100 ppb) have been detected in two groundwater wells located at this site. These concentrations are the highest detections of chlorobenzene and dichlorobenzene in groundwater in the El Pueblo Road area. No soil sampling has been done at this site. Due to the relatively high detections in wells on the site, a possible source may be located nearby.

(7) Septic Systems, regional.

All facilities in the El Pueblo Road area used septic systems and leach fields until 1970 to dispose of sanitary wastewater. Between 1970 and 1975, sewers were installed. Discussions with the Scotts Valley Department of Public Works indicates that a small percentage of businesses scattered around the city could still be on septic

systems. Improper disposal of chemicals into septic systems and leach fields could result in groundwater contamination. Septic system cleaners have in the past contained hazardous chemicals including orthochlorobenzene. There is a potential for inactive and active septic and leach field systems in the area to contribute to groundwater contamination.

Watkins-Johnson. Watkins-Johnson is located at 440 Kings Village Road adjacent to the Skypark Airport on the western perimeter of the City of Scotts Valley. Investigations initiated in 1984 found a number of organic compounds in soil and groundwater at the site. Site characterization and remedial activities were originally overseen by the RWQCB; currently the USEPA provides regulatory guidance because Watkins-Johnson is a proposed NPL site. A dilution tank located on the site and removed in 1987 is the major suspected source of site contamination. In the vicinity of the Watkins-Johnson site, the Santa Margarita aquifer is comprised of a perched and regional zone. TCE is the key constituent detected in perched and regional groundwater (Watkins-Johnson Environmental, Inc., April 1989). In 1987, a program of aquifer restoration was initiated (Watkins-Johnson Environmental, Inc., November 1989). Operation of remedial facilities at the site has reduced the extent of groundwater contamination at the site to within site boundaries. The Watkins-Johnson site is not a suspected source of contamination to water supply wells.

Other Identified Contamination Sites. Several other leaking underground storage tanks sites have been identified in Scotts Valley. These sites include:

- Jeff Mora Property, 5276 Scotts Valley Drive,
- Exxon Station, 5620 Scotts Valley Drive,
- Chevron Station, 6012 Scotts Valley Drive,
- Shell Station, 1 Hacienda, and
- Fast Gas, 5451 Scotts Valley Drive.

These sites show minor contamination which is either confined onsite or has been remediated to low levels. These sites are not likely sources of water supply well contamination.

4.3 Groundwater Contamination Prevention

Groundwater contamination prevention programs are the best strategy for minimizing future groundwater contamination problems. This is particularly true in Scotts Valley because of the permeability and susceptibility of local aquifers to contamination, difficulty in determining the sources of groundwater contamination, extended periods of time and high costs required to remediate known contamination problems, and added cost of wellhead treatment by water purveyors.

There are a number of groundwater contamination prevention activities which have been or could be implemented in Scotts Valley. The topics related to groundwater protection discussed in the following sections include well construction, abandonment, and destruction; hazardous material management; underground storage

tanks; septic tank disposal systems; and city planning and zoning. These activities are performed by various state and local agencies. While SVWD has some responsibility for the construction and destruction of supply wells, the prevention of groundwater contamination requires the cooperation of a number of local and state agencies. The regulatory framework for the implementation of groundwater prevention programs is discussed at the end of this section. Recommendations to improve groundwater protection are presented at the end of each section.

Well Construction, Abandonment, and Destruction. Water wells connect the ground surface to the aquifer, and can connect one aquifer to another; consequently they can act as conduits for the transmission of pollutants from the land surface to the aquifer or from a shallower aquifer to a deeper aquifer. However, properly constructed and destroyed wells are engineered to minimize such mechanisms of transmission.

Responsibility for regulation of the construction, abandonment, and destruction of water wells is divided between the DWR, SVWD, Santa Cruz County, SVFPD, and the USEPA. The California Water Code Section 231 requires the DWR to develop well standards to protect California's water quality. DWR Bulletin 74-81 (1981) and supplemental Bulletin 74-90 (1991) contain the minimum requirements for constructing, altering, maintaining, and destroying wells. Local governments may have more stringent standards than those of the DWR. In Scotts Valley, DWR standards

for the permitting, construction, abandonment, and destruction of water supply wells are enforced by SVWD and Santa Cruz County; while the permitting, construction, abandonment and destruction of monitoring wells and soil borings are enforced by the SVFPD.

A database of domestic, industrial, and municipal water supply wells and around the SVWD boundaries has been compiled by Todd Engineers. The database documents the well owner, location, uses, and construction and hydrogeologic information. Figure 14 shows the locations of known private, irrigation, industrial and municipal water supply wells in and around Scotts Valley. As can be seen on the figure, many wells have been constructed, with at least 100 wells drilled within the district boundaries. A review of the water well drillers reports show that many of these wells are old and screened at relatively shallow depths. It is likely that many of these wells are no longer in use and have been destroyed; however, documentation of well destructions is scarce and in many cases does not exist. It is likely that some of these wells have been lost or covered over at the surface and have not been properly destroyed. These lost and abandoned wells provide a potential conduit for the migration of contaminants from the ground surface to the depth penetrated.

In addition, since small private groundwater users in Scotts Valley are not well documented, it is not clear whether some private well users may be consuming groundwater that is contaminated with low levels of VOCs. There is no mechanism currently in place, other than newspaper articles, to inform small

private well owners of contamination problems.

The SVFPD implements DWR standards and the more strict standards for monitoring wells that were developed by the Santa Clara Valley Water District (SCVWD, 1989). The SVFPD keeps records of all monitoring well installations in Scotts Valley with the exception of monitoring wells installed at the Watkins-Johnson site, which are regulated by the USEPA. There are 87 groundwater monitoring, vadose zone monitoring, groundwater recovery, and vapor extraction wells documented in SVWPD records. An additional 51 monitoring wells are located on and around the Watkins-Johnson facility.

To date, Scotts Valley has had no documented problems associated with old wells acting as conduits for the migration of contaminants. Nonetheless, prevention of future problems can be facilitated by better documentation of existing wells and stricter enforcement of DWR guidelines.

Recommendations

- Continue to update and maintain the well inventory database to include all wells within SVWD boundaries.
- Document the status of wells within the SVWD boundaries and update well inventory database (i.e. identify and inventory active and destroyed wells).
- Establish a notification system to alert private groundwater users of contamination problems within the SVWD boundaries.

- Given the existence of multiple aquifer systems within SVWD, implement well construction standards to prevent cross-contamination of aquifers (i.e. installation of conductor casings and minimum seal depths).
- Establish and enforce a permitting system for well destructions within the SVWD boundaries and track well destruction in the well database.
- Establish a program to identify (e.g. during real estate property transfers) and encourage the proper destruction of abandoned wells within the SVWD boundaries.

Hazardous Materials Management. Hazardous materials users pose a threat to groundwater quality through accidental or intentional surface spills, leaking underground storage tanks, and improper handling, storage, and disposal. It should be noted that the general public also handles hazardous wastes in the form of paints, fertilizers, pesticides, household cleaners, and waste oil.

The SVFPD is the local agency which oversees hazardous materials management for the City of Scotts Valley, while hazardous wastes are regulated by the Santa Cruz County Health Services Agency, Environmental Health Service (Santa Cruz County). Santa Cruz County also oversees the household hazardous waste programs in Scotts Valley. The hazardous materials management program as implemented by the SVFPD is intended to insure that hazardous materials are properly stored and monitored, that leaks and spills are detected in a timely manner, and that proper

reporting and corrective actions are taken in the event of a leak or spill. A Hazardous Materials Management/Business Plan (HMMP) must be submitted by businesses or individuals who use or store toxic chemicals or hazardous materials over certain volumes, as part of the application for a Hazardous Materials Permit. The HMMP contains information on types and volumes of hazardous materials used, storage, and safety procedures.

A risk management and prevention program (RMPP) is required if a location stores or uses extremely or acutely hazardous material. No business in Scotts Valley has been required to file a RMPP.

Figure 15 shows the locations of hazardous materials users in Scotts Valley on file at the SVFPD. Sixty-four facilities have been identified as hazardous materials users in Scotts Valley. As shown, hazardous materials users are clustered along Scotts Valley Drive and between Scotts Valley Drive and Highway 17. There are no hazardous waste transfer, treatment, storage, and disposal facilities (TSDF) in Scotts Valley.

Recommendations

It is recommended that SVWD cooperate with the city and other agencies to:

- Establish a public/business education program emphasizing the importance of the proper disposal of hazardous materials.
- Institute programs encouraging reduced hazardous material use and waste minimization programs.
- Consider stricter regulations for hazardous material users.

Underground Storage Tanks. The SVFPD implements state regulations for the installation, monitoring, use, and removal of underground storage tanks (USTs) in Scotts Valley. The SVFPD keeps a database that documents the locations, status, capacity, construction, and contents of USTs in Scotts Valley. The UST information is reported to State Water Resources Control Board (SWRCB).

Review of SVFPD records show that there are 37 active USTs located at 13 sites in Scotts Valley. Of the 37 active USTs, 15 are single-walled, and 22 are double-walled and meet new tank requirements for UST construction and monitoring standards. At least 50 USTs within Scotts Valley have been removed, while one tank was identified as closed in place and two previously unknown tanks are scheduled for removal. Figure 15 shows the locations of active, inactive, removed, and closed-in-place USTs in Scotts Valley, most of which are located along Scotts Valley Drive. Because of the density of USTs and other hazardous material use, this area has a high potential for release of pollutants to groundwater and surface water. It should be noted that it is likely that USTs may exist which have not been documented. Two recently discovered tanks on Scotts Valley Drive attest to this possibility. Other USTs may have been removed prior to institution of inspection programs without proper testing to determine if the tanks had leaked.

Chapter 6.7, Division 20 of the Health and Safety Code and the California Underground Storage Tank Regulations (Subchapter 16 of

Title 23 CCR), established a program for regulation of USTs that requires local implementing agencies to permit, inspect, and oversee monitoring programs to detect leakage of hazardous materials from USTs. The following requirements for new and old USTs are among those described in the California Underground Storage Tank Regulations.

New tank construction standards require that all new USTs (including associated piping) used for the storage of hazardous substances shall be required to have primary and secondary levels of containment. New tank monitoring standards require that all exterior surfaces of the USTs and the surface of the floor directly beneath the USTs shall be capable of being monitored by direct viewing. The liquid level in the USTs shall be recorded at the time of each inspection. The secondary containment system shall be equipped with a continuous monitoring system that is connected to an audible and visual alarm system.

The observation of any liquid around or beneath a UST shall require the owner/operator to undertake the following action or actions:

- 1) Conduct an appropriate laboratory or field analysis of the observed liquid. If the liquid is a hazardous substance, proceed with actions 2 and 3 below.
- 2) Conduct an appropriate tank integrity test.
- 3) If a leak is confirmed, immediately remove all hazardous substances from the UST and the secondary containment system.

Old tank monitoring standards apply to owners of existing USTs that do not meet new tank construction requirements. These standards require implementation of a monitoring program that is capable of detecting any unauthorized release from any portion of the UST system at the earliest possible opportunity. The monitoring program shall include visual and non-visual monitoring.

The owner or operator shall undertake all of the following activities if any liquid around or beneath an old UST is observed:

- 1) Any and all action necessary shall be taken to promptly determine if the observed liquid constitutes an unauthorized release.
- 2) Observed liquid shall be analyzed in the field or laboratory to determine if an unauthorized release has occurred.
- 3) The UST shall be tested utilizing a quantitative release detection method.
- 4) If the above steps indicate that an unauthorized release has occurred, the owner or operator shall replace, repair or close the UST.

The California Trade and Commerce Agency, Office of Small Business offers low interest loans for repairing underground petroleum storage tank projects (RUST). Qualified businesses have total resources not exceeding 21 million dollars over a three year period. Eligible projects include the upgrade, repair, or removal of underground storage petroleum products. Measures can also include minor cleanup. Loan amounts are from \$10,000 to \$350,000

with low, fixed-rate financing, and up to 20 years to repay.

The California State Legislature created the UST Cleanup Fund (SB 2004) to provide funding to eligible UST owners and operators for the cleanup of contaminated soil and groundwater caused by leaking petroleum USTs. Owners/operators of petroleum USTs are eligible for funding if they meet the following requirements:

- 1) There has been an unauthorized release of petroleum from the UST reported to and confirmed by the regulatory agency.
- 2) As a result of this unauthorized release, the owner/operator must take corrective action as required by a regulatory agency.
- 3) The owner/operator must be in compliance with any applicable financial responsibility requirements and by UST requirements.

The maximum amount available from the UST Cleanup Fund per occurrence is \$990,000. Claimants are responsible for the first \$10,000 of eligible corrective costs.

It is clear that leaking USTs have been a serious groundwater contamination source in Scotts Valley. Several sites have been identified where leaking USTs have impacted groundwater. The high cost and extended time required to identify and remediate these sites makes the prevention of leaks a desirable alternative. Single walled tanks pose a particular hazard because leakage is often not detected until a release has occurred. The current application of state standards to the use, monitoring, and removal of USTs may not provide adequate protection to the groundwater

resources of Scotts Valley. Although SVWD has no regulatory authority over USTs, SVWD should encourage stricter regulation.

Recommendations

SVWD should cooperate with the City of Scotts Valley and other agencies to:

- Develop more stringent local standards for the use, monitoring, removal, and replacement of USTs.
- Eliminate exemptions to UST requirements such as residential tanks, farm tanks, and elevator vaults.
- Require replacement of single walled tanks or upgrade monitoring requirements.
- Evaluate feasibility of local regulation of UST cleanups to speed the process of source identification and remediation.
- Discourage additional installations of USTs in Scotts Valley.

Septic Tank Disposal Systems. Septic tanks and cesspools are one of the most frequently reported sources of groundwater contamination in the United States. Prior to 1964, all of Scotts Valley used septic systems, leach fields and cesspools for the disposal of wastewater. The first sewage treatment plant in Scotts Valley was built in 1965 and sewer lines were extended to various areas over a period of years. For example, homes and facilities in the El Pueblo Road area used septic systems and leach fields until 1970, while some residential neighborhoods located along Lockwood Lane south of Mount Hermon Road were not sewered until the mid-

1980s. Four major outlying residential areas still rely upon septic systems for waste disposal (Figure 16). Currently, all businesses and private residences within 200 feet of sewer lines are required to hook into the sanitary sewer system. Discussions with the Scotts Valley Department of Public Works indicate that a small percentage of businesses and private residences (less than 5 percent) scattered around the city could still be on septic systems.

In the past, problems with elevated nitrate concentrations in groundwater have been attributed in part to use of residential septic systems. In addition, improper disposal of chemicals into septic systems and leach fields can result in the release of metals and organic constituents to groundwater. Septic system cleaners and drain cleaners contain hydrocarbons and chlorinated hydrocarbons which can leach into groundwater.

Recommendations

SVWD should cooperate with the City of Scotts Valley to:

- Review records of Scotts Valley City Finance Department to identify businesses and residences not currently connected to sanitary sewer system; and
- Encourage all businesses and residences not currently hooked to the sanitary sewer system to connect to system.

City Planning and Zoning. A city zoning map, Figure 17, shows the distribution of land use in the City of Scotts Valley. Light

industrial and commercial service zones are shown to be concentrated along Scotts Valley Drive and Highway 17 and along Mount Hermon Road. These zones represent the areas of greatest risk to groundwater quality because they are current and potential locations of hazardous materials users, USTs, and potential sources of contaminant release. These areas have been recognized as "high risk" (Todd Engineers, 1988), and as needing greater management. Accordingly, groundwater prevention programs by the City and other agencies should focus on these areas as a first priority. On its part, SVWD should continue its policy of limiting groundwater supply development in shallow aquifers in these areas. In addition, SVWD should consider installation of monitor wells sited between possible contamination source areas and major municipal well fields to allow early identification of groundwater contamination problems.

Recommendations

SVWD should encourage the City to:

- Limit future industrial and commercial service development to existing areas.
- Encourage greater consideration by City planners of groundwater protection issues in land use planning.

Summary. In summation, the Scotts Valley groundwater basin is locally susceptible to groundwater contamination, and has experienced serious local groundwater contamination problems.

Several local, state, and federal agencies share responsibility for groundwater protection and remediation in Scotts Valley. However, no single regulatory agency has a regional outlook or authority on groundwater contamination problems.

SVWD does not have authority for the prevention, identification, or remediation of contamination sites. It does have some authority over the construction, abandonment, and destruction of water wells, and specific recommendations are provided to aid groundwater contamination prevention through this limited authority. However, SVWD is responsible for monitoring its groundwater supply and providing water satisfying state and federal drinking water standards. Given this responsibility, SVWD has delineated zones of groundwater contamination risk and has pursued a policy of developing groundwater supplies in areas and aquifers of low contamination risk. In addition, SVWD provides wellhead treatment for contaminated groundwater affecting some of its wells.

SVWD also monitors the status of groundwater contamination sites that pose a potential threat to groundwater resources, and to SVWD wells. Generally, key reports are sent to the SVWD; however, no official policy or agreement exists whereby SVWD is automatically and fully informed of groundwater contamination problems. Given SVWD's existing role and proven record in monitoring local water resources, and its critical responsibility in providing safe drinking water, SVWD should be automatically and fully informed of groundwater contamination situations. This information will become increasingly important if artificial

recharge or other local groundwater supply management efforts are implemented in the Camp Evers or Scotts Valley Drive areas. In turn, SVWD could help to provide a regional overview and aid in information sharing among agencies.

Section 5

CONCLUSIONS

Conclusions of each of the major sections of the report are summarized below.

HYDROGEOLOGY

1. The areal extent, thickness, and depth of the local aquifers are strongly affected by erosion and geologic folding and faulting, resulting in a complex and varied setting for groundwater storage and flow. As a consequence, groundwater and storage available to a given well could be limited.
2. Much valuable information is available on the hydrogeology of the margins of the Scotts Valley groundwater basin. However, geologic data are relatively lacking for the central portion of the basin.

GROUNDWATER SUPPLY

Monitoring

3. The water resource monitoring program is comprehensive, with an appropriate focus on the developed portions of the basin.

Groundwater Level Trends

4. Although the basin is not in overdraft, localized groundwater level declines have resulted in adverse effects, including drying up of shallow private wells, loss of production and efficiency in wells, and a somewhat lower groundwater quality.

5. The wet 1992-1993 season resulted only in a moderation of the extent and severity of localized groundwater level declines.

6. Although affected by recent drought, Bean Creek responded to the wet 1992-1993 season with increased baseflow during the summer of 1993.

Perennial Yield and Groundwater Storage

7. Perennial yield for the Scotts Valley groundwater basin has been estimated to be 4200 acre-feet/year. This is an average annual value and is relevant to the area of the Scotts Valley groundwater basin.

8. Groundwater storage in the developed portion of the basin has declined between April 1986 and April 1994 by an estimated 500 to 600 acre-feet/year, or about 10 percent of estimated total groundwater storage.

AMBAG Model

9. The model can be used to observe effects of proposed well locations and pumping configurations and potential recharge projects, consequently aiding in groundwater management.

10. The model can be supplemented by other computer programs for use in simulating migration of dissolved contaminants in groundwater.

Pumpage

11. About 70 percent of the total estimated groundwater production is metered by SVWD, SLVWD, Watkins-Johnson, and the Mount Hermon Association. Groundwater production was estimated for other groundwater users, including landscape irrigators, private water

purveyors, commercial and industrial firms, and domestic users.

12. Total estimated groundwater production is 3,460 AFY, not accounting for return flows to the groundwater basin via percolation from irrigation and landscaping ponds, leakage from pipelines, and percolation from septic tanks.

13. The estimated total groundwater pumpage amounts to over 80 percent of the estimated 4,200 AFY of perennial yield for the Scotts Valley groundwater basin, and is concentrated in the southeast one-quarter of the groundwater basin.

14. The efforts of SVWD to redistribute its pumpage have not been sufficient to mitigate localized groundwater declines. SVWD efforts should be supplemented by additional actions of SVWD and others to redistribute pumpage, minimize groundwater losses, and to initiate groundwater replenishment programs.

Replenishment

15. More than one replenishment program will be needed to mitigate localized groundwater level declines and to ensure long-term groundwater supply.

16. Six conceptual projects for direct artificial recharge or wastewater irrigation are presented with possible yields ranging from 20 to 200 AFY each.

GROUNDWATER QUALITY

Regulatory Responsibilities

17. The Scotts Valley Fire Protection District oversees the City of Scotts Valley's hazardous materials management program,

implements state regulations of underground storage tanks, oversees monitoring and soil boring installation and destruction, and responds first to a hazardous material release.

18. The California Regional Water Quality Control Board (RWQCB) regulates sites where groundwater contamination occurs from underground tanks or other sources.

19. The California Environmental Protection Agency (Cal-EPA) oversees groundwater contamination sites where the potentially responsible party is not known or is not financially solvent.

20. The United States EPA oversees sites that are on or proposed for the Superfund list.

21. The Scotts Valley Water District does not have regulatory authority for the prevention, identification, or remediation of groundwater contamination. SVWD is responsible for monitoring of its water supply and provision of water satisfying state and federal drinking water standards.

Groundwater Contamination

22. Ten possible sources of the benzene contamination in Camp Evers have been investigated by the RWQCB. Of these, three service stations along Mount Hermon Road have been identified as possible sources.

23. Cal-EPA is the lead agency overseeing the characterization and remediation of contamination in the El Pueblo Road area, and is in the process of identifying possible sources of the TCE and chlorobenzene problems. Of seven possible sources, Scotts Valley Circuits has been identified as a possible source of TCE

contamination. A Remedial Investigation and Feasibility Study for the site have been prepared; a remedial action plan remains to be drafted and approved.

24. The United States EPA is overseeing remediation at the Watkins-Johnson site, which has reduced groundwater contamination to within site boundaries.

Groundwater Contamination Prevention

25. Prevention of groundwater contamination in Scotts Valley is important because of the susceptibility of aquifers to contamination, difficulty in determining sources of contamination, extended time and high costs to remediate contamination, and added costs of wellhead treatment by water purveyors.

26. Improperly constructed or abandoned wells can provide conduits for downward migration of contaminants from the ground surface.

27. SVWD and Santa Cruz County share responsibility for enforcing standards for permitting, construction, abandonment, and destruction of water supply wells.

28. Sixty-four facilities using hazardous materials exist in Scotts Valley, located mostly along Scotts Valley Drive.

29. Thirty-seven active underground storage tanks have been identified in Scott Valley, of which 22 are double-walled and meet new tank standards.

30. Septic tanks represent other potential sources of contamination.

Section 6

RECOMMENDATIONS

HYDROGEOLOGY

1. Groundwater exploration efforts and hydrogeologic studies should be undertaken in cooperation with SLVWD and Santa Cruz County to more fully evaluate the Scotts Valley groundwater basin as a whole.

GROUNDWATER SUPPLY

Monitoring

2. Continue data compilation on wells and geology and the program of climatic, surface water, and groundwater monitoring with annual reporting.

3. Encourage coordination of groundwater level monitoring by all agencies so that the quarterly measurements occur within a small time period, such as one week.

4. Expand data compilation and monitoring as groundwater exploration and production are extended into new areas, or as needed for groundwater replenishment projects or for groundwater contamination investigations or remediation.

Perennial Yield and Groundwater Storage

5. The perennial yield and groundwater storage of the Scotts Valley groundwater basin should be reevaluated in greater detail.

AMBAG Model

6. The model should be maintained, but revised as additional hydrogeologic and groundwater production data become available.

Pumpage

7. Information on wells and metered groundwater production should be compiled and updated regularly. Groundwater production by large groundwater users should be measured.

8. Following metering of major groundwater producers, consumptive use of groundwater should be analyzed.

9. SVWD should continue its efforts to redistribute its pumpage throughout its service area.

10. Roundtable meetings should be convened by the major groundwater producers to discuss means to analyze and mitigate groundwater level declines.

Replenishment

11. Replenishment projects should be planned and implemented in the context of basin-wide groundwater resource management, and coordinated when appropriate with SLVWD, Santa Cruz County, and major groundwater producers.

12. The conceptual replenishment projects, in addition to others that may be suggested, should be considered in greater depth. Additional investigations would include field work, computer modeling, cost/benefit analysis, and assessment of environmental impacts.

13. SVWD, SLVWD and other groundwater producers should continue efforts to encourage conservation measures such as low flow plumbing fixtures and drought resistant vegetation.

14. SVWD should continue to work with the City of Scotts Valley to encourage appropriate recycling and reuse of wastewater.

GROUNDWATER QUALITY

SVWD does not have regulatory authority for the prevention, identification, or remediation of groundwater contamination. However, SVWD and Santa Cruz County share responsibility for enforcing standards for construction, abandonment, and destruction of water supply wells. Accordingly, specific recommendations for SVWD are as follows:

Well Construction, Abandonment, and Destruction

15. Continue to update and maintain the well inventory database to include all wells within SVWD boundaries.

16. Conduct a survey to document the status of wells within SVWD boundaries, and to identify both active and destroyed wells.

17. Once the well survey is complete, establish a notification system to alert private groundwater users of contamination problems within the SVWD boundaries.

18. Given the existence of multiple aquifer systems within SVWD implement well construction standards to prevent cross-contamination of aquifers (i.e. installation of conductor casings and minimum seal depths).

19. Establish and enforce a permitting system for well destructions within the SVWD boundaries and track well destruction in the well database.

20. Establish a program to identify (e.g. during real estate property transfers) and encourage the proper destruction of abandoned wells within SVWD.

21. In addition, SVWD is responsible for provision of water satisfying state and federal drinking water standards. Accordingly, SVWD should continue its policy of siting new wells in areas and aquifers that are less susceptible to contamination. SVWD should also consider installation of monitor wells sited between possible contamination source areas and major municipal well fields to allow early identification of groundwater contamination problems.

The remaining recommendations, grouped according to the specific areas of groundwater contamination prevention, are long-term and require cooperations between agencies.

Hazardous Materials Management

- Establish a public/business education program emphasizing the importance of the proper disposal of hazardous materials.
- Institute programs encouraging reduced hazardous material use and waste minimization programs.
- Consider stricter regulations for sites which use hazardous materials.

Underground Storage Tanks

- Develop more stringent local standard for the use, monitoring, removal, and replacement of USTs.
- Eliminate exemptions to UST requirements such as residential tanks, farm tanks, and elevator vaults.
- Require replacement of single walled tanks or upgrade monitoring requirements.
- Evaluate feasibility of local regulation of UST cleanups to speed the process of source identification and remediation.
- Discourage additional installations of USTs in Scotts Valley.

Septic Tank Disposal Systems

- Review records of Scotts Valley City Finance Department to identify businesses and residences not currently connected to sanitary sewer system.
- Encourage hookup of all businesses and residences not currently connected to the sanitary sewer system.

City Planning and Zoning

- Limit future industrial and commercial service development to existing areas.
- Encourage greater consideration by City planners of groundwater protection issues in land use planning.

Overall SVWD should encourage and cooperate fully with responsible agencies in the investigation and remediation of contamination sites, and in the identification of potentially responsible parties. SVWD also can provide a regional groundwater management overview and aid in information sharing among agencies.

Section 7

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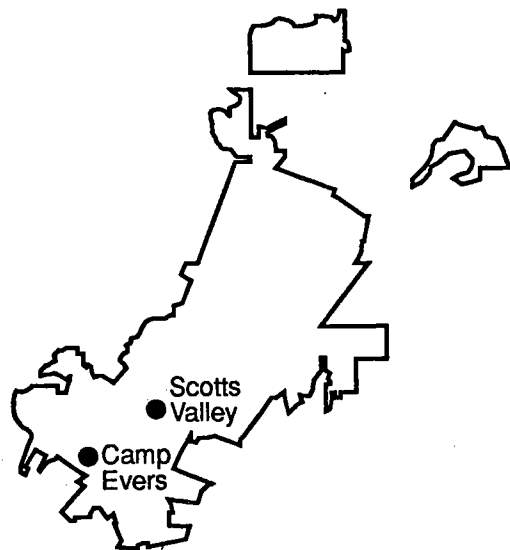
Scotts Valley Water District
Scotts Valley, California

COUNTER COPY
DO NOT REMOVE

SCOTTS VALLEY
GROUNDWATER MANAGEMENT PLAN
(AB 3030)

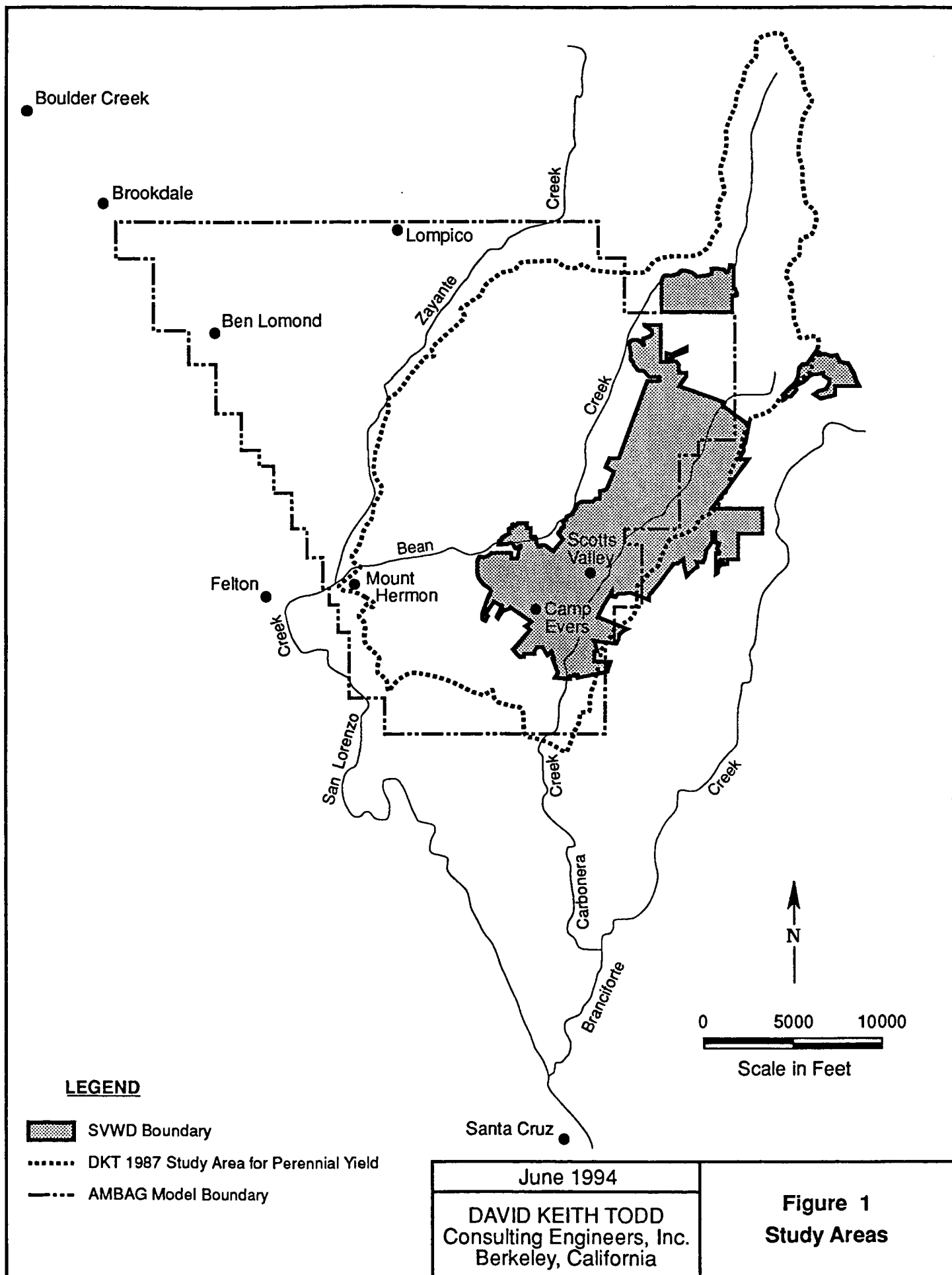
July 1994

David Keith Todd
Consulting Engineers, Inc.
Berkeley, California



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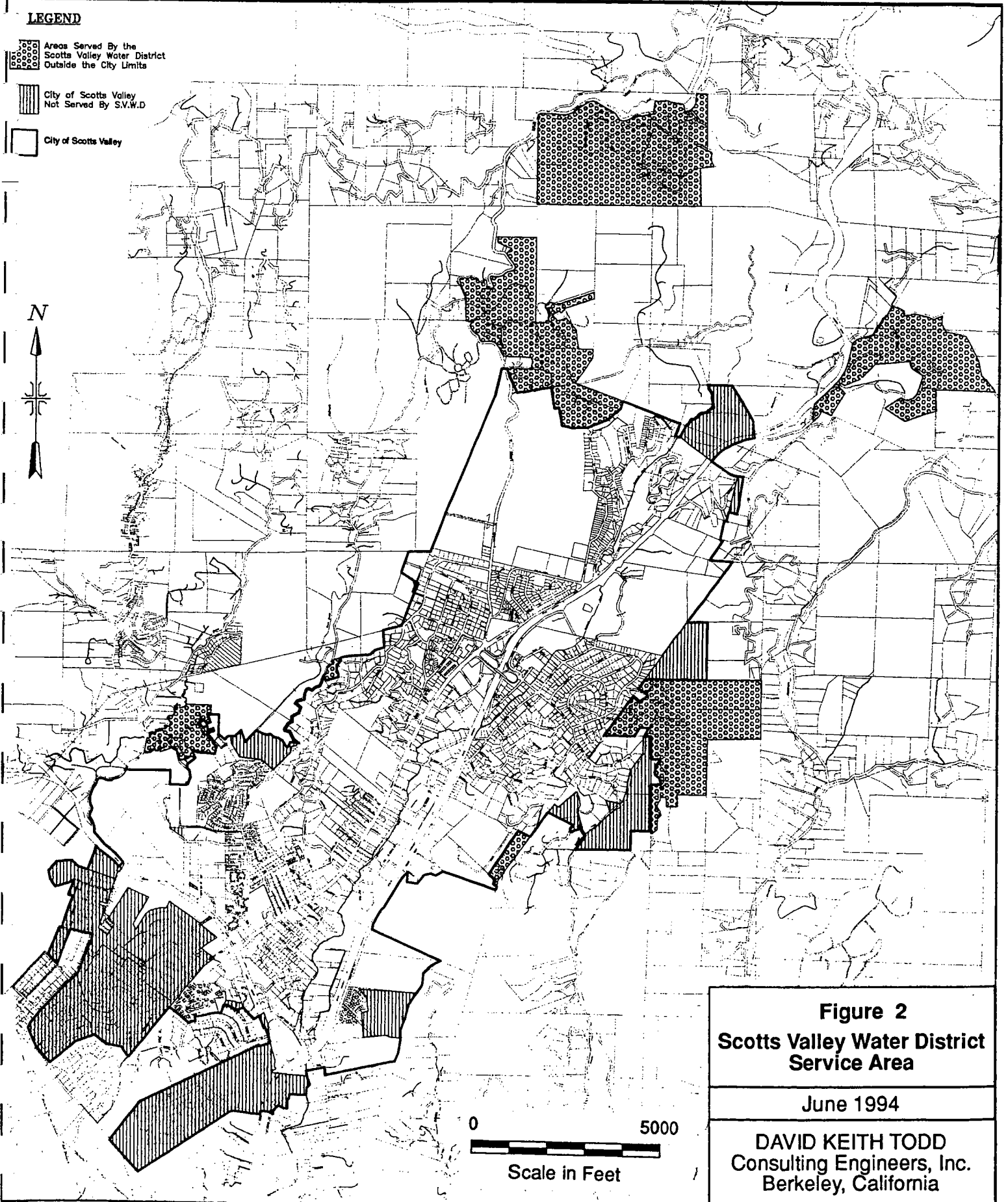
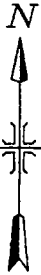


LEGEND

Areas Served By the
Scotts Valley Water District
Outside the City Limits

City of Scotts Valley
Not Served By S.V.W.D

City of Scotts Valley

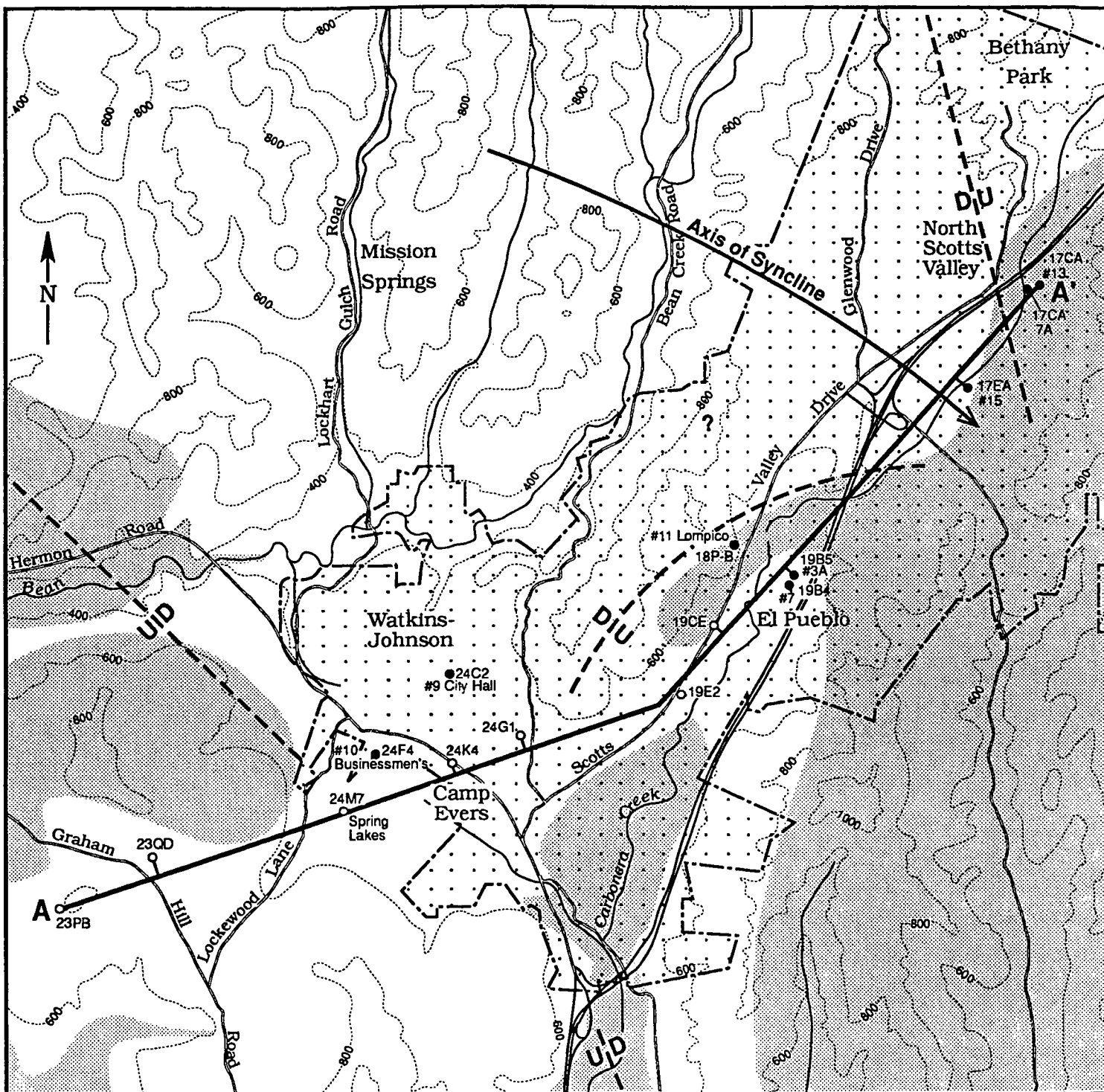


0 5000
Scale in Feet

Figure 2
Scotts Valley Water District
Service Area

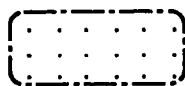
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Legend

- Well
- SVWD Production Well



SVWD Boundary



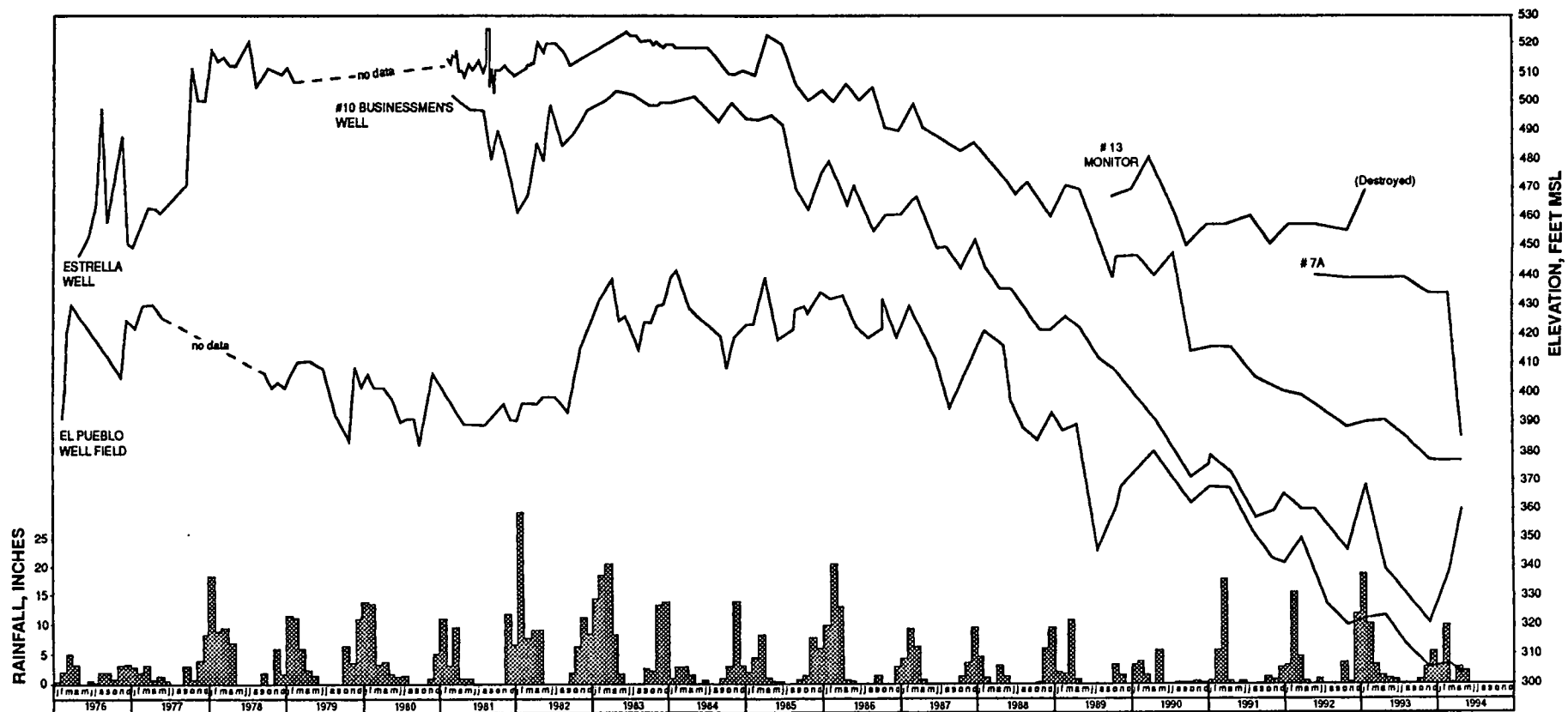
Unsaturated Santa Margarita Sandstone

Scale
0 2000 4000 feet

Figure 3
Cross Section A - A'
Location Map

June 1994

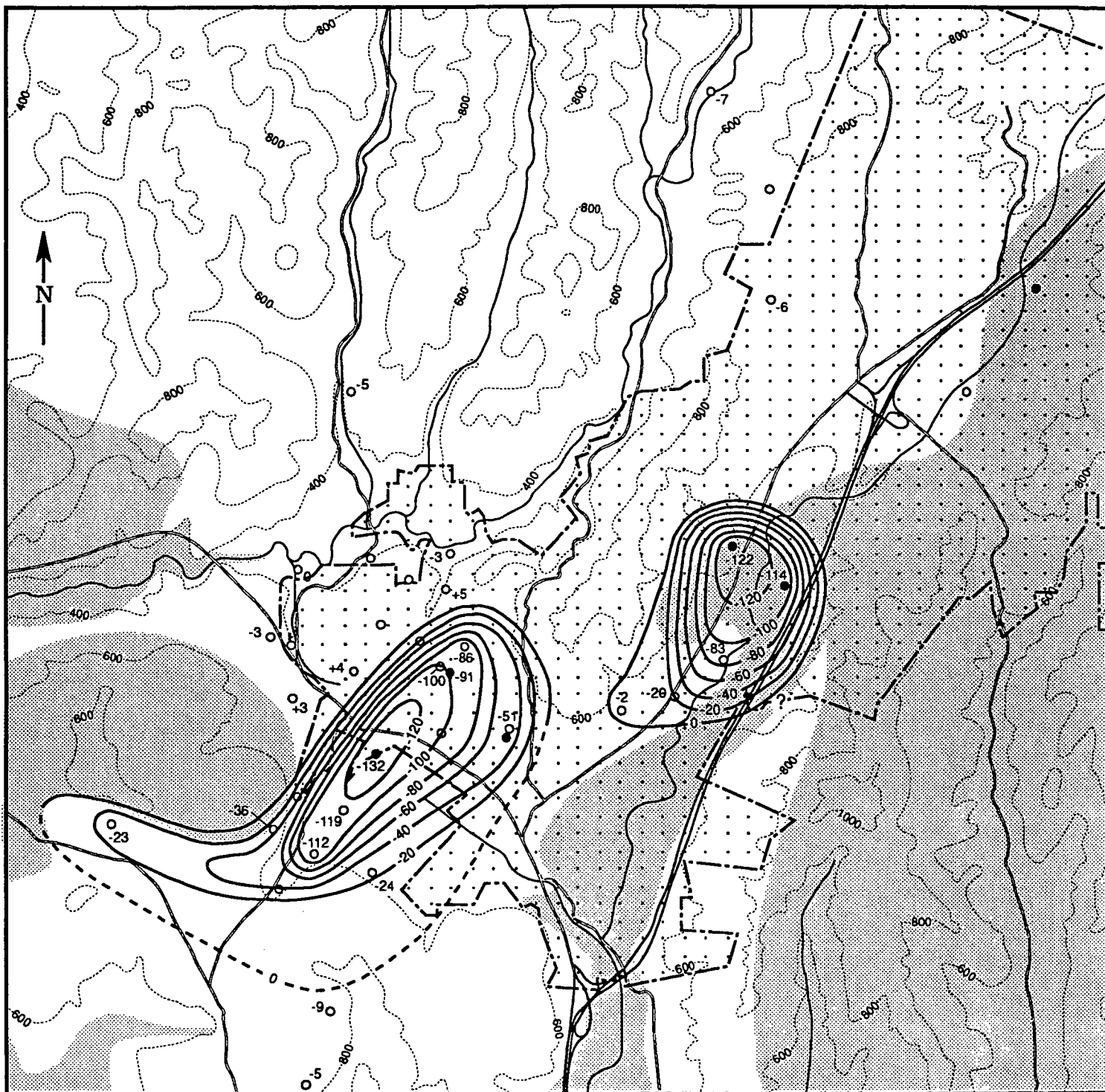
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June 1994

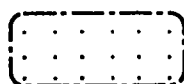
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Figure 6
Water Level Trends in
Selected Wells



Legend

- Well
- SVWD Production Well
- 20- Contour in feet (change)



SVWD Boundary

Scale
0 2000 4000 feet

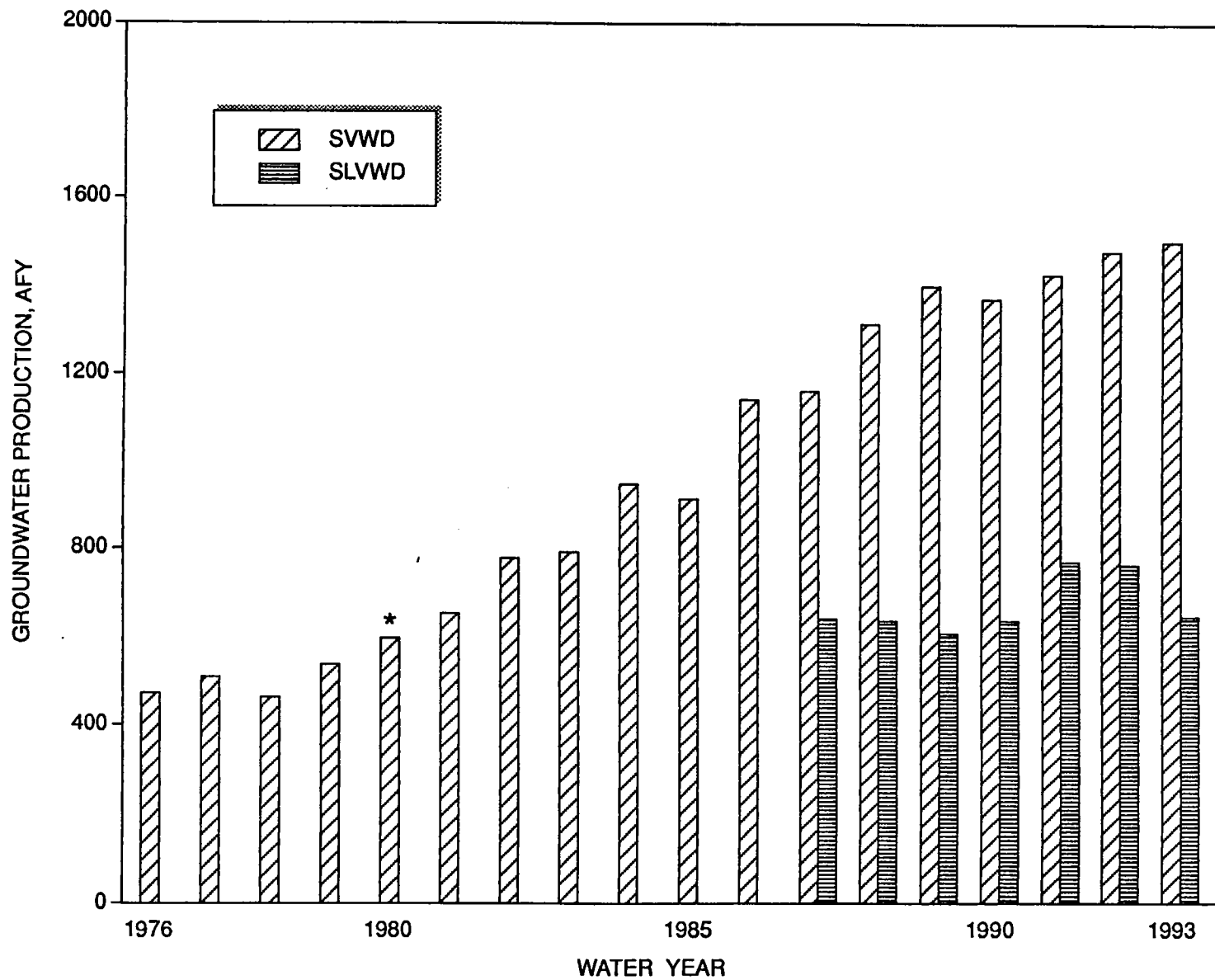


Approximate Area of
No Saturated Santa
Margarita Sandstone

Figure 7
Water Level Change
April 1986 - April 1993

June 1994

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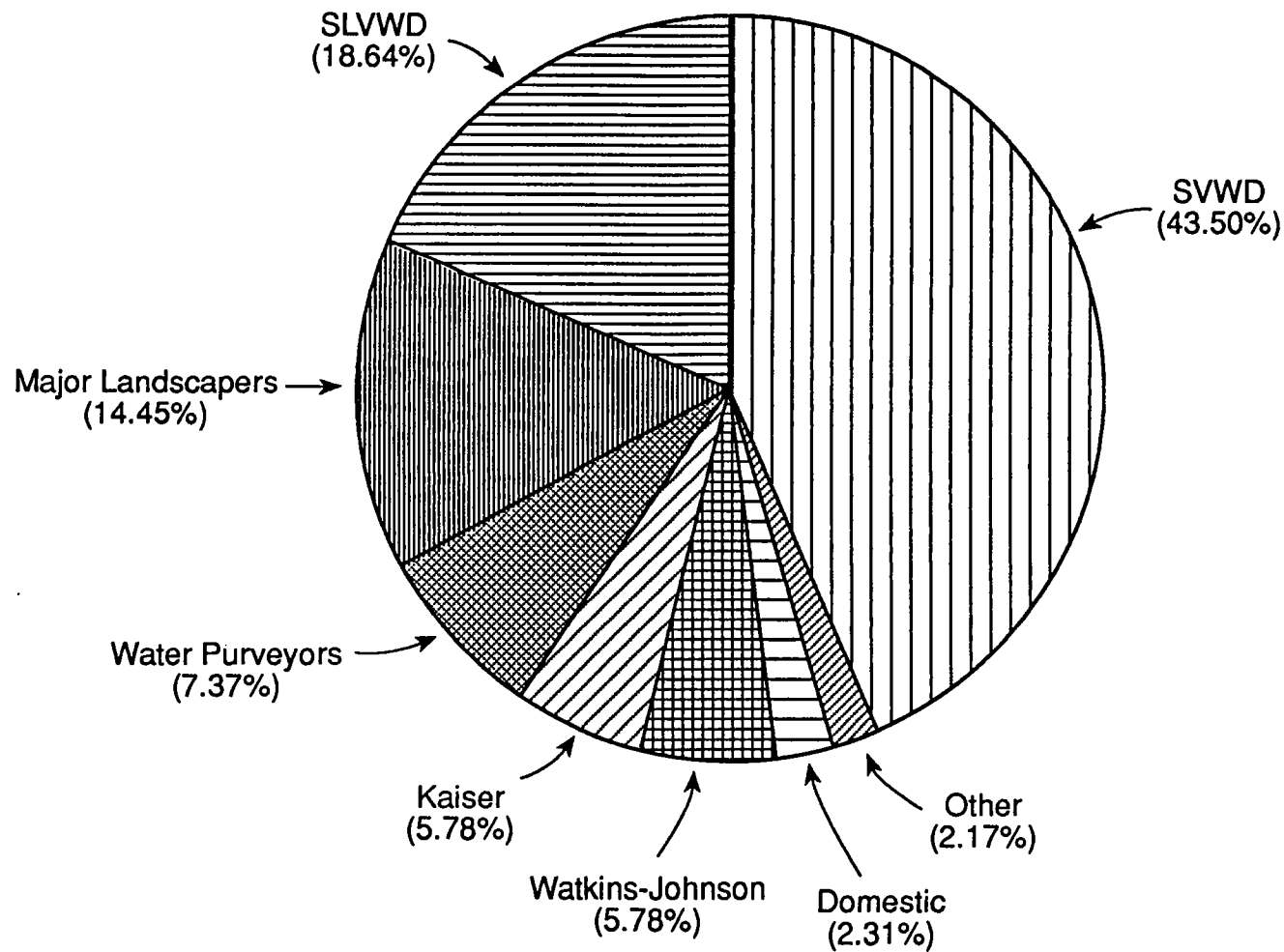


* Estimated

June 1994

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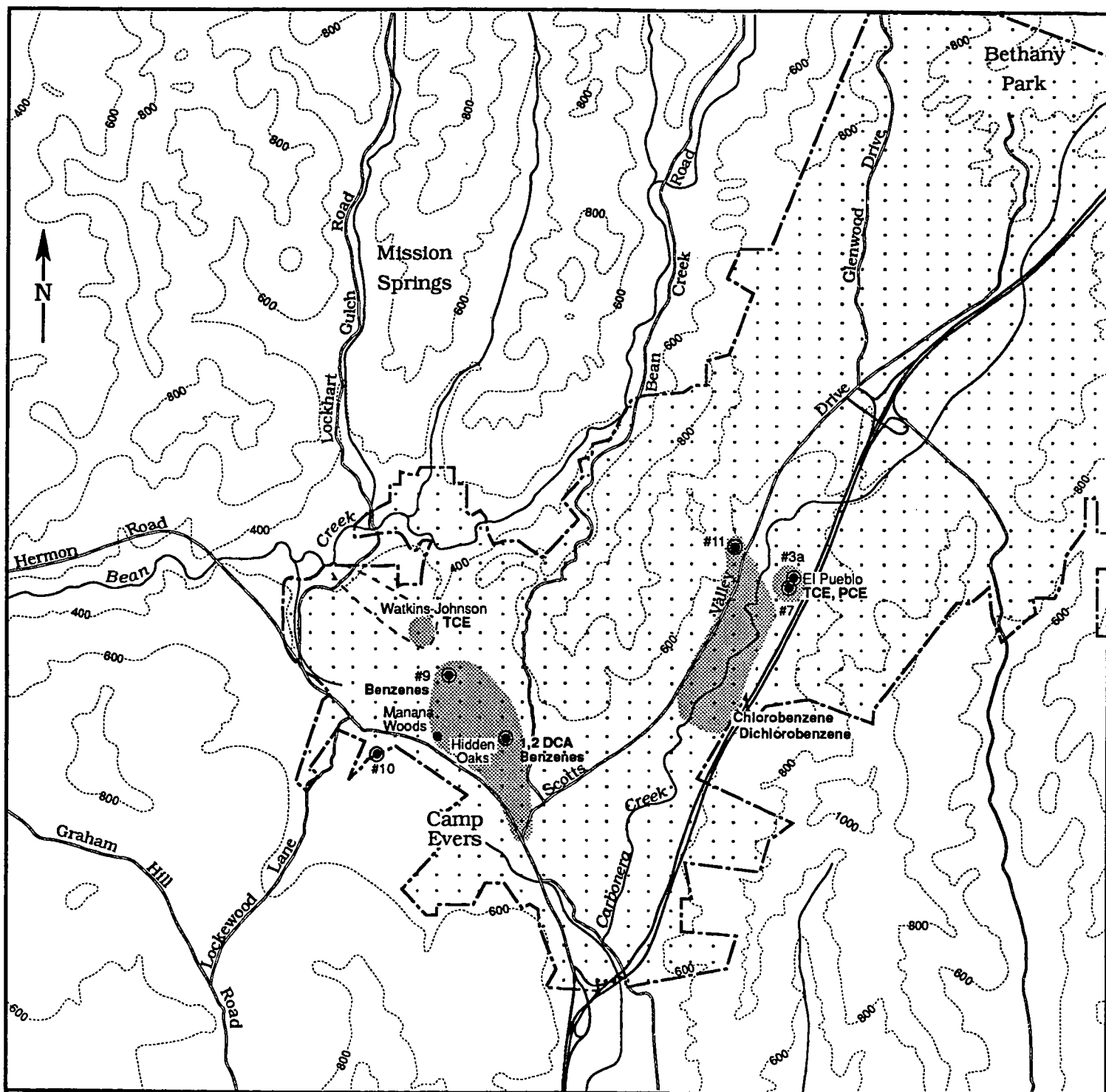
Figure 8
Groundwater Production
SVWD 1976 - 1993 and
SLVWD 1987 - 1993



Estimated Total Pumpage: 3460 AFY

June 1994
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Berkeley, California

Figure 9
Current Distribution
of Groundwater
Production



Legend

● SVWD Production Wells

■ Approximate Plume Area

○ Former Plume Area

--- SVWD Boundary

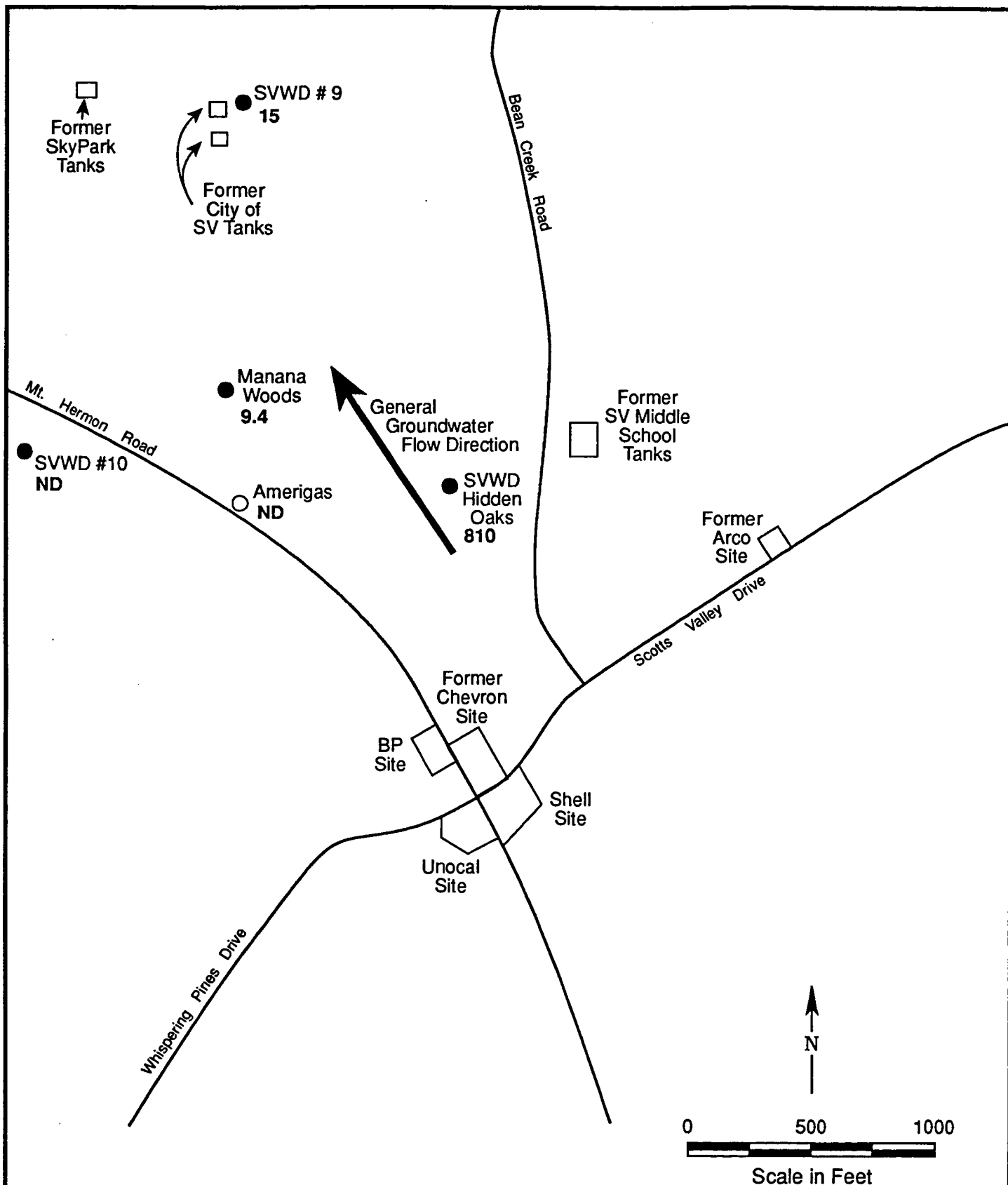
Scale
0 2000 4000 feet

Figure 10

Groundwater Quality Problems

June 1994

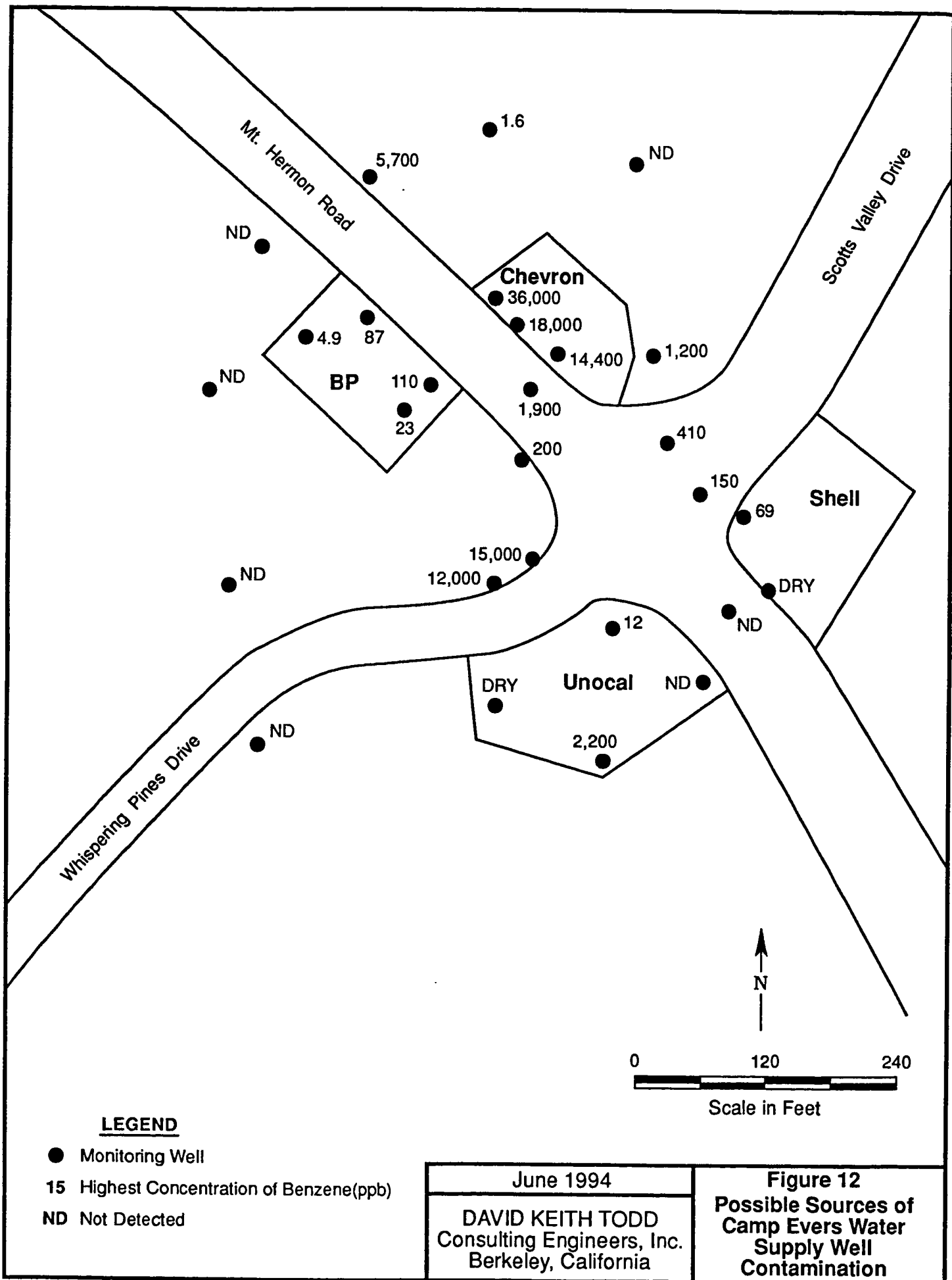
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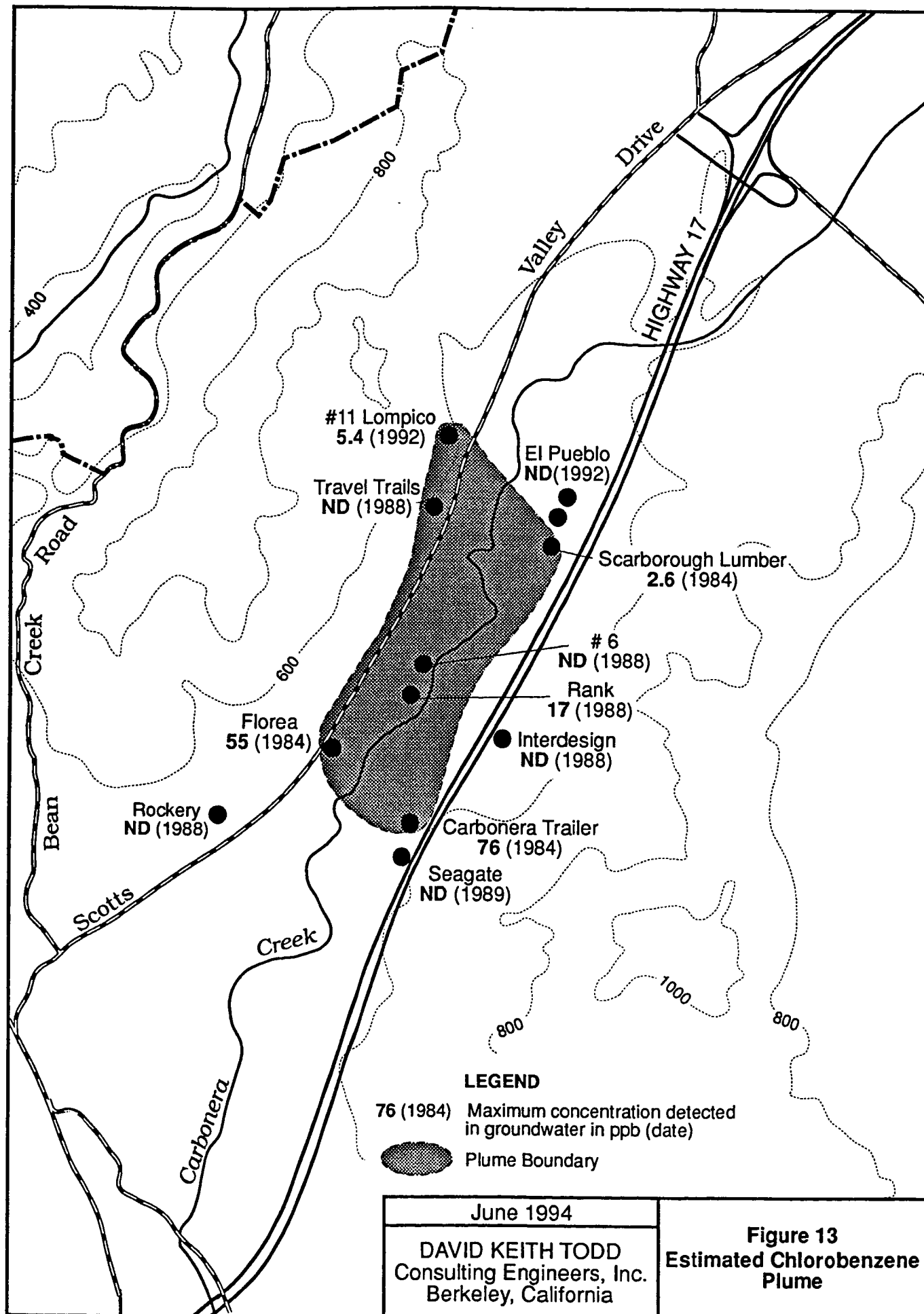


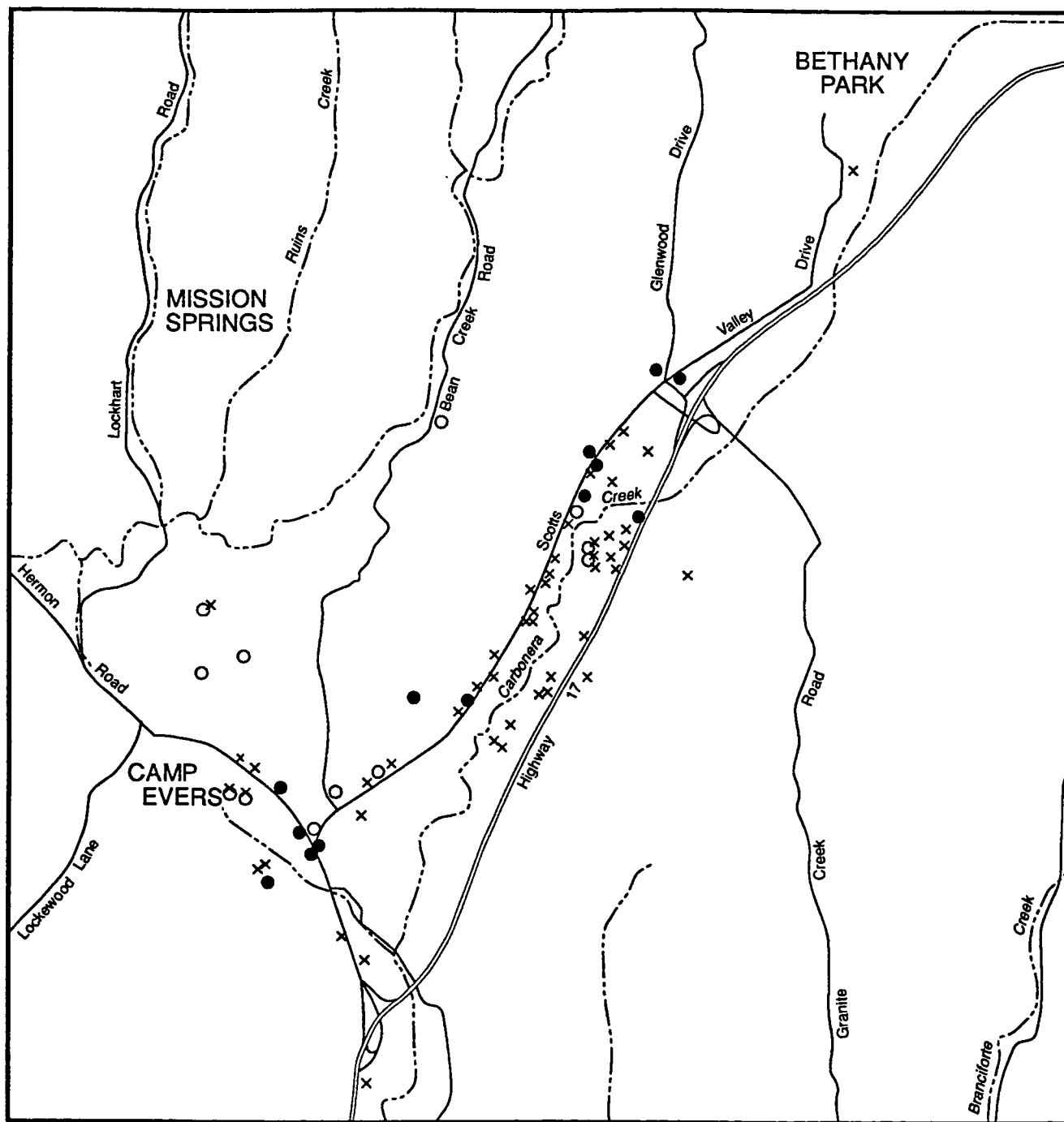
LEGEND

- Water Supply Well
- Irrigation/Industrial Well
- 15 Highest Concentration of Benzene(ppb)
- ND Not Detected

June 1994	Figure 11 Possible Sources of Camp Evers Water Supply Well Contamination
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LEGEND

- Underground Storage Tanks, Active
- Underground Storage Tanks, Inactive, Removed or Closed in Place
- x Hazardous Materials Use

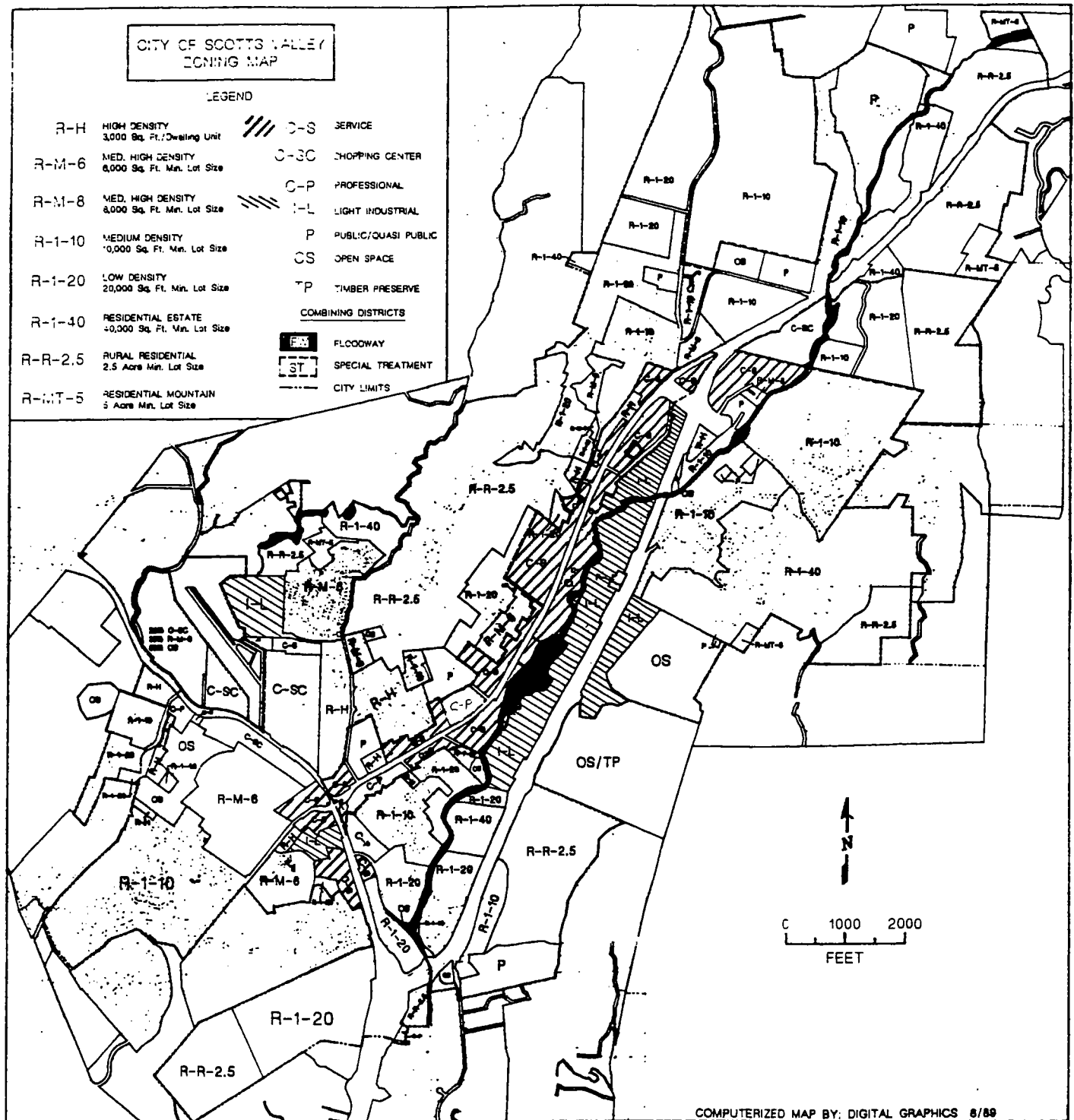


0 2000
Scale in Feet

Figure 15
Underground Storage
Tank and Hazardous
Material Locations

June 1994

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Berkeley, California



June 1994

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Figure 17
City of Scotts Valley
Zoning

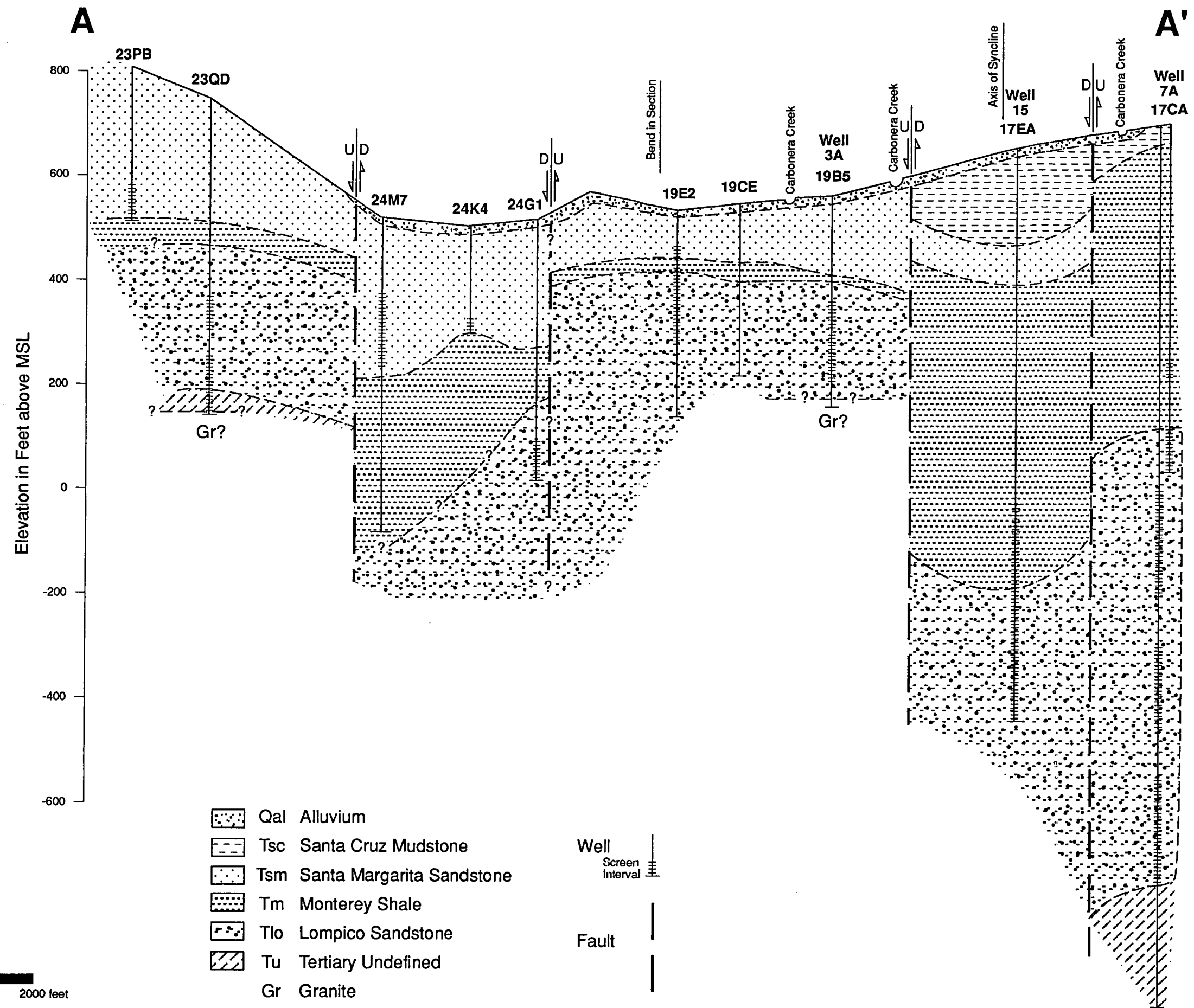
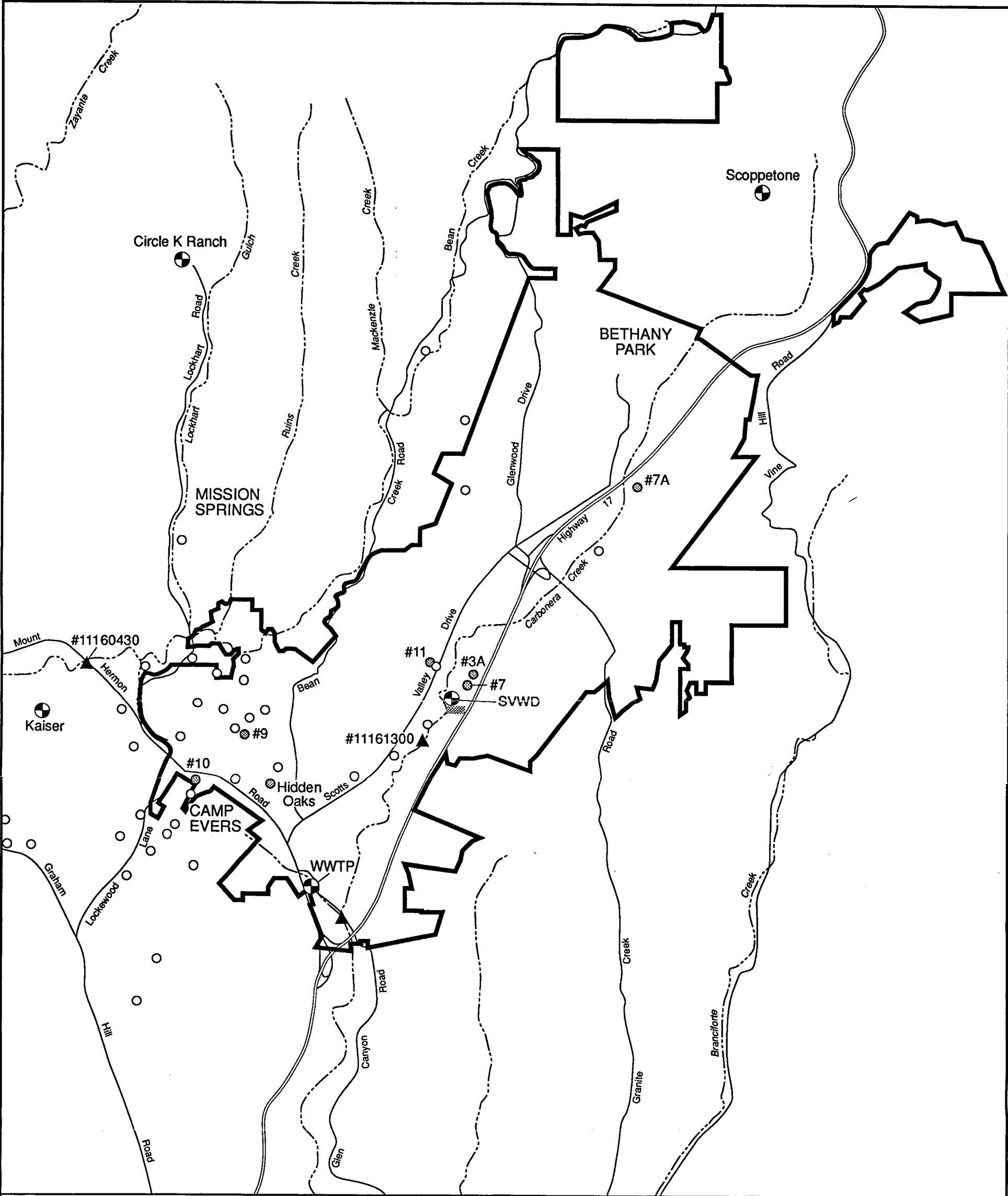


Figure 4
Cross Section
A - A'

June 1994

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LEGEND

-  Scotts Valley Water District Boundary
-  Stream Gage
-  Precipitation Gage
-  Evaporation Gage
-  Groundwater Level Well
-  SVWD Production Well

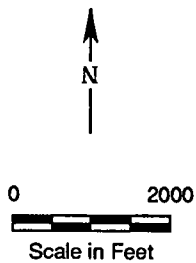
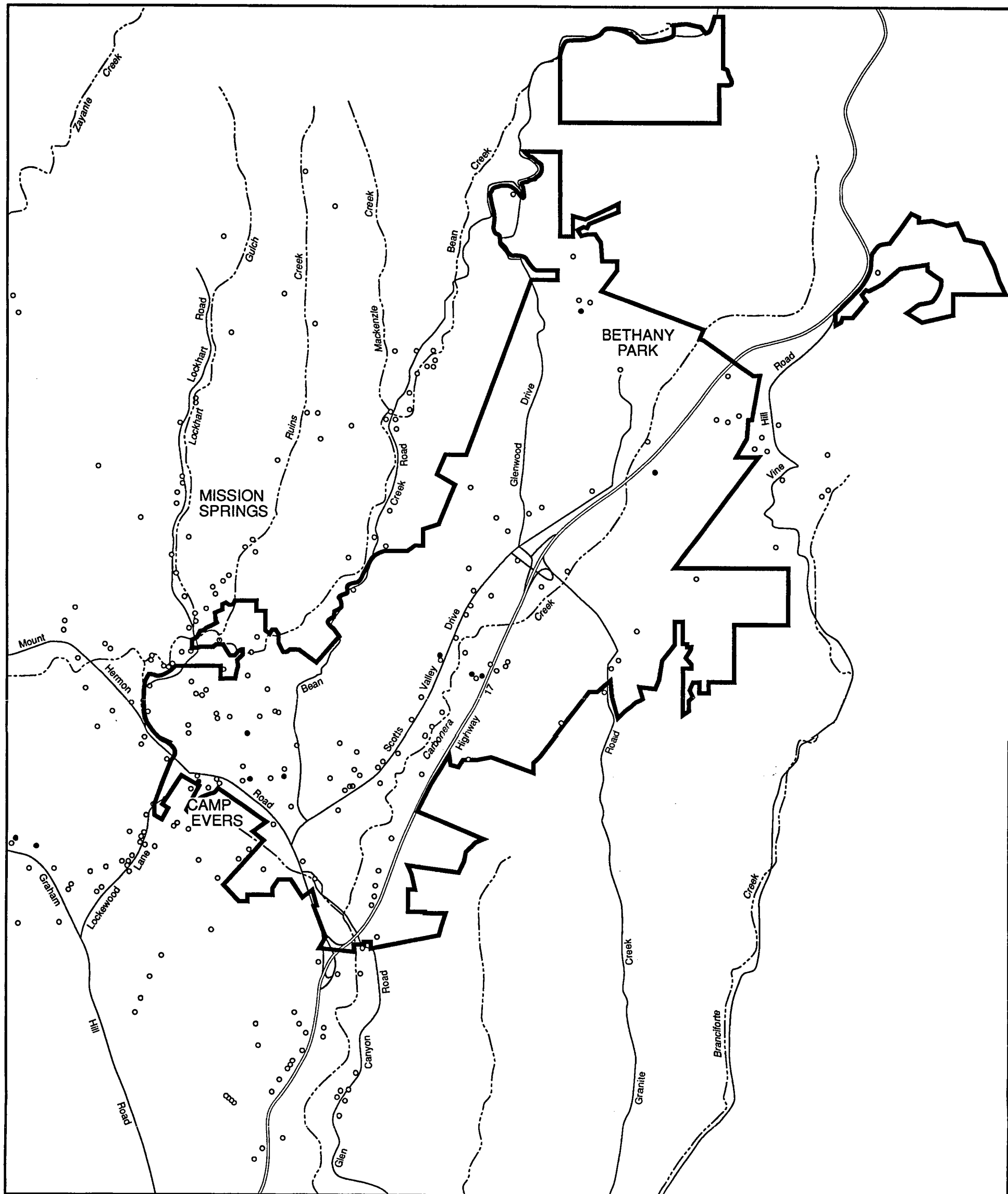


**Figure 5
Monitoring
Locations**

June 1994

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LEGEND

- Scotts Valley Water District boundary
- Private domestic, irrigation or industrial well
- Municipal water supply well

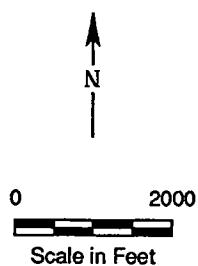
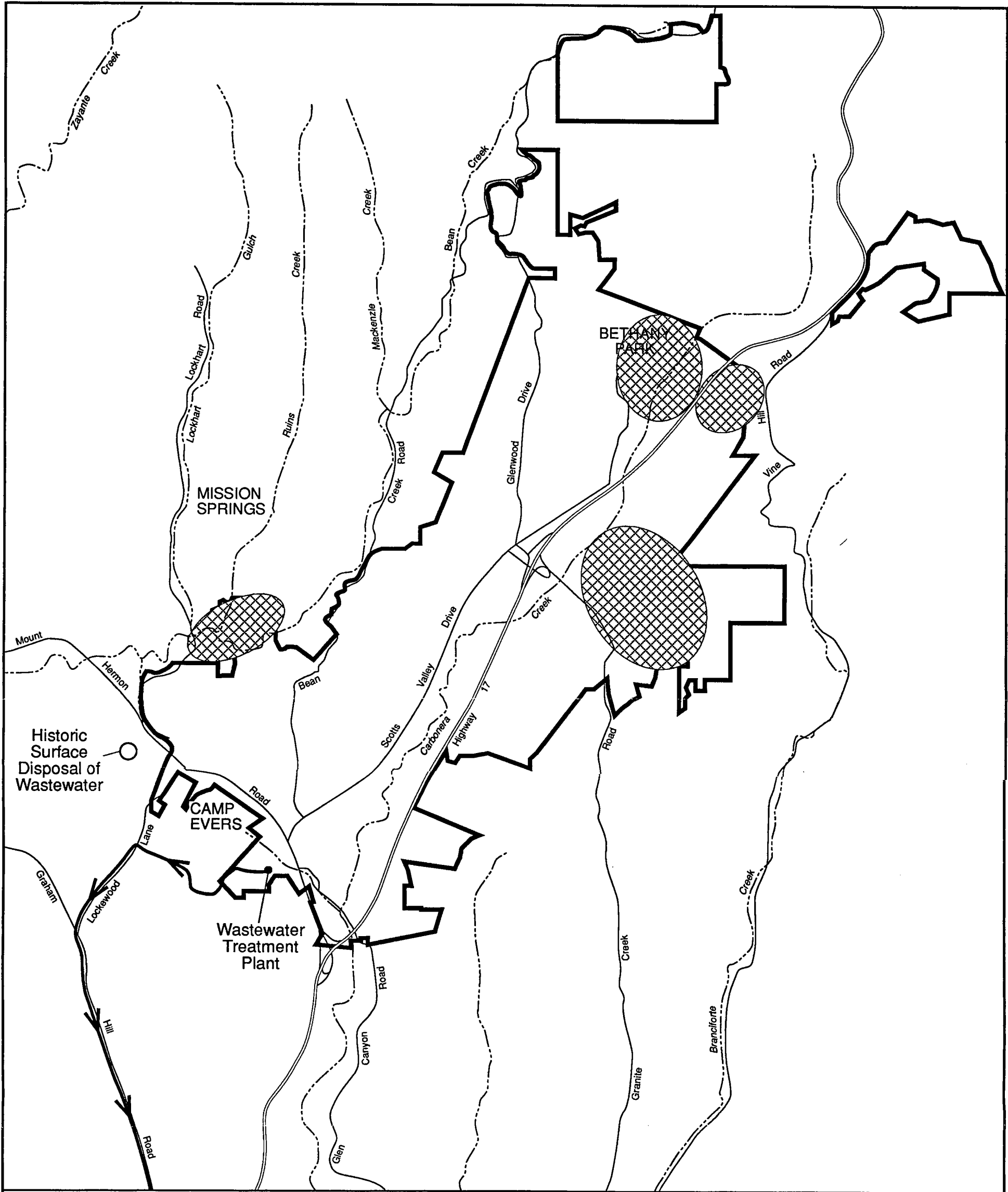


Figure 14
Water Well Locations
in the
Scotts Valley Area

June 1994

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Berkeley, California



LEGEND

- Scotts Valley Water District Boundary
- ⊞ Approximate Major Residential Areas on Septic Systems
- ➔ Treated Wastewater Disposal to Ocean

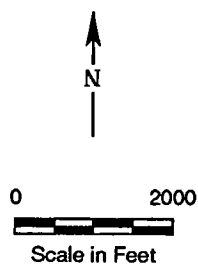


Figure 16
Wastewater Treatment
and
Disposal Facilities
June 1994
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Appendix G: SVWD Ordinances

EXHIBIT C

ORDINANCE NO. 74-83

AN ORDINANCE TO ADOPT WATER CONSERVATION
REGULATIONS PURSUANT TO THE PROVISIONS OF
SECTION 2.5.1 OF ORDINANCE NO. 68-82

BE IT ORDAINED by the Board of Directors of the
Scotts Valley Water District (Board), Santa Cruz County,
California, as follows:

WHEREAS, the Board adopted Ordinance No. 68-82 on
March 11, 1982, which provides authority in Section 2.5.1 to
adopt Water Conservation Regulations; and

WHEREAS, water is a finite resource that should
not be wasted; and

WHEREAS, it is imperative to the public well-being
that those uses of water which constitute waste or abuse of
the resource be prohibited; and

WHEREAS, it is necessary to conserve the water
supply of the Scotts Valley Water District for the greatest
public benefit and to discourage wasteful and unproductive
uses of water; and

WHEREAS, the Board has considered the proposed
Negative Declaration attached hereto and the comments received
during the public review period; determines that the project
will not have any significant effect on the environment and
that a Negative Declaration has been prepared in accordance
with the provisions of CEQA; and approves the Negative
Declaration.

NOW, THEREFORE, BE IT ORDAINED, that the Board
does hereby adopt the attached Water Conservation Regulations
as authorized by Section 2.5.1 of Ordinance 68-82.

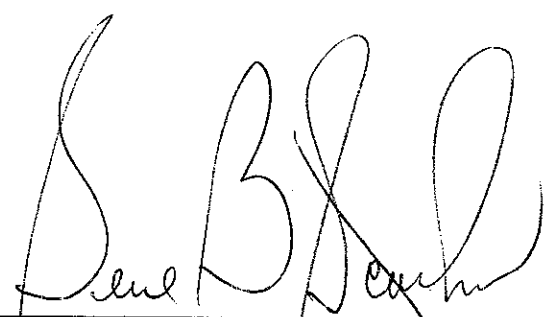
* * * * *

Passed and adopted this 14th day of April, 1983,
by the following vote:

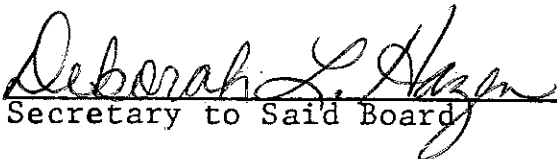
AYES: Directors Scothorn, Miles, Tetter, Dunkle

NOES: Directors None

ABSENT: Directors Snyder


Vice-PRESIDENT OF THE BOARD OF DIRECTORS

ATTEST:


Secretary to Said Board

WATER CONSERVATION REGULATIONS
ADOPTED PURSUANT TO
SECTION 2.5.1

SECTION 1. - DECLARATION OF CONDITION

It is hereby found and declared that water is a finite resource and should not be wasted within the service area of the Scotts Valley Water District, and that it is necessary to prohibit and regulate water uses as provided in this Ordinance.

SECTION 2. - APPLICATION OF REGULATIONS

The provisions of this Ordinance shall apply to all persons using District water both within and outside the District Service Area, regardless of whether any person using water shall have a contract for water service with the District.

SECTION 3. - PROHIBITED WATER USES

The use and withdrawal of water by any person from District sources within the District for the following purposes is hereby prohibited:

Revised Ord. 74-83

Date APR. 14, 1983

A. The use of water from any fire hydrant unless specifically authorized by permit from the District, except by regularly constituted fire protection agencies for fire suppression purposes.

B. The watering of grass, lawn, groundcover, shrubbery, open ground, crops and trees, including agricultural irrigation, in a manner or to an extent which allows excess water to run to waste.

C. The escape of water through leaks, breaks, or malfunction within the water user's plumbing or distribution system for any period of time within which such break or leak should reasonably have been discovered and corrected. It shall be presumed that a period of forty-eight (48) hours after the water user discovers such break, leak, or malfunction, or receives written notice from the District of such condition, whichever occurs first, is a reasonable time within which to correct such condition or to make arrangements for correction.

D. The use of water for washing cars, building exteriors, mobilehome exteriors, boats, sidewalks, driveways, or other exterior surfaces, without the use of a quick-acting positive shut-off nozzle on the hose.

E. The operation of any ornamental fountain, car wash, or other such structure using water from the District water system, unless water for such use is recycled.

Revised Ord. 74-83

Date APR. 14, 1983

11-51

F. The indiscriminate running of water or washing with water not otherwise prohibited above which is wasteful and without reasonable purpose.

SECTION 4. - DISCONNECTION

Any person in violation of the provisions of Section 3 who fails to take corrective action within forty-eight (48) hours after first written notification of the violation shall be subject to disconnection of water service.

SECTION 5. - NON-COMPLIANCE WITH REGULATIONS

Water service may be discontinued by the District for non-compliance with this or any other ordinance or regulation applicable to the water service and the District Manager is hereby authorized to terminate water service forty-eight (48) hours after written notice of the customer's non-compliance therewith. Water service will be reinstated under the terms and conditions of District Ordinances.

SECTION 6. - APPEAL TO THE DISTRICT BOARD

Should any applicant or customer be dissatisfied with the actions or decisions of the District Manager pursuant to the regulations or prohibitions herein set forth, said applicant may file an appeal of the decision of the District Manager with the Board of Directors of the District, which appeal shall be placed on the agenda of the District Board whose decision therein shall be final. The applicant

or customer may request a special meeting of the Board of Directors to consider the appeal, as provided in Section 1.5 of Ordinance 68-82.

Revised Ord. 74-83

Date APR. 14, 1983

ORDINANCE NO. 149-09

AN ORDINANCE REVISING POLICY FOR TEMPORARY SERVICE FROM HYDRANTS BY AMENDING SECTION 3.25 OF ORDINANCE NO. 119-96, AS AMENDED

BE IT ORDAINED by the Board of Directors of the Scotts Valley Water District (“District”), Santa Cruz County, California, that:

SECTION 1. TEMPORARY SERVICE FROM A HYDRANT

Section 3.25 of the ordinance cited in the title shall be, and is hereby amended to read as follows:

“Section 3.25 – Temporary Service From a Hydrant¹

If temporary service is supplied through a hydrant, a bulk meter permit for the use of the hydrant for up to three months shall first be obtained from the District. Bulk meter permits will require the use of recycled water for construction and other purposes whenever possible. Use of recycled water under a bulk meter permit shall be subject to all District rules and regulations and pursuant to the terms and limitations of the District’s recycled water distribution permit.

A deposit of \$2,000.00 will be required when the bulk meter permit is issued. The bulk meter permit may be renewed without additional deposit payment. The deposit is: \$1,000.00 for water usage and \$1,000.00 for the bulk meter. The \$1,000.00 meter deposit will be returned to the customer upon the return of the meter in good working condition, or less the cost of repair of the meter. The \$1,000.00 water usage deposit will be returned after the meter has been returned, less any outstanding balance of water charges. The customer shall read the meter once a month and provide this reading to the District along with a list of all locations where bulk water was delivered during the month and the amounts delivered to these locations. Whenever returning the meter or renewing a permit, the customer shall bring the meter to the District office for a District reading and at that time shall provide a comprehensive list indicating all locations where bulk water was delivered during the permit period and the amounts delivered to these locations.

Water consumption will be charged according the District’s current rate schedules, prorated as necessary for monthly payment. Whether approved for recycled or potable supply, the customer will be charged the basic service charge for a three-inch potable meter, subject to a one-month minimum and proration after one month. All other District rules and regulations regarding time and calculation of payment shall apply.

Bulk water for construction or other non-emergency purposes may not be used outside the District. Except in emergencies, the customer shall notify the District in advance

¹ As amended on July 16, 2009, by Ordinance No. 149-09

of all locations where bulk water will be used. The bulk meter must be placed on the hydrant assigned by the District. Operating the valve of a hydrant other than by the use of a spanner wrench designed for that purpose is prohibited. A temporary tank or truck with appropriate backflow protection as determined by the District shall be used for all applications. The bulk permit may be canceled, the deposit forfeited, the meter removed by the District, and the permittee deemed ineligible for a new bulk meter permit for a period of up to one year if (a) the District finds any violation of the preceding conditions, (b) the District finds that the meter has been tampered with or used in such a way that flow volume is registered inaccurately, (c) the permittee fails to bring the bulk meter to the District office for a meter read or provide the required list of delivery sites and amounts within twenty days after the monthly payment due date, or (d) the permittee fails return the bulk meter or renew the permit within twenty days after the permit expiration date.

The newly amended Section 3.25 hereby replaces and supersedes the previous section of the same number:

~~“Section 3.25—Temporary Service From a Fire Hydrant²~~

~~If temporary service is supplied through a fire hydrant, a permit for the use of the hydrant shall first be obtained from the District. It shall be unlawful to operate the valve of any fire hydrant other than by the use of a spanner wrench designed for that purposes.~~

~~A deposit of \$1,500.00 will be required when the permit is issued. The deposit is:—\$1,000.00 for water usage, and \$500.00 for the water meter. The \$500.00 meter deposit will be returned to the customer upon the return of the meter in good working condition, or less the cost of repair of the meter. The \$1,000.00 water usage deposit will be returned after the meter has been returned, less outstanding balance of water consumption, less payments on the account. The meter must be placed on the fire hydrant assigned by the District. Direct application of water, for dust control, from a fire hydrant is prohibited. A temporary tank with a float valve or truck shall be used for application. The water must be used for the assigned project work being done within the District boundaries. If the District finds that the water is being used outside the District, or at a different fire hydrant location, the permit will be canceled and the meter shall be removed by the Water District staff. The deposit shall be returned as per this paragraph. The permittee will not be issued a new meter for a period of one year. The meter shall be read by the customer, once a month and reported to the Water District. The customer will be billed according to the usage, at the current consumption rate, and all other rules and regulations regarding time of payment shall apply.”~~

SECTION 2. MISCELLANEOUS

² As amended on October 9, 1997 by Ordinance No. 123-97.

SECTION 2.1 - Severability

If any section, subsection, paragraph, subparagraph, sentence, clause or phrase of this ordinance is for any reason held to be invalid or unconstitutional, such validity or unconstitutionality shall not affect the validity or constitutionality of the remaining portions of this ordinance; and the Board declares that this ordinance and each section, subsection, paragraph, subparagraph, sentence, clause and phrases thereof would have been adopted irrespective of the fact that one or more of such section, subsection, paragraph, subparagraph, sentence, clause or phrase be declared invalid or unconstitutional.

SECTION 2.2 - Immediate Effect

This ordinance shall be in full force and effect forthwith upon adoption and shall be published once in full in a newspaper of general circulation, printed, published, and circulated in the District within fifteen (15) days after adoption and shall be posted within said time in three (3) public places within the District.

SECTION 2.3 - Violation A Misdemeanor: Punishment

After the publication or posting of this ordinance, it is a misdemeanor for any person to use or apply water received from the District contrary to or in violation of the restriction or prohibition, until the ordinance has been repealed or the emergency or threatened emergency has ceased, and, upon conviction thereof, that person shall be punished by imprisonment in the County jail for not more than thirty (30) days or by fine of not more than Six Hundred Dollars (\$600.00), or by both the fine and imprisonment.

PASSED AND ADOPTED this 16th day of July 2009 by the following vote:

AYES: Directors – Hodgins, Kassis, Miller, Perri
NOES: Directors –
ABSENT: Directors – Kannegaard

By: /s/ Chris Perri
Chris Perri
President, Board of Directors

ATTEST:

/s/ Deborah L. Hazen
Deborah L. Hazen
Secretary to the Board

I hereby certify that the foregoing Ordinance was duly passed and adopted by the Board of Directors of the Scotts Valley Water District, Santa Cruz County, California, at its regular meeting thereof held on the 16th day of July in the year 2009, by the following vote:

AYES: Directors – Hodgin, Kassis, Miller, Perri

NOES: Directors –

ABSENT: Directors – Kannegaard

By: /s/ Chris Perri

Chris Perri

President, Board of Directors

ATTEST:

/s/ Deborah L. Hazen

Deborah L. Hazen

Secretary to the Board

SCOTTS VALLEY WATER DISTRICT

ORDINANCE NO. 150-09

AN ORDINANCE ESTABLISHING PENALTIES FOR VIOLATION OF WATER CONSERVATION RESTRICTIONS AND REVISING CERTAIN CHARGES FOR WATER METER SERVICE CALLS

BE IT ORDAINED by the Board of Directors of the Scotts Valley Water District, Santa Cruz County, California, that Ordinance No. 119-96, as amended, is hereby further amended at Article 4 and Article 9 as stated in Sections 1 and 2 of this Ordinance No. 150-09.

SECTION 1. REVISION OF CHARGES FOR WATER METER SERVICE CALLS

The current “Section 4.3 – Meter Test – Deposit” at Article 4 shall be amended, revising the District’s meter test deposit amount from twenty-five dollars (\$25.00) to one hundred dollars (\$100.00). The new Section 4.3 shall read as follows:

“Section 4.3 - Meter Test – Deposit

All meters will be tested prior to installation and no meter will be installed which registers more than two percent (2%) fast. If a customer desires to have the meter serving his premises tested, a deposit of One Hundred Dollars (\$100.00) will be required. Should the meter register more than two percent (2%) fast, the deposit will be refunded, and the meter will be replaced. Should the meter register less than two percent (2%) fast, the deposit will be retained by the District.”

The current “Section 4.16 – Re-Connection Charge” at Article 4 shall be amended, revising the District’s re-connection charge from twenty dollars (\$20.00) between the hours of 8:00 a.m. and 5:00 p.m. and thirty five dollars (\$35.00) at other times to fifty dollars (\$50.00) between the hours of 8:00 a.m. and 4:00 p.m. on regular workdays and two hundred dollars (\$200.00) at other times. The new Section 4.16 shall read as follows:

“Section 4.16 - Re-Connection Charge

Between the hours of 8:00 a.m. and 4:00 p.m. on regular workdays, a re-connection charge of Fifty Dollars (\$50.00) will be made prior to renewing service following a discontinuance. At all other times, a re-connection charge of Two Hundred Dollars (\$200.00) will be made prior to renewing service following a discontinuance.”

SECTION 2. ESTABLISHMENT OF PENALTIES FOR VIOLATING WATER CONSERVATION RESTRICTIONS

The current “Section 9.4 – Claims Against District” at Article 9 shall be renumbered to “Section 9.5 – Claims Against District.” A new Section 9.4 shall be added at Article 9 to read as follows:

“Section 9.4 – Violation of Water Conservation Restrictions

Any customer found repeatedly violating District water conservation restrictions in a given calendar year shall be assessed penalties to be applied to the customer’s next water bill as set forth below.

<i>First offense:</i>	<i>Explanation of restrictions is provided to customer</i>
<i>Second offense:</i>	<i>Written notice of violation</i>
<i>Third offense:</i>	<i>\$100 penalty</i>
<i>Fourth offense:</i>	<i>\$250 penalty</i>
<i>Fifth and subsequent offenses:</i>	<i>\$500 penalty”</i>

SECTION 3. SEVERABILITY

If any section, subsection, paragraph, subparagraph, sentence, clause or phrase of this Ordinance is for any reason held to be invalid or unconstitutional, such invalidity or unconstitutionality shall not affect the validity or constitutionality of the remaining portions of this Ordinance; and the Board declares that this Ordinance and each section, subsection, paragraph, subparagraph, sentence, clause and phrases thereof would have been adopted irrespective of the fact that one or more of such section, subsection, paragraph, subparagraph, sentence, clause or phrase be declared invalid or unconstitutional.

SECTION 4. EFFECTIVE DATE

This Ordinance shall be in full force and effect forthwith upon adoption and shall be published once in full in a newspaper of general circulation, printed, published, and circulated in the District within fifteen (15) days after adoption and shall be posted within said time in three (3) public places within the District.

PASSED AND ADOPTED this 10th day of September 2009 by the following vote:

AYES:	DIRECTORS - Hodgins, Kannegaard, Kassis, Miller, Perri
NOES:	DIRECTORS -
ABSENT:	DIRECTORS -
ABSTAIN:	DIRECTORS -

By: /s/ Chris Perri
Chris Perri
President of the Board of Directors

ATTEST:

/s/ Deborah L. Hazen
Deborah L. Hazen
Secretary to the Board

I hereby certify that the foregoing Ordinance was duly passed and adopted by the Board of Directors of the Scotts Valley Water District, Santa Cruz County, California, at its regular meeting thereof held on the 10th day of September in the year 2009, by the following vote:

AYES: DIRECTORS - Hodgins, Kannegaard, Kassis, Miller, Perri
NOES: DIRECTORS -
ABSENT: DIRECTORS -
ABSTAIN: DIRECTORS -

By: /s/ Chris Perri
Chris Perri
President of the Board of Directors

ATTEST:

/s/ Deborah L. Hazen
Deborah L. Hazen
Secretary to the Board

ORDINANCE NO. _____
Adopted by the [BOARD OF DIRECTORS or THE DISTRICT]
[DATE]

ADOPTING WATER USE RESTRICTIONS

WHEREAS, article X, section 2 of the California Constitution declares that waters of the State are to be put to beneficial use, that waste, unreasonable use, or unreasonable method of use of water be prevented, and that water be conserved for the public welfare; and

WHEREAS, conservation of current water supplies and minimization of the effects of water supply shortages that are the result of drought are essential to the public health, safety and welfare; and

WHEREAS, regulation of the time of certain water use, manner of certain water use, design of rates, method of application of water for certain uses, installation and use of water-saving devices, provide an effective and immediately available means of conserving water; and

[for CSDs] **WHEREAS**, California Government Code section 61100, subdivision (a) incorporates Water Code sections 71000 et seq., including section 71640, into the Community Service District Law; and

WHEREAS, California Water Code section 71610.5 authorizes the District to undertake a water conservation program to reduce water use and may require, as a condition of new service, that reasonable water-saving devices and water reclamation devices be installed to reduce water use; and

WHEREAS, pursuant to Water Code section 71640, municipal water districts may restrict the use of district water during a drought emergency or other water shortage condition and may prohibit the wastage of district water or the nonessential use of district water during such periods for any purpose other than household uses or other restricted uses as the District determines to be necessary; and

WHEREAS, pursuant to Water Code section 71641 and Government Code section 6061, the [District] must publish in a newspaper of general circulation any ordinance setting forth the restrictions, prohibitions, and exclusions determined to be necessary under Water Code section 71640 within 10 days after its adoption, even though the ordinance is effective upon adoption; and

WHEREAS, Water Code section 71644 establishes that, from the publication of an ordinance pursuant to section 71641 until the repeal of the ordinance or end of the emergency, it is a misdemeanor punishable by up to 30 days in county jail and/or a fine of up to \$600 for any person to use or apply water from the District contrary to or in violation of any restriction or prohibition; and

WHEREAS, the adoption and enforcement of a comprehensive water conservation program will allow the [District] to delay or avoid implementing measures such as water rationing or more restrictive water use regulations pursuant to a declared water shortage emergency as authorized by California Water Code sections 350 et seq.; and

WHEREAS, on [date resolution finding a drought emergency or water shortage was adopted], the [District] found the existence or threat of a local drought emergency or water shortage; and,

[INSERT clauses speaking to locally relevant conditions and concerns as needed or desired]

NOW, THEREFORE, BE IT ORDAINED by the [Board of Directors or District], as follows:

1. This ordinance is effective upon adoption; and
2. Within ten days the [District] will publish in a newspaper of general circulation this ordinance setting forth the restrictions, prohibitions, and exclusions determined by the [District] to be necessary in the [local newspaper of general circulation]; and
3. The Board hereby requires mandatory water conservation and restricts water use to a maximum of [amount] per day per water connection; and
[Also consider restrictions requiring a set percentage of reductions; prohibitions on landscape runoff; restrictions on use of potable water for street cleaning, or other non-potable uses; or other conditions in Levels 2 through 4 in the sample ordinance adopting a water conservation program for cities and counties.]
4. The restrictions in this ordinance remain in effect until the ordinance has been repealed or the emergency or threatened emergency has ceased; and
5. Violation of the requirements of this ordinance shall constitute a misdemeanor, subject to the following penalties:
 - a. Each violation of this ordinance may be prosecuted as a misdemeanor punishable by imprisonment in the county jail for not more than thirty (30) days or by a fine not exceeding \$600, or by both as provided in Water Code section 71644.
 - b. Each day that a violation of this ordinance occurs is a separate offense.
 - c. Administrative penalties may be levied for each violation of a provision of this ordinance in accordance with Water Code section 71590.

Passed and adopted this ____ day of _____ 2014, by the following vote:

AYES: _____
NOES: _____
ABSTAIN: _____

ABSENT: _____

SAMPLE

Appendix H: SVWD Emergency Response Plan



SCOTTS VALLEY
WATER DISTRICT

Emergency Response Plan

2 Civic Center Drive
Scotts Valley, CA 95066
(831) 438-2363

EMERGENCY USE OF THIS PLAN

Step 1

- Turn to **APPENDIX 1** - EOC Assignments.
- Determine Your **EOC** Positional Assignment.

Step 2

- Turn to **SECTION 2** - Emergency Operations Center.
- Set up EOC based on **Page 51** - EOC Activation Checklist.
- Lay out EOC based on **Page 49** - EOC Layout.

Step 3

- Noting your EOC Assignment, refer to Checklists in **SECTION 3** and the **APPENDICES** and **ANNEXES** sections for supplemental information as you assume emergency response duties.

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SECTION 1

THE EMERGENCY RESPONSE PLAN

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

Promulgation

Letter of Promulgation

The preservation of life, environment, and property is an inherent responsibility of local, state, and federal government. The Scotts Valley Water District has prepared this Emergency Response Plan to ensure the most effective and economical allocation of resources for the maximum benefit and protection of the community in time of emergency.

While no plan can completely prevent death and destruction, good plans carried out by knowledgeable and well-trained personnel can and will minimize losses. This plan establishes the emergency organization, assigns tasks, specifies policies, and general procedures, and provides for coordination of planning efforts of the various emergency staff and service elements utilizing the Standardized Emergency Management System (SEMS). The plan also meets requirements established by the National Incident Management System (NIMS).

The objective of this Plan is to incorporate and coordinate all agencies and personnel of the District into an efficient organization capable of responding to any emergency.

This Emergency Response Plan is an extension of the *California Emergency Plan*. It will be reviewed, exercised periodically, and revised as necessary to meet changing conditions.

The Board gives its full support to this plan and urges all officials, employees, and citizens, individually and collectively, to do their share in the total emergency effort of the Scotts Valley Water District.

Concurrence of this promulgation letter constitutes the adoption of the Standardized Emergency Management System and the National Incident Management System by the Scotts Valley Water District. This Emergency Response Plan will become effective on approval by the Board.

Piret Harmon
General Manager
EOC Director

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

The Emergency Response Plan

The Emergency Response Plan addresses the District's responsibilities in emergencies associated with natural disaster, human-caused emergencies and technological incidents. It provides a framework for coordination of response and recovery efforts within the District in coordination and with local, State, and federal agencies. The Plan establishes an emergency organization to direct and control operations during a period of emergency by assigning responsibilities to specific personnel.

The Plan:

- Conforms to the State mandated Standardized Emergency Management System (SEMS), the National Incident Management System (NIMS), and effectively structures emergency response at all levels in compliance with the Incident Command System (ICS).
- Establishes response policies and procedures, providing the District clear guidance for planning purposes.
- Describes and details procedural steps necessary to protect lives and property.
- Outlines coordination requirements.
- Provides a basis for unified training and response exercises to ensure compliance.

Requirements

The Plan meets the requirements of the State's policies on Emergency Response and Planning, the Standardized Emergency Management System (SEMS), and conforms to the requirements set forth by the California State Department of Water Resources Control Board, Division of Drinking Water publication ***California Emergency Response Plan Guidance - Public Drinking Water Systems Serving a Population of 3,300 or More.***

(February 2015)

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

Purpose and Scope

Purpose

The Purpose of the Emergency Response Plan is to protect the safety and welfare of the community of Scotts Valley, the customers of the Scotts Valley Water District, as well as all of its employees and contractors.

Scope

The Scope encompasses a broad range of major emergencies. Such incidents include flooding, earthquakes, hazardous materials incidents, severe storms, wildfires, and human-caused events. Also included are procedures for emergencies that may or may not require the full or partial activation of the District's Emergency Operations Center (EOC), which will coordinate with other local jurisdiction's Emergency Operation Centers.

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

Overall Emergency Planning Assumptions

Assumptions of the Plan include:

- Incidents mean an occurrence or event (natural, technological, or human-caused), that requires a response to protect life, property, or the environment (e.g., major disasters, emergencies, earthquakes, terrorist attacks, terrorist threats, civil unrest, wildland and urban fires, floods, hazardous materials (HAZMAT) spills, aircraft accidents, winter storms, war-related disasters, public health and medical emergencies, and other occurrences requiring an emergency response.
- Incidents may occur at any time with little or no warning in the context of a general or specific threat or hazard, and they may involve single or multiple geographic and jurisdictional areas.
- All incidents begin and end locally and are typically managed at the lowest possible geographic, organizational, and jurisdictional level.
- Government at all levels must continue to function under all threats, emergencies, and disaster conditions.
- Local governments possess varying levels of capabilities, plans, procedures, and resources to provide for the safety and welfare of their pERPlE. They also vary in their capacity to protect property and the environment in times of emergency or disaster.
- Incidents may cause significant alterations and damage to the environment resulting in numerous casualties and fatalities, displaced individuals, property loss, disruption of normal life support systems, disruption of essential public services, and damage to basic infrastructure.
- Incidents pose a challenge for the whole community but specifically the special needs population which includes children, individuals with disabilities and others with access and functional needs, diverse communities, the elderly, and people with limited English proficiency. These groups may be lacking in resources such as food, shelter, and transportation.
- Emergency efforts will enable people with disabilities to evacuate, use emergency transportation, stay in shelters, and participate in all emergency and disaster related programs.

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

- Incidents may attract a sizeable influx of independent, spontaneous volunteers and supplies and may require prolonged, sustained incident management operations and support activities.
- Individuals, community based organizations, and businesses will offer services and support in time of disaster.
- The greater the complexity, impact and geographic scope of an emergency, the more multiagency coordination will be required.

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

Objectives

The objectives of the Plan are to:

- Protect the safety and welfare of the overall community, as well as the employees of the Scotts Valley Water District.
- Provide for a safe and coordinated response to emergency situations.
- Protect the District's facilities and properties.
- Enable the District to restore normal conditions with minimal confusion in the shortest time possible.
- Provide for interface and coordination between incident sites and the District's Emergency Operations Center (EOC) as well as other city and county Emergency Operation Centers.

Specific goals falling within the objectives include:

- Rapidly restore water service after an emergency.
- Ensure adequate water supply for fire suppression.
- Minimize water system damage.
- Minimize impact and loss to customers.
- Minimize negative impacts on public health and employee safety.
- Provide emergency public information concerning customer service.

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

Standardized Emergency Management System (SEMS)

What is SEMS?

The Standardized Emergency Management System (SEMS) is the system required by Government Code §8607(a) for managing response to multi-agency and multi-jurisdiction emergencies in California. SEMS consists of five organizational levels that are activated as necessary:

- Field Response
- Local Government (Cities and Special Districts)
- Operational Area (County)
- Regional
- State

SEMS incorporates the use of the Incident Command System (ICS), the Master Mutual Aid Agreement, existing mutual aid systems, the Operational Area concept, and multi-agency or inter-agency coordination. Local governments and special districts must use SEMS to be eligible for funding of their personnel related costs under State Disaster Assistance programs.

Purpose of SEMS

SEMS has been established to provide an effective response to multi-agency and multi-jurisdiction emergencies in California. By standardizing key elements of the emergency management system, SEMS is intended to:

- Facilitate the flow of information within and between levels of the system,
- Facilitate coordination among all responding agencies.

Use of SEMS improves the mobilization, deployment, utilization, tracking, and demobilization of needed mutual aid resources. Use of SEMS reduces the incidence of poor coordination and communications, and reduces resource ordering duplication on multi-agency and multi-jurisdiction responses. SEMS is flexible and adaptable to the varied disasters that occur in California and to the needs of all emergency responders.

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

Organizational / Response Levels and Activation Requirements

The five SEMS organizational / response levels are described below. The levels are activated as needed for an emergency.

Field Response Level

The field response level is where emergency response personnel and resources, under the command of an appropriate authority, carry out tactical decisions and activities in direct response to an incident or threat. SEMS regulations require the use of ICS at the field response level of an incident.

Local Government Level

Local governments include cities, counties, and special districts. Local governments manage and coordinate the overall emergency response and recovery activities within their jurisdiction. The Scotts Valley Water District is a special district, and therefore falls into this level. Local governments are required to use SEMS when their Emergency Operations Center is activated or a local emergency is declared or proclaimed in order to be eligible for State and federal funding of response-related costs. In SEMS, the local government emergency management organization and its relationship to the field response level may vary depending upon factors related to geographical size, population, function, and complexity.

Operational Area Level

Under SEMS, the Operational Area means an intermediate level of the State's emergency services organization which encompasses the County and all political subdivisions located within the County. The Operational Area manages and/or coordinates information, resources, and priorities among local governments within the Operational Area, and serves as the coordination and communication link between the local government level and the regional level.

It is important to note, that while the Operational Area always encompasses the entire County area, it does not necessarily mean that the County government manages and coordinates the response and recovery activities within the county. The decision on organization and structure within the Operational Area is made by the governing bodies of the county and the political subdivisions with the county.

In Santa Cruz County, the emergency management organization of each incorporated city and each special district is responsible for coordination and direction of response and recovery operations within their respective jurisdictions, while the County Office of Emergency Services serves a support role. The County is responsible for coordinating and directing response and recovery operations in the unincorporated areas of the County, including certain services in Scotts Valley Water District, and with the cities providing support and mutual aid as needed.

The County is the Operational Area, and will be the focal point for information transfer and support requests by cities within the County. The County Administrator is in charge of the Operational

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

Area. In the event of a major disaster, the County emergency organization will operate under a Unified Command Structure.

Regional Level

Because of its size and geography, the state has been divided into three Regions. The purpose of the Regions is to provide for the more effective application and coordination of mutual aid and other emergency related activities. The Scotts Valley Water District is in the Coastal Region, which has its Regional Emergency Operations Center (REOC) in Walnut Creek. In SEMS, the regional level manages and coordinates information and resources among operational areas within the Region, and also between the Operational Areas and the State level. The regional level also coordinates overall State agency support for emergency response activities within the Region.

State Level

The State level of SEMS manages state resources in response to the emergency needs of the other levels, and coordinates mutual aid among the Regions and the State. The State level also serves as the coordination and communication link between the State and the federal disaster response system.

Features Common to all Organizational Response Levels

SEMS has several features based on the Incident Command System (ICS). The field response level uses functions, principles, and components of ICS as required in SEMS regulations. Many of these field response level features are also applicable at local government, Operational Area, Regional and State levels. In addition, there are other ICS features that have application to all SEMS levels. Described below are the features of ICS that are applicable to all SEMS levels.

Essential Management Functions

SEMS has five essential functions adapted from ICS. Field Response uses the five primary ICS functions: Command, Operations, Planning / Intelligence, Logistics and Finance / Administration. In an Emergency Operations Center at local government, Operational Area, and Regional / State levels, the term Management is used instead of Command. The titles of the other functions remain the same at all levels.

Management by Objectives

The Management by Objectives feature of ICS as applied to SEMS means that each SEMS level establishes, for a given operational period, measurable and attainable objectives to be achieved.

An objective is an aim or end of an action to be performed. Each objective may have one or more strategies and performance actions needed to achieve the objective. The operational period is the length of time set by command at the field level, and by management at other levels to achieve a given set of objectives. The operational period may vary in length from a few hours to days, and will be determined by the situation.

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

Action Planning

Action planning should be used at all SEMS levels. There are two types of action plans in SEMS:

Incident Action Plans: At the field response level, written or verbal incident action plans contain objectives reflecting the overall incident strategy and specific tactical action and supporting information for the next operational period. Incident action plans are an essential and required element in achieving objectives under ICS.

EOC Action Plans: At local, Operational Area, Regional and State levels, the use of EOC action plans provide designated personnel with knowledge of the objectives to be achieved and the steps required for achievement. Action plans not only provide direction, but they also serve to provide a basis for measuring achievement of objectives and overall system performance.

After Action Reporting

After Action Reports are required by the National Incident Management System any time the Emergency Operations Center is activated. The EOC Director will ensure that all responsible persons (Section Chiefs) will attend a critique or “Hot Wash” within 48 hours of the closing of the operation. As a result of this meeting, individual reports will be submitted no later than 30 days after the closing of the EOC. The reports must include Corrective Actions, including who is responsible for the actions and when they are to be completed. A copy of the After Action Report must be sent to the Santa Cruz County Office of Emergency Services within 90 days of the EOC deactivation.

Organizational Flexibility - Modular Organization

The intent of this SEMS feature is that at each SEMS level: 1) only those functional elements that are required to meet current objectives need to be activated, and 2) that all elements of the organization can be arranged in various ways within or under the five SEMS essential functions. The functions of any non-activated element will be the responsibility of the next highest element in the organization. Each activated element must have a person In-charge of it. However, one supervisor may be in charge of more than one functional element.

Organizational Unity and Hierarchy of Command or Management

Organizational Unity means that every individual within an organization has a designated supervisor. Hierarchy of command / management means that all functional elements within each activated SEMS level are linked together to form a single overall organization within appropriate span-of-control limits.

Span of Control

Maintaining a reasonable span of control is the responsibility of every supervisor at all SEMS levels. The optimum span of control is one to five, meaning that one supervisor has direct supervisory authority over five positions or resources. The recommended span of control for supervisory personnel at the field response level and all EOC levels should be in the one-to-three to one-to-

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

seven range. A larger span of control may be acceptable when the supervised positions or resources are all performing a similar activity.

Personnel Accountability

An important feature of ICS applicable to all SEMS levels is personnel accountability. This is accomplished through the Organizational Unity and Hierarchy of Command or Management feature along with the use of check-in forms, position logs and various status keeping systems. The intent in bringing this ICS feature into SEMS is to ensure that there are proper safeguards in place so all personnel at any SEMS level can be accounted for at any time.

Common Terminology

In ICS, common terminology is applied to functional elements, position titles, facility designations and resources. The purpose of having common terminology is to rapidly enable multi-agency, multi-jurisdiction organizations and resources to work together effectively. This feature, as applied to all SEMS levels, would ensure that there is consistency and standardization in the use of terminology within and between all five SEMS levels.

Resources Management

In ICS, resource management describes the ways in which field level resources are managed and how status is maintained. At all SEMS levels, there will be some functional activity related to managing resources. This will vary from level to level in terms of directing and controlling, to coordination, to resource inventorying. Procedures for effective resources management must be geared to the function and the level at which the function is performed.

Integrated Communications

This feature of ICS relates to: hardware systems; planning for system selection and linking; and the procedures and processes for transferring information. At the field response level, integrated communications is used on any emergency. At all EOC levels, and between all SEMS levels, there must be a dedicated effort to ensure that communications systems, planning and information flow are being accomplished in an effective manner.

Mutual Aid

What is Mutual Aid?

Incidents frequently require responses that exceed the resource capabilities of the affected response agencies and jurisdictions. When this occurs Mutual Aid is provided by other agencies, local governments, and the state. Mutual Aid is voluntary aid and assistance by the provision of services and facilities including but not limited to: fire, police, medical and health, communications, transportation, and utilities. Mutual Aid is intended to provide adequate resources, facilities, and other support to jurisdictions whenever their own resources prove to be inadequate to cope with a given situation.

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Mutual Aid is provided between and among local jurisdictions and the State under the terms of the California Disaster and Civil Defense Master Mutual Aid Agreement. This agreement was developed in 1950 and has been adopted by California's incorporated cities, all 58 counties, and the State.

Mutual Aid Systems

The mutual aid program in California has developed statewide mutual aid systems. These systems, operating within the framework of the Master Mutual Aid Agreement, allow for the progressive mobilization of resources to and from emergency response agencies, local governments, operational areas, regions, and state with the intent to provide requesting agencies with adequate resources.

Several discipline-specific mutual aid systems have been developed, including fire and rescue, law, medical, and public works. The adoption of SEMS does not alter existing Mutual Aid systems. These systems work through local government, Operational Area, Regional and State levels consistent with SEMS.

Mutual aid may also be obtained from other states. Inter-state Mutual Aid may be obtained through direct state-to-state contacts, pursuant to inter-state agreements and compacts, or may be coordinated through federal agencies.

Mutual Aid Coordinators

The basic role of a Mutual Aid Coordinator is to receive Mutual Aid requests, coordinate the provision of resources from within the coordinator's geographic area of responsibility, and to pass on unfilled requests to the next level. Mutual Aid requests that do not fall into one of the discipline-specific Mutual Aid systems are handled through the Emergency Services Mutual Aid System by emergency management staff at the local government, Operational Area, Regional, and State levels. Agencies may be requested to send representatives to the Regional EOC to assist OES regional staff in handling mutual aid requests for disciplines or functions that do not have designated Mutual Aid Coordinators.

Participation of Volunteer and Private Agencies

Volunteer agencies and private agencies may participate in the Mutual Aid system along with governmental agencies. For example, the Disaster Medical Mutual Aid system relies heavily on private sector involvement for medical / health resources. Some volunteer agencies such as the American Red Cross, the Salvation Army and others are an essential element of the statewide emergency response to meet the needs of disaster victims. Volunteer agencies mobilize volunteers and other resources through their own systems. They also may identify resource needs that are not met within their own systems that would be requested through the Mutual Aid system. Volunteer agencies with extensive involvement in the emergency response should be represented in EOCs.

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Some private agencies have established mutual aid arrangements to assist other private agencies within their functional area. For example, electric and gas utilities have Mutual Aid agreements within their industry and established procedures for coordinating with governmental EOCs. In some functional areas, services are provided by a mix of special districts, municipal, and private agencies. Mutual aid arrangements may include both governmental and private agencies. Liaison should be established between activated EOCs and private agencies involved in a response. Where there is a need for extensive coordination and information exchange, private agencies should be represented in activated EOCs at the appropriate SEMS level.

Emergency Facilities used for Mutual Aid

In-coming Mutual Aid resources may be received and processed at several types of facilities including: marshalling areas, mobilization centers, and incident facilities. Each type of facility is described briefly below:

Marshalling Area: Defined in the National Response Framework as an area used for the complete assemblage of personnel and other resources prior to their being sent directly to the disaster area. Marshalling areas may be established in other states for a catastrophic California earthquake.

Mobilization Center: Off-incident location at which emergency service personnel and equipment are temporarily located pending assignment, release, or reassignment. For major area-wide disasters, mobilization centers may be located in, or on the periphery of, the disaster area.

Incident Facilities: Incoming resources may be sent to staging areas, other incident facilities, or directly to an incident depending on the circumstances.

Staging Areas: Temporary locations at an incident where personnel and equipment are kept while awaiting tactical assignments.

Overview of SEMS Response

The following describes generally how SEMS is intended to work for various emergency situations. The situations are described in terms of the involvement and interactions of the five SEMS levels, and are intended to apply to all types of disasters that may occur in California, such as, earthquakes, floods, fires, and hazardous materials incidents.

This discussion assumes that appropriate emergency declarations and proclamations are made. It also assumes that multi-agency or inter-agency coordination is accomplished at each level as required by SEMS regulations.

Note that SEMS may be activated and resources mobilized in anticipation of possible disasters. Such anticipatory actions may be taken when there are flood watches, severe weather, earthquake advisories, or other circumstances that indicate the increased likelihood of a disaster

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that may require emergency response and mutual aid. The extent of actions taken will be decided at the time based on the circumstances.

Local Incident within Capability of Local Government

Field Response: Field units respond as needed using the Incident Command System. Resources are requested through local government dispatch centers.

Local Government: Supports field response as needed. Small incidents generally do not require activation of the local government Emergency Operations Center. Emergency management staff may monitor the incident for possible increase in severity. Larger incidents may necessitate activation of the EOC. Local governments will notify the operational area if the EOC is activated.

Operational Area: Activation of the Operational Area EOC is generally not needed for small incidents, but consideration should be given to possibility of the incident becoming larger. The Operational Area EOC would be activated if the local government activates its EOC and requests Operational Area EOC activation.

Single Jurisdiction Incident - Local Government Requires Additional Resources

Field Response: Field units respond as needed using the Incident Command System. Resources are requested through dispatch centers, Department Operations Centers, or in some cases, the EOC.

Local Government: Supports incident commanders with available resources. The local government Emergency Operations Center is activated. Local government and special districts notify the Operational Area. Resources are requested through Operational Area emergency management staff and appropriate Mutual Aid Coordinators. (In some cases, Mutual Aid may be obtained directly from neighboring local governments under local Mutual Aid agreements.) Local government and special districts retain responsibility for managing the response.

Operational Area: Operational Area emergency management staff and Mutual Aid coordinators locate and mobilize resources requested by local government or special districts. Emergency management staff and Mutual Aid Coordinators generally operate from normal departmental locations for handling limited resource requests, and the EOC is not activated. Emergency management staff and Mutual Aid Coordinators will communicate with each other as needed to coordinate resource mobilization. If requested by the affected local government, emergency management staff will activate the operational area EOC.

Major Single Jurisdiction Disaster - Local Government Requires Additional Resources

Field Response: Field units respond as needed using the Incident Command System. One or more Incident Commands may be established depending upon the size and nature of the disaster. Resources are requested through dispatch centers, Department Operations Centers (DOCs), or the EOC.

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Local Government: Supports Incident Commanders with available resources. Local governments activate their Emergency Operations Centers and notify the Operational Area lead agency. Resources are requested through Operational Area emergency management staff and Mutual Aid Coordinators. Local governments retain responsibility for managing the response.

Operational Area: Lead agency activates Operational Area Emergency Operations Center. Operational Area emergency management staff and Mutual Aid Coordinators locate and mobilize resources requested by Local government and special districts. Mutual Aid Coordinators go to the EOC or send representatives depending on circumstances. Resources not available within the Operational Area are requested through the California Office of Emergency Services Regional Administrator and Regional Mutual Aid Coordinators.

Regional: The California Office of Emergency Services Regional Administrator activates the Regional Emergency Operations Center (REOC) and notifies headquarters. The Regional Administrator and Regional Mutual Aid Coordinators locate and mobilize resources requested by the Operational Area.

State: State Operations Center is activated. The California Office of Emergency Services staff monitors the situation.

Major Area - Wide Disaster - Damage in Multiple Operational Areas

Field Response: Field units from the affected jurisdictions respond as feasible using the Incident Command System. Incident Command Posts may be established at various sites throughout the disaster area. Resources are requested through dispatch centers, Department Operations Centers (DOCs), or EOCs.

Local Government: Ability to respond may be severely impaired. Local governments assess capability and report situation to operational area. Local governments mobilize all available resources. EOCs establish priorities, allocate available resources to support the field response, and request assistance through the Operational Area. Local governments and special districts retain responsibility for managing the response within their jurisdictions.

Operational Areas: Lead agency activates Emergency Operations Center and notifies the California Office of Emergency Services Regional Administrator. Emergency Operations Center assesses situation and reports information to the Regional Emergency Operations Center (REOC). The emergency management staff and Mutual Aid Coordinators mobilize available resources in the Operational Area, request additional resources through the REOC and Regional Mutual Aid Coordinators, and provide overall situation information to local governments and special Districts.

Regional: The California Office of Emergency Services Regional Administrator activates Regional Emergency Operations Center (REOC) and notifies State Headquarters. REOC staff and Regional Mutual Aid Coordinators locate and mobilize resources available within the Region and from State agencies. Additional resources are requested through the State Operations Center.

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State: The State Operations Center (SOC) is activated and State agency representatives are requested to staff the SOC. SOC coordinates State agency response and mobilization of mutual aid resources from unaffected regions. SOC may direct activation of other California Office of Emergency Services REOCs to assist in resource mobilization. State agency department operations centers are activated. If needed, federal assistance is requested using the National Response Framework. The SOC continuously monitors the situation.

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Authorities and References

Scotts Valley Water District

Board Policy # *****

Include language from Policy

State of California

California Government Code, Section 3100, Title 1, Division 4, Chapter 4

States that public employees are Disaster Service Workers (DSW), subject to such disaster service activities as may be assigned to them by their superiors or by law. The term “public employees” includes all persons employed by the State; or any county, city, or special district, excluding aliens legally employed. The law applies when:

- A local emergency has been proclaimed.
- A state of emergency has been proclaimed.
- A federal disaster declaration has been made.

The California Emergency Plan

Promulgated by the Governor, and published in accordance with the Act and provides overall statewide authorities and responsibilities, and describes the functions and operations of government at all levels during extraordinary emergencies, including wartime. Section 8568 of the Act states, in part, that: “...the State Emergency Plan shall be in effect in each political subdivision of the state, and the governing body of each political subdivision shall take such action as may be necessary to carry out the provisions thereof.” Local emergency plans are, therefore, considered to be extensions of the California Emergency Plan.

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Definitions

Incidents, Emergencies, and Disasters

Incident

An *incident* is an occurrence or event, either human-caused or caused by natural phenomena, that requires action by emergency response personnel to prevent or minimize loss of life or damage to property and/or natural resources.

Incidents may result in extreme peril to the safety of persons and property and may lead to, or create conditions of disaster. Incidents may also be rapidly mitigated without loss or damage. While not yet meeting disaster level definition, larger incidents may call for managers to proclaim a "Local Emergency".

Incidents are usually a single event that may be small or large. They occur in a defined geographical area and require local resources or, sometimes, mutual aid. There are usually one to a few agencies involved in dealing with an ordinary threat to life and property and to a limited population. Usually a local emergency will not be declared and the jurisdictional EOC will not be activated. Incidents are usually of fairly short duration, measured in hours or, at most, a few days. Primary command decisions are made at the scene along with strategy, tactics, and resource management decisions

Emergency

The term *emergency* is used in several ways. It is a condition of disaster or of extreme peril to the safety of persons and property. In this context, an emergency and an incident could mean the same thing, although an emergency could have more than one incident associated with it.

Emergency is also used in Standardized Emergency Management System (SEMS) terminology to describe agencies or facilities, e.g., Emergency Response Agency, Emergency Operations Center, etc.

Emergency is also used to define a conditional state such as a proclamation of "Local Emergency". The California Emergency Services Act, of which SEMS is a part, describes three states of emergency:

- State of War Emergency
- State of Emergency
- State of Local Emergency

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Disaster

A *disaster* is defined as a sudden calamitous emergency event bringing great damage, loss, or destruction. Disasters may occur with little or no advance warning, e.g., an earthquake or a flash flood, or they may develop from one or more incidents, and e.g., a major wildfire or hazardous materials discharge.

Disasters are either single or multiple events that have many separate incidents associated with them. The resource demand goes beyond local capabilities and extensive mutual aid and support are needed. There are many agencies and jurisdictions involved including multiple layers of government. There is usually an extraordinary threat to life and property affecting a generally widespread population and geographical area. A disaster's effects last over a substantial period of time (days to weeks) and local government will proclaim a Local Emergency. Emergency Operations Centers are activated to provide centralized overall coordination of jurisdictional assets, departments and incident support functions. Initial recovery coordination is also a responsibility of the EOCs.

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Response Levels

Response Levels are used to describe the type of event:

Area(s) affected and extent of coordination or assistance needed, and degree of participation expected from the District.

Response Level 1 – Local Emergency

This type of situation is managed in a normal manner from a command post at the scene. Local resources are adequate and available; a local emergency is declared. Both coordination and direction are centralized: the Emergency Operations Center is not activated and public safety personnel provide necessary support, as established by agreements and ordinances. Police, fire and other responders coordinate via established telephones, radio systems and dispatch centers.

Response Level 2 - Local Disaster

Local resources are not adequate and mutual aid may be required on a regional or even statewide basis. A Local Emergency is proclaimed and a State of Emergency might be proclaimed. Several departments as well as other jurisdictional agencies need close coordination.

The Emergency Operations Center is activated to coordinate emergency response. EOC activities may include but are not limited to:

- Establishing a District-wide situation assessment function,
- Establishing a District-wide public information function,
- Determining resource requirements for the affected area and coordinating resource requests,
- Establishing and coordinating the logistical systems necessary to support multi-incident management,
- Establishing priorities for resource allocation.

Direction is decentralized: Incident Command Systems are established and continue to report through agency dispatch centers. Agency dispatch centers or liaison personnel provide information to the Emergency Operations Center.

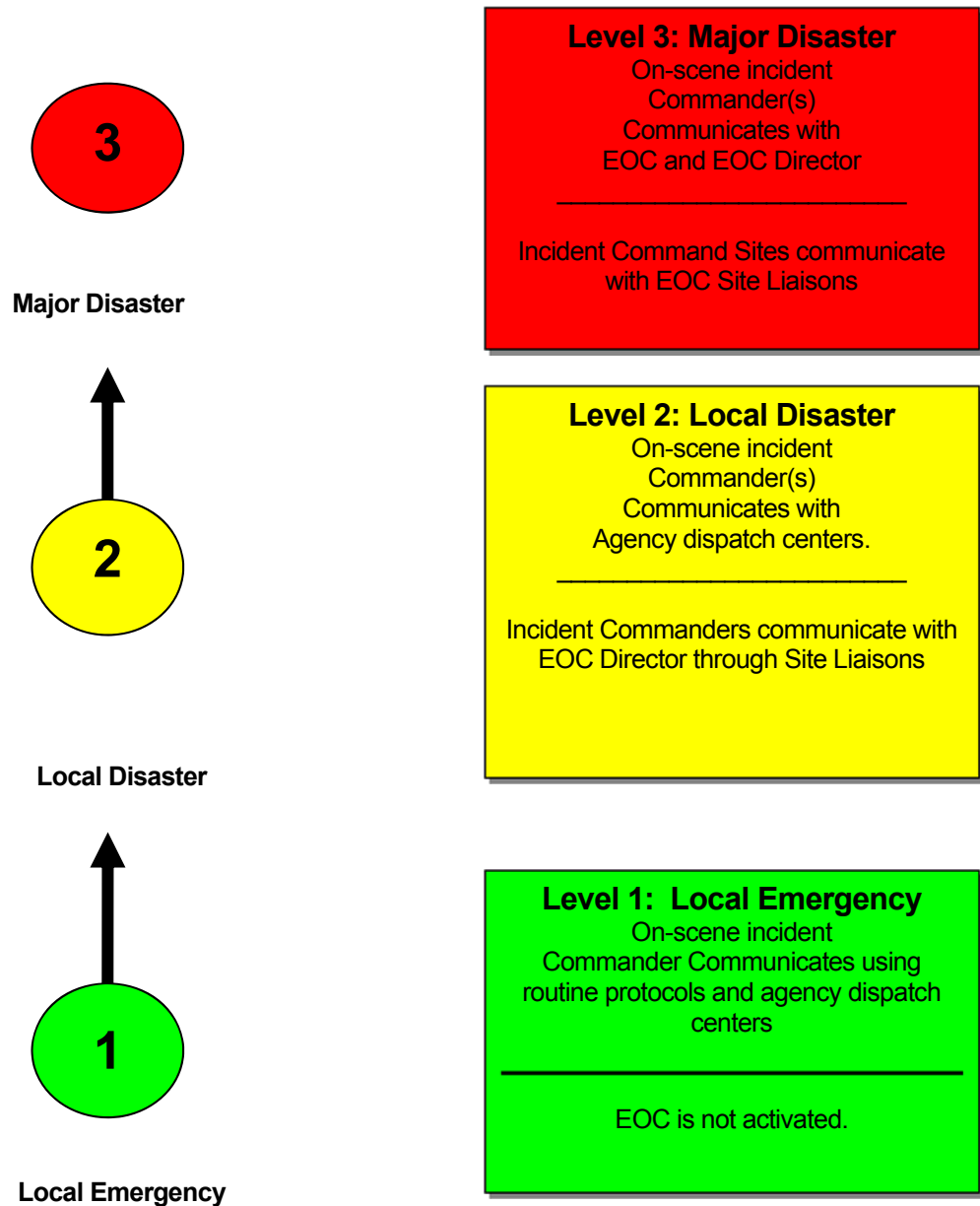
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Response Level 3 - Major Disaster

District and other local resources are overwhelmed, and the District declares a State of Emergency because extensive outside resources are required. A Local Emergency and a State of Emergency are proclaimed, and a Presidential Declaration is requested. The emergency operation is centralized. The EOC is activated and all coordination and direction activities are done from there. There may be several incidents and the managers of each incident would, as much as possible, report to and receive direction from the EOC. During war, a Statewide Emergency Management System will be fully activated and the State will coordinate emergency operations from Sacramento.

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Response Level Diagram



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Emergency Phases

General Information Regarding Emergencies

Some emergencies will be preceded by a build-up or warning period, providing sufficient time to warn the population and implement mitigation measures designated to reduce loss of life and property damage. Other emergencies occur with little or no advance warning, thus requiring immediate activation of the Emergency Response Plan and commitment of resources. All employees must be prepared to respond promptly and effectively to any foreseeable emergency, including the provision and use of mutual aid.

Emergency management activities during peacetime and national security emergencies are often associated with the phases indicated below. However, not every disaster necessarily includes all indicated phases.

Mitigation Phase

Mitigation is perhaps the most important phase of emergency management. However, it is often the least used and generally the most cost effective. Mitigation is often thought of as taking actions to strengthen facilities, abatement of nearby hazards, and reducing the potential damage either to structures or their contents.

While it is not possible to totally eliminate either the destructive force of a potential disaster or its effects, doing what can be done to minimize the effects may create a safer environment that will result in lower response costs, and fewer casualties.

Preparedness Phase

The preparedness phase involves activities taken in advance of an emergency. These activities develop operational capabilities and responses to a disaster. Those identified in this plan as having either a primary or support mission relative to response and recovery should review this document, its procedures and checklists, that detail personnel assignments, policies, and resource lists. Personnel should be acquainted with these SOPs and checklists and periodically should be trained in activation and execution.

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Response Phase

Pre-Impact: Recognition of the approach of a potential disaster where actions are taken to save lives and protect property. Warning systems may be activated and resources may be mobilized, EOCs may be activated and evacuation may begin.

Immediate Impact: Emphasis is placed on saving lives, controlling the situation, and minimizing the effects of the disaster. Incident Command Posts and EOCs may be activated, and emergency instructions may be issued.

Sustained: As the emergency continues, assistance is provided to victims of the disaster and efforts are made to reduce secondary damage. Response support facilities may be established. The resource requirements continually change to meet the needs of the incident.

Recovery Phase

Recovery is taking all actions necessary to restore the area to pre-event conditions or better, if possible. Therefore, mitigation for future hazards plays an important part in the recovery phase for many emergencies. There is no clear time separation between response and recovery. In fact, planning for recovery should be a part of the response phase.

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Emergency Proclamations

Local Emergency

A Local Emergency may be proclaimed by the District Board, or by the General Manager, as specified by the California Government Code. A Local Emergency declared by the General Manager must be ratified by the Board within seven days. The Board must review the need to continue the declaration at least every fourteen days until the Local Emergency is terminated.

The Local Emergency must be terminated by resolution as soon as conditions warrant. Declarations are normally made when there is a threat or an actual disaster or extreme peril to the safety of persons and property within the city, caused by natural or human created situations.

The declaration of a Local Emergency provides the District Board with the legal authority to:

- Request that the Governor declare a State of Emergency
- Promulgate or suspend orders and regulations necessary to provide for the protection of life and property, including issuing orders or regulations imposing a curfew within designated boundaries.
- Exercise full power to provide mutual aid to any affected area in accordance with local ordinances, resolutions, emergency plans, or agreements.
- Request state agencies and other jurisdictions to provide mutual aid.
- Require the emergency services of any local official or employee.
- Requisition necessary personnel and materials from any local department or agency.
- Obtain vital supplies and equipment and, if required, immediately commandeer the same for public use.
- Impose penalties for violation of lawful orders.
- Conduct emergency operations without incurring legal liability for performance, or failure to perform. (Note: Article 17 of the Emergency Services Act provides for certain privileges and immunities.)

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State of Emergency

A State of Emergency may be declared by the Governor when:

- Conditions of a disaster or extreme peril exist that threaten the safety of persons and property within the state caused by natural or human-caused incidents.
- The Governor is requested to do so by local authorities.
- The Governor finds that local authority is inadequate to cope with the emergency.

When the Governor declares a State of Emergency:

- Mutual aid shall be rendered in accordance with approved emergency plans when the need arises in any city or county.
- The Governor shall, to the extent deemed necessary, have the right to exercise all police power vested in the State by the Constitution and the laws of the State of California within the designated area.
- Jurisdictions may command the aid of citizens as deemed necessary to cope with the emergency.
- The Governor may suspend the provisions of orders, rules, or regulations of any state agency, any regulatory statute, or statute prescribing the procedure for conducting state business.
- The Governor may commandeer or make use of any private property or personnel (other than the media) in carrying out the responsibilities of the office.
- The Governor may promulgate, issue, and enforce orders and regulations deemed necessary.

State of War Emergency

When the Governor declares a State of War Emergency or a State of War Emergency exists, all provisions associated with a State of Emergency apply, plus:

- All state agencies and political subdivisions are required to comply with the lawful orders and regulations of the Governor that are made or given within the limits of the Governor's authority as provided for in the Emergency Services Act.

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Sample Proclamation

**PROCLAMATION DECLARING THE EXISTENCE
OF A LOCAL EMERGENCY**

WHEREAS, the EOC Director for the Scotts Valley Water District (Special District) does hereby find:

That conditions of extreme peril to the safety of persons and property have arisen within the District, as a result of:

_____;

And that the Board of the Scotts Valley Water District is not in session;

NOW, THEREFORE, IT IS HEREBY PROCLAIMED that a local emergency now exists throughout the District; and

IT IS FURTHER PROCLAIMED AND ORDERED that a copy of this declaration be forwarded to the Governor of California with the request that he proclaim a State of Emergency for the Scotts Valley Water District (Special District), and further that the Governor request a Presidential Declaration; and

IT IS FURTHER PROCLAIMED AND ORDERED that during the existence of said local emergency the powers, functions and duties of the emergency services organization of this District shall be those prescribed by law, by ordinances and resolutions of this District, and by the Scotts Valley Water District Emergency Response Plan.

BY: _____

EOC DIRECTOR

Date: _____ Time: _____

Attest: _____

District Clerk

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

Hazard Vulnerability Assessments / Risk Analyses

Hazard Risks

The Scotts Valley Water District recognizes that the planning process must address each hazard that threatens the City. Scotts Valley is vulnerable to a wide range of threats. There are three broad categories of hazards: natural, technological or human-caused, and national security.

The area around Scotts Valley, with its varying topography and mix of urban and semi-rural areas, is subject to a wide variety of negative impacts from natural and technological hazards. The natural hazards and technological or man-made hazards that confront the Scotts Valley are as follows:

Natural Hazards

- Earthquakes
- Floods
- Wildland fires
- Landslides
- Extreme weather and storms

Technological and Human-Caused Hazards

- Hazardous materials (HazMat)
- Major vehicle accident
- Airplane crash
- Civil disturbance
- Terrorism

A hazard matrix that outlines each of these hazards and identifies their likelihood of occurrence and its severity is listed on the next page.

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Likelihood of Occurrence

Severity

Hazard	Infrequent	Sometimes	Frequent	Low	Moderate	High
Earthquake M<5		X		X		
Earthquake M>5	X					X
Wildland Fire		X			X	X
Floods		X		X	X	
HazMat		X		X	X	X
Landslides		X		X	X	
Civil Disturbance	X			X		
Extreme Weather			X	X	X	X
Aircraft Crash	X			X	X	X
Major Vehicle Accident			X	X	X	
Terrorism	X				X	X

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Additional Information Regarding Hazards in and around Scotts Valley

Earthquakes

The area surrounding Scotts Valley is relatively close to four major fault zones. These fault zones are the San Andreas Fault zone, located approximately five miles to the northeast of the Planning Area, the Zayante Fault Zone, located to the north within 1.5 miles of the planning area; the Butano Fault Zone, located approximately four miles to the north; and the Ben Lomond Fault Zone, approximately one mile to the southeast. Based upon the major historic earthquakes which have occurred along these faults, each is considered active or potentially active, except the Ben Lomond Fault for which insufficient data exists to determine its activity. A relatively short fault (1.5 miles), the Bean Creek Fault is located along the lower portion of Bean Creek between Mt. Hermon Conference Center and Scotts Valley. There is insufficient data to classify its activity.

<u>Earthquake Size Descriptions</u>		
Descriptive Title	Richter Magnitude	Intensity Effects
Minor Earthquake	1 to 3.9	Only observed instrumentally or felt only near the epicenter.
Small Earthquake	4 to 5.9	Surface fault movement is small or does not occur. Felt at distances of up to 20 or 30 miles from the epicenter. May cause damage.
Moderate Earthquake	6 to 6.9	Moderate to severe earthquake range; fault rupture probable.
Major Earthquake	7 to 7.9	Landslides, liquefaction and ground failure triggered by shock waves.
Great Earthquake	8 to 8+	Damage extends over a broad area, depending on magnitude and other factors.

Both the Zayante Fault and Butane Fault are considered potentially active and capable of producing major earthquakes of magnitude 7.4 and 6.4 on the Richter Scale, respectively. Both faults exhibit evidence of activity and are tied into the San Andreas Fault system.

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The Ben Lomond Fault, according to the County Seismic Safety Element, shows evidence of activity during recent geological history, but it is unclear what potential seismic safety hazards this fault could create. Since science has not yet developed a reliable system for earthquake forecasting, we must assume that some earthquake activity can be expected in the future from these active or potentially active faults.

Nature of Seismic Hazards

Seismic hazards can be divided into five basic categories: faulting or ground rupture, ground shaking, liquefaction, seismic slope failure, and seismically induced water waves (tsunamis). Faulting and ground rupture occur when one side of a fault moves during an earthquake horizontally or vertically in relation to the earth on the other side. The earth's surface may also rupture but that does not happen every time a fault moves. Structures placed over a fault stand a high possibility of failure should faulting and ground rupture occur. There is no indication that surface rupture is a hazard in the planning area because no faults are known to traverse it.

The second category of seismic hazard is ground shaking. Ground shaking is vibration of the ground caused by earthquakes and often results in damage to structures. The extent of damage depends on: characteristics of underlying soils and rocks, design and configuration of the structure, quality of materials and workmanship used in construction, location of epicenter and magnitude of the earthquake, and duration and character of the ground motion. Damage to structures due to ground shaking may occur if tall, multi-story buildings are located on deep saturated soils and if the periods of vibration of the structures and the ground are similar. Potential for damage to buildings is generally minimized for well-constructed, single-story wood-frame buildings. Of all the hazards associated with major earthquakes, ground shaking will have the most pervasive impact in the planning area. Alluvium is highly responsive to ground shaking.

Much of the present development along Scotts Valley Drive and Mt. Hermon Road is located on alluvium and therefore will be subject to strong shaking during a major earthquake. Shaking often will trigger landslides, particularly on slopes of 15% or greater. Maps of ground shaking hazards in the planning area are unavailable.

Ground shaking may cause liquefaction of recent alluvial and terrace deposits. Liquefaction occurs when non-cohesive surface or subsurface materials are saturated and become liquid-like under the influence of ground shaking. This may result in ground failure. The longer the shaking, the greater the potential for ground failure.

The alluvial deposits of the planning area have a moderately low potential for liquefaction except for younger alluvium found predominately along creeks and other water courses; these have a moderate potential for liquefaction.

Seismic Slope failure is the third category of seismic hazard and includes earthquake caused slope failure, landslide and liquefaction. The severity of this hazard depends on the duration

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and intensity of shaking, location and magnitude of the quake, and the characteristics and condition of the ground at the time. The longer the shaking, the greater the potential for ground failure. Lurch cracking and lateral spreading are other types of slope failure. Lateral spreading occurs along creek banks or the open side of fill embankments. Slope failure and landslides due to earthquakes involve the movement of rock, soil, mud and debris. They range from minor slides to major landslide involving millions of cubic yards. Steep slopes found in the area favor such mass movements. Landslides may occur as an effect of nearby moderate to major earthquake. Because this information is general, site specific studies must be made to identify landslide hazards that may exist at any one location. Down slope movement may be rapid or so slow that a change of position can be noted only over a period of weeks or years. A landslide can range from several square feet to several square miles in area. Damage to structures can range from slight to total destruction.

Conditions that contribute to landslide occurrence in the planning area include: loose and weakly consolidated soils or rock; steep slopes; amount, intensity, and volume of rainfall; poor drainage and erosion. Humans often contribute to slope instability by inappropriate or poorly engineered grading, removal of vegetation, and alteration of surface and subsurface water conditions. In some situations, septic tanks and landscape watering can increase the landslide potential by saturating slopes. As previously indicated, seismic shaking can also trigger landslides.

Hazards due to erosion are difficult to separate from flooding and landsliding hazards. In some cases, erosion is a result of flood and landslide conditions; in others, prolonged erosion can cause rapid water runoff and landsliding. Erosion is a natural process caused by wind, water and gravitational forces. This process generally creates two problems: removal of soil from one site and its subsequent deposit in another.

The final category of seismic hazard is the seismic sea wave, or tsunami, which would not affect Scotts Valley.

Flood Hazards

The Scotts Valley planning area is subject to flood hazards resulting from heavy rainfall, causing the overflow of stream courses. Scotts Valley is principally drained by Carbonara Creek, which begins 1.3 miles north of the City limits. The creek runs through the City parallel to Highway 17, and eventually joins Branciforte Creek in the City of Santa Cruz. The creek has two main tributaries in Scotts Valley: Camp Evers Creek runs south of Mt. Hermon Road; West Branch Creek runs east of Glenwood Drive. All three creeks have been altered by road development, bridges and culverts.

The most recent recorded storm damage occurred in January 1982. Carbonara Creek and Camp Evers Creek both experienced significant bank erosion. Bridges were washed out on Carbonara Creek, and west Branch Creek flooded when it clogged with silt and debris.

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Insufficient channel capacity to handle peak flood flows, obstructions (such as vegetation or structures) in the stream channel, and poor land use practices can increase flood potential. Runoff occurs when storms of high intensity and/or long duration exceed the soil's ability to absorb water. Runoff rate and volume is also influenced by slope and vegetative cover. The greater the slope, the less chance rainfall has to infiltrate into the soil. Infiltration potential is enhanced by vegetation which serves to reduce the velocity of raindrops striking soil surfaces. In undeveloped areas where there are fewer streets and structures, absorption levels can be excellent. In intensely developed areas where streets, parking lots, and structures cover much of the ground surface, absorption is extremely low because these materials are impermeable.

Urban development conditions contribute to erratic runoff rates and flooding in areas where there is an inadequate storm drainage system. When the capacity of storm drains is exceeded, flooding occurs. Development in these flood-prone areas increases hazards to life and property.

Scotts Valley revised the Storm Drainage Master Plan in December 1989. The plan recognized both natural flood hazards and an increased need for adequately sized drainage facilities. Both in-stream and off-stream drainage facilities were identified, coded and prioritized for both private and public properties. In addition to flood control improvements, the Federal Flood Insurance Program makes flood insurance available to residents and businesses in flood hazard areas after the hazards, of flooding are estimated. Insurance rates vary according to the expected severity of the hazard. In order to participate in the program, however, a community must regulate development in the hazard area so as not to increase the hazard. The City regulates flood hazards by requiring the floor elevation of new development to be at least 1.0 foot above the 100-year flood height and preventing development which may cause floodwaters to flow at hazardous velocities (for instance, by narrowing the channel). The 100-year flood hazard area was mapped by FEMA on Flood Insurance Rate Maps in 1983. These maps are available in the Public Works and Planning departments and are used to indicate the necessity for special review prior to project approval.

Fire Hazards

Any fire, regardless of size or location, poses a threat to life and property until it is contained or controlled. It must be recognized that all fires are hazardous and fire prevention and safety measures must be incorporated into all land use planning decisions.

Fire hazards are generally categorized into two main types: 1) fires within undeveloped areas, commonly called wildland fires, and 2) fires within urban areas which primarily involve specific sites and structures. California experiences large wildland fires almost every year. The factors contributing to fires - highly flammable brush, rugged terrain, long arid summers, dry northeast winds, and an expanding population - are all typical characteristics of Scotts Valley. In addition to wildland fires, Scotts Valley experiences fires from structural, vehicular, utility, and other sources as well.

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Fires in the Scotts Valley area tend to be structural in nature year-round, and wildland in nature during the summer.

Fire Protection Problems

Various land uses require minimum water flows for adequate fire protection. Fire hydrant capacities within the Scotts Valley area present some fire protection problems for the Fire District in meeting these flows. Hydrant capacities range from 1,000 gpm (in 60% of the District), 500-1,000 gpm (30%) to 0-500 gpm (10%). Service is especially limited in the higher elevations. The vast majority of the valley floor, however, has flows in excess of 2,000 gpm with storage of 2.8 million gallons. Thus, all the commercial and industrial areas of Scotts Valley are more than adequately protected. Areas around Lockhart Gulch-Nelson Road, Bean Creek Road and Manana Woods presently have water supply and pressure problems.

Other problems regarding provision of fire service involve restrictions due to road widths and structural obstructions. Problem areas are located around the Granite Creek-Southwood Drive "Ridge", Cadillac Drive, Bean Creek Road and Lockhart Gulch-Nelson Road. The Scotts Valley Fire District has a minimum road width requirement of 24 foot streets with no parking on either side, 28 feet with parking on one side, and 36 feet with parking on both sides. The minimum cul-de-sac radius permitted is 35 feet. Another critical roadway problem is long dead-end streets with no emergency outlets. This physical restriction presents a severe safety hazard.

Hazardous Materials

Hazardous materials include certain products which are corrosive, ignitable, toxic, radioactive, flammable or explosive and reactive.

In their natural state, these materials may be solid, liquid, or gas. Actual materials regulated are defined by Health and Safety Code section 25501 as may be amended from time to time. Some materials are also defined in the Scotts Valley Hazardous Materials Ordinance and includes California Administration Code Title 22, EPA Priority Pollutants, and Flammable and Combustible materials. Teratogens, carcinogens, mutagens and other regulated materials not specifically regulated in the above will be evaluated on a case by case basis and not overlooked.

State law mandates that each city and/or county identify and register hazardous materials that are being used. The City of Scotts Valley has adopted an ordinance which regulates the safe storage and handling of all hazardous materials. The Scotts Valley Fire District administers the hazardous materials program for the City. The major safety issues involving hazardous materials can be classified into two categories: (1) fire; and (2) public exposure to toxic substances as a result of a release.

Hazardous waste is managed by the Santa Cruz County Environmental Health Services Department. A major problem with chemical fires is their secondary effects. Burning chemicals can generate toxic vapors, thereby greatly increasing the potential for adverse

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health effects from both the original material and its combustion product. Releases may occur in areas where hazardous materials are being stored, handled, transported or disposed. Hazardous material releases may cause substantial environmental degradation and irreparable damage to natural resources. Use and Storage of Hazardous Materials Use and storage of hazardous materials is of particular concern to adjacent land uses. Hazards are created by leaks or releases which may contaminate air, soil, or water, cause explosions, and/or cause fires.

Currently there are no known hazardous materials manufactured in the area of Scotts Valley. However, hazardous waste may be generated as a result of the use of chemical materials. Hazardous materials are used by a number of industries within the City, and some hazardous wastes are generated as a result of some activities.

Motor fuels, waste oils, propane, and other petroleum products are frequently overlooked as constituting the largest quantity of hazardous materials stored within the City. However, other chemicals are used by a wide variety of businesses including electronic companies, cleaning establishments, and various medical and veterinary businesses. Hazardous materials in the form of household products are also used by the average consumer.

Disposal and Transportation of Hazardous Materials

Hazardous waste, which may be a by-product of the use of hazardous materials, is not re-used in Scotts Valley, but is handled in a number of ways. The majority of hazardous waste produced within the city is recycled by state licensed facilities that treat, store, or dispose of hazardous waste. These facilities are commonly referred to as "T, S, D's." There are no T, S, D facilities located within the City. Licensed waste haulers are used to transport hazardous waste from the generator to the T, S, D facilities.

The second most widely used practice of waste disposal is the "land fill" method. Hazardous waste may be disposed of in state approved disposal sites referred to as "Class I" sites. Licensed waste haulers transport hazardous waste to Class I sites, which are located outside of Santa Cruz County. The most commonly used sites for this area are located in Kern County and out of state. State Highway 17 serves as the main transit line for the majority of hazardous materials hauled throughout the county. Scotts Valley Drive is used by the majority of licensed hazardous materials/waste haulers that supply and remove hazardous materials/waste from specific locations throughout the city. In 1981, the California Highway Patrol assumed leadership in responding to spills on California's state highways, a job formerly handled by Caltrans. The Highway Patrol acts as a command and information center and works cooperatively with the County Office of Emergency Services; the Department of Transportation will continue to take the lead in cleaning up spills on state property.

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Scotts Valley Hazardous Materials Management Plan

The purpose of the Hazardous Materials Storage Permit Ordinance, adopted by the city, is to protect health, life, resources, and property through prevention and control of unauthorized discharges of hazardous materials.

The ordinance is implemented through a permitting process. All businesses or persons that store hazardous materials must have a permit issued by the administering agency, which is currently the Scotts Valley Fire Protection District. The issuance of a permit is based on type or quantity of material, proper storage, emergency response plans, sampling, monitoring inspections, and testing programs. The ordinance provides for full cost recovery through a schedule of fees which is based upon type and quantity of materials stored.

There are more than 100 commercial/industrial users of hazardous materials within the City. These materials may include bulk storage of fuels, solvents, resins, and a wide variety of other solids, liquids and gases.

Terrorism Event

According to the FEMA publication *Principal Threats Facing Communities and Local Emergency Management Coordinators*, most terrorist activities are bombing attacks. Principal targets include military personnel and facilities, commercial establishments, and federal government buildings and property. However, based on the events surrounding September 11, 2001, there is an increasing threat of WMD (Weapons of Mass Destruction) incidents, including Nuclear, Biological, and Chemical attacks against civilian targets.

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Plan Maintenance and Training

Emergency Response Plan Maintenance

The Scotts Valley Water District Emergency Response Plan is designed for efficient update and additions. The responsibility of maintaining the document is assigned to the District's General Manager.

The General Manager will conduct a thorough review of the plan annually. Updates shall be distributed every year as needed or when there are significant changes.

This Plan is a management tool. It supports, and is integrated with, District operations. Sections of the Plan can be easily updated with minor modifications when there are changes to the District organization, systems and/or new functional positions are added. It does not need to be updated every time procedures change.

Individuals with emergency assignments are to review their procedures and related information after every activation; either simulated in drills or as an actual response. Individual Checklists are to be revised as needed. Additionally, individual users are encouraged to add supplemental materials to their Sections for a complete "response ready" plan.

The Checklists are designed to be used as worksheets. New and revised Checklists can be reprinted after each activation. It is not necessary to reprint the entire document each time it is updated. The footer date should always be kept current and can include the word "Revised" to indicate the update.

Training Program

This Plan is consistent with the Standardized Emergency Management System (SEMS) guidelines. The guidelines provide standardized training modules with competency requirements for each level of activation and responsibility. The District will need to review the guidelines to identify competency requirements based on this Plan.

Orientation

All new District supervisory and management employees should review the Plan upon hire, and attend field or EOC training when practical.

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

SEMS Required EOC Exercises and After Action Reports

The District will conduct an EOC table top or an EOC functional exercise at least once a year, simulating an actual incident or disaster, as required by SEMS. This serves to practice policies, procedures and decision-making skills. The exercise may involve District staff alone, or it can be held in conjunction with other jurisdictions. These exercises are the most effective method of training the District's staff. Shortly after the annual exercise, the District will prepare an After Action Report (including Corrective Actions) as required by NIMS.

In addition, should the EOC be activated for a declared emergency; the District will also prepare an After Action Report that includes Corrective Actions as required by NIMS and SEMS. All After Action Reports will indicate who is responsible for completing the Corrective Actions and when they are to be completed. These reports will be forwarded to the Santa Cruz County Office of Emergency Services.

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

Continuity of Government

General

A major emergency could result in loss of key District officials, loss of function of the established seat of government, and destruction of public and private records. Authority for policies and procedures associated with continuity of government is derived from the California State Constitution, the Emergency Services Act, and Scotts Valley Water District Board Policies.

Succession of District Officials

The District Board shall meet as soon as possible after a disaster. If necessary, it reconstitutes itself and fills appointive District offices. Section 8635 et seq., Article 15, Chapter 7, Division 1, Title 2 of the California Government Code establishes a method of reconstituting the District Board and appointing District offices.

If the EOC Director (General Manager) is not available, he or she is succeeded by an individual who is permanently appointed to the following positions in city government. The successor serves until an appointment has been made by the District Board and the appointee has been seated:

First Alternate: Operations Manager

Second Alternate: Finance Manager

Succession of Emergency Operations Center Sections and Branches are provided for in the procedures and checklists that support this plan.

Temporary Seat

The seat of government is the Scotts Valley Water District Office, 2 Civic Center Drive, Scotts Valley, CA 95066. The alternate seat of government is the District's Corporation Yard at 70 El Pueblo Road, Scotts Valley, CA 95066.

Preservation of Essential Records

Essential District records comprise only a small amount of all the records of the District and meet one or more of the following criteria:

- Records necessary to conduct emergency operations. Records in this category include utility systems maps, locations of emergency supplies and equipment, Emergency Response Plans and procedures, lists of regular and auxiliary personnel.
- Records required to restore day-to-day District operations. Records in this category include state statutes, District ordinances, resolutions, official proceedings, and financial records.

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- Records necessary for the protection of rights and interests of individuals and government. Records in this category include land and tax records, license registers, and articles of incorporation.

Essential District records may be protected at any point in their life cycle, i.e., from their creation to final disposition. Acceptable methods of preserving essential records include dispersal, duplication, on-site storage, off-site storage. The District currently preserves essential records by reproducing them electronically on digital drives.

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REVISION LOG

Date	Summary of Revisions

SECTION 2

EMERGENCY OPERATIONS CENTER

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

Emergency Organization

Overall Emergency Structure

SEMS requires that all public agencies use the five designated functions to serve as the basis for organizing emergency planning and response. The Scotts Valley Water District's emergency response organization is based on these functions. The Emergency Operations Center is located at the District Office at 2 Civic Center Drive, Scotts Valley, 95066. A secondary EOC can be activated at the District's Corporation Yard at 70 El Pueblo Road, Scotts Valley, CA 95066.

Emergency Operations Center (EOC)

Explanation of the EOC

The Emergency Operations Center (EOC) is the location from which centralized management of an emergency response is performed. The use of EOCs is a standard practice in emergency management.

The EOC Director and key decision-making personnel operate from the EOC during the emergency response, establishing policy and priorities. It serves as the central point for information gathering, processing, and dissemination; coordination of all District emergency operations; and coordination with the City, other agencies, and the Operational Area EOC. The EOC is partially or fully activated by the EOC Director, according to the requirements of the situation.

The EOC is organized according to SEMS, as noted earlier in this plan. The Management Group and the Section Chiefs serve as the EOC Team.

Unless otherwise specified, the EOC should not be providing tactical direction to the various incidents that are being conducted in the field using the Incident Command System.

It is recommended that the EOC be configured as closely as possible to the diagram listed in this Section. However, in the event of a disaster where the District's Office is not accessible, the EOC may be moved to the Corporation Yard, or any other safe location at the discretion of the EOC Director.

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EOC Organizational Chart



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EOC Positional Definitions

EOC Director - (WUEOCM)

(Water Utility Emergency Operations Center Manager)

From the EOC, the EOC Director constantly assesses the situation and knows what resources are available. The Director determines strategy for implementing the Action Plan to handle the incident, and monitors how the plan is working. Adjustments to the plan can be made to meet the realities of the situation. In addition, the Director makes sure that the response is being fully documented for legal and financial reasons. The Director coordinates all response activities through the EOC Section Chiefs, and keeps the District's Board informed of the progress and strategies being implemented during the response.

The EOC Director is also responsible for the formulation and release of information about the event, as well as the point of contact for news media and other appropriate agencies and organizations. In addition, the Director is the conduit for information flow between the District and other jurisdictions. This may include, but is not limited to law enforcement agencies, the Fire Service, Public Works, Water Districts, and other county and State agencies.

Legal Officer

The Legal Officer is the District's Legal Counsel. As required, the Legal Officer provides advice to the EOC Director in all legal matters relating to the emergency. The Legal Officer assists the Director in declaring a local emergency and the implementation of emergency powers if required.

Public Information Officer

The PIO is responsible for the formulation and release of information about the event, as well as the point of contact for news media and other appropriate agencies and organizations. The PIO is authorized to speak for the District as directed by the EOC Director.

Liaison Officer

The Liaison Officer is a direct representative of the EOC Director. The Liaison Officer is the conduit for information flow between the District and other jurisdictions, notably the City of Scotts Valley. They also act as point of contact for personnel who have been assigned to the event response from assisting or cooperating agencies. This may include, but is not limited to law enforcement agencies, the Fire Service, Public Works, other water districts, the Red Cross, hospitals, schools, etc. The Liaison Officer ensures that these organizations are informed and involved in the event response.

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Operations Section Chief - (WUERM)

(Water Utility Emergency Response Manager)

The Operations Chief is responsible for activating the operational element of the EOC Action Plan. They manage the strategic operation that directs the primary mission. They are responsible for coordinating the District's potable and recycled water distribution in accordance with the Action Plan.

Planning and Intelligence Section Chief

The Planning and Intelligence Section is managed by the Section Chief, who is responsible for the collection, evaluation, documentation, and dissemination of incident information and intelligence within the EOC. Also, the Planning and Intelligence Section Chief is responsible for preparation of the Action Plan and the After Action Report, as well as other reports that may be required.

Logistics Section Chief

Responsible for all the services and support needs of the event. This includes procuring and maintaining essential personnel, facilities, equipment and supplies. They are also responsible for maintaining the EOC in operational order by procuring and repairing equipment, as well as obtaining supplies as needed. The Logistics Chief cooperates closely with the Operations Section to determine resources currently in place and what resources may be needed.

Finance & Administration Section Chief

The Finance and Administration Chief provides advice and support to EOC Director regarding financial issues, and insures that adequate records are maintained to support requests for State and federal assistance. They also insure that personnel and volunteer time worked by all those involved in the incident is also tracked, while providing cost analysis and projections. They also manage all legal claims for compensation filed against the District. It advises the EOC Director in areas of claims for bodily injury and property damage compensation presented to the District.

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EOC Activation and Set-Up Procedure

- ☐ Check in with EOC Director to determine level of EOC activation.
- ☐ Set up tables according to the EOC set up diagram. Place chairs around each of the tables.
- ☐ EOC supplies are kept in the storage room.
- ☐ Set up the tables with the equipment from the appropriately labeled containers, including telephones and laptop computers. Remove the vests and place them on the chairs around the tables.
- ☐ Turn on television to initially monitor news reports.
- ☐ Read the position checklists for specific duties and begin EOC operations.

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

When the EOC is activated

Activation of Scotts Valley Water District's EOC means that at least one District official implements SEMS as appropriate to the scope of the emergency and the District's role in response to the emergency. The District's EOC is activated when routine use of resources needs support and/or augmentation. The official implementing SEMS may function from the EOC, or from other locations depending on the situation.

Activated EOCs may be partially or fully staffed to meet the demands of the situation. The District maintains three EOC staffing levels that can be applied to various situations. Activation criteria are as follows:

EOC Activation Guide				
Level	Conditions	EOC Duties	Activation	Actions
0	1. No potential severe weather 2. No increasing probability of hazard	1. Monitor regional weather forecasts.	1. No to minimal staff in normal operations	1. No actions.
1	1. Severe weather watch is issued 2. Situational conditions warrant 3. Small incidents involving one facility 4. Earthquake advisory 5. Flood watch	1. Continuous monitoring of event 2. Check & update all resource lists 3. Distribute status and analysis to EOC personnel 4. Receive briefing from field personnel as necessary	1. Only basic support staff or as determined by EOC Director	1. EOC Sections review Plan and Guidelines and check readiness of staff and resources.
2	1. Situational conditions warrant 2. Severe weather warning issued 3. Moderate earthquake 4. Wildfire affecting specific areas 5. Incidents involving 2 or more facilities 6. Hazardous materials incident requiring evacuation 7. Imminent earthquake alert	1. Continuous monitoring of event 2. Initiate EOC start-up checklist 3. Facilitate field personnel 4. Provide status updates to EOC personnel	1. Staffed as situation warrants and liaison to other agencies 2. Primary EOC personnel will be available and check-in regularly	1. Briefings to District staff 2. EOC begins full operation
3	1. Hazardous conditions that affect a significant portion of the District 2. Severe weather is occurring 3. Verified and present threat to critical facilities 4. Situational conditions warrant 5. Major emergency in the Area or Region 6. Incidents occurring involving heavy resource involvement 7. Major earthquake	1. Brief arriving staff on current situation 2. Facilitate EOC staff	1. As determined by the EOC Director 2. EOC essential and necessary staff 3. Key department heads 4. Required support staff	1. As situation warrants

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EOC Closeout Checklist

- ☐ Notify appropriate agencies and individual sites that EOC is being closed.
- ☐ Collect data, logs, situation reports, message forms, and other significant documentation. Place in a secure file box. Mark the outside with the date and any state or federal numbers associated with the response.
- ☐ Deliver the information to the Finance Section Chief.
- ☐ Fold and repack re-usable maps, charts, materials.
- ☐ Collect and place all equipment and supplies in the appropriate containers.
- ☐ Make a list of all supplies that need replacement and forward to the Logistics Section Chief.
- ☐ Return vests to the containers.
- ☐ Turn off all radios, computers, and the television.
- ☐ Leave the Board Room in good order.

SECTION 3

EMERGENCY OPERATIONS CENTER

POSITIONAL CHECKLISTS

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EOC Director

(Assigned to: General Manager, Operations Manager, Other Management Staff)

From the EOC, the EOC Director constantly assesses the situation and knows what resources are available. The Director determines strategy for implementing the Action Plan to handle the incident, and monitors how the plan is working. Adjustments to the plan can be made to meet the realities of the situation. In addition, the Director makes sure that the response is being fully documented for legal and financial reasons. The Director coordinates all response activities through the EOC Section Chiefs, and keeps the District's Board informed of the progress and strategies being implemented during the response.

Action Checklist

- ☐ Identify yourself as the EOC Director.
- ☐ Read this entire Checklist.
- ☐ Obtain a briefing on the extent of the emergency and recommended initial objectives.
- ☐ Depending on the type of the incident and the information available, order partial or full activation of the EOC.
- ☐ Refer to **ANNEX D** for Threat and Water System Attack Procedures.
- ☐ Determine if all key personnel have been notified.
- ☐ Brief Section Chiefs and ensure that they utilize the EOP Checklists.
- ☐ If required, direct the Liaison Officer to report to the City's EOC.
- ☐ Determine the need for the evacuation of District facilities. Consider declaring a local emergency. Distribute declaration to the County Administrator and the Office of Emergency Services.
- ☐ Establish the frequency of briefing sessions for EOC staff.
- ☐ Working with the Operations Section Chief, establish operational work periods for all Emergency Operations Center and field personnel.
- ☐ Direct Section Chiefs to maintain appropriate Unit Logs, charts, and records.
- ☐ Review and approve the EOC Action Plan developed by the Planning and Intelligence Chief.
- ☐ Working with the Operations Section Chief and the PIO, ensure that proper warnings have been given to affected areas.
- ☐ Working with the PIO, issue special information releases addressing rumors. Identify them as such, and provide correct information, if available.
- ☐ Ensure that separate voice mail telephone hotlines are created for the media and public use.

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- ☐ Working with the PIO, arrange for escort and briefing service for the media and VIPs.
- ☐ If there is little or no damage to the District, prepare to provide mutual aid to neighboring jurisdictions.
- ☐ Make sure that the Liaison Officer is a point of contact for other Agency Representatives.
- ☐ Ensure that the Liaison Officer maintains a list of assisting and cooperating agencies and Agency Representatives.
- ☐ Assist in establishing and coordinating interagency contacts.
- ☐ Be sure that the agencies supporting the incident aware of its status.
- ☐ Keep the Board informed of all major problems and decisions.
- ☐ Maintain a Management Section Log noting messages received; decisions made and actions taken.
- ☐ Ensure that an After Action Report is completed at the deactivation of the EOC, and that Corrective Actions are noted, including who is responsible for the actions and when they are to be completed. The Director is to ensure that the Corrective Actions are completed by whom they were assigned, and that they are completed in the time allocated in the report.

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Legal Officer

The Legal Officer is the District's Legal Counsel. As required, the Legal Officer provides advice to the EOC Director in all legal matters relating to the emergency. The Legal Officer assists the Director in declaring a local emergency and the implementation of emergency powers if required.

(Assigned to: General Counsel)

Action Checklist

- ☐ Identify yourself as the Legal Officer.
- ☐ Read this entire Checklist.
- ☐ Obtain a situation briefing on the extent of the emergency from the EOC Director.
- ☐ Advise EOC Director on declaring an emergency and/or issuing special orders.
- ☐ Monitor response effort and advise the EOC Director regarding liability exposures and protection against such exposures.
- ☐ Prepare proclamations, emergency ordinances, and other legal documents as required by the EOC Director.
- ☐ Develop rules and regulations required for acquisition and/or control of critical resources.
- ☐ Provide advice and prepare draft documents regarding the demolition of hazardous structures or abatement of hazardous conditions.
- ☐ Brief relieving staff upon arrival.
- ☐ Maintain a log noting messages received; decisions made; actions taken; and personnel on duty.
- ☐ Complete an After Action Report that should include a brief overview of support provided during the operation and suggested Corrective Actions to improve operations. Use the following format:
 - Issue
 - Corrective Action
 - Assigned to and due date for completion

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Public Information Officer

The PIO is responsible for the formulation and release of information about the event, as well as the point of contact for news media and other appropriate agencies and organizations. The PIO is authorized to speak for the District as directed by the EOC Director.

(Assigned to: Assistant to the General Manager, Other District Staff)

Action Checklist

- ☐ Identify yourself as the Public Information Officer.
- ☐ Read this entire Checklist.
- ☐ Obtain a briefing from the EOC Director.
- ☐ Prepare an initial information summary as soon as possible after arrival.
- ☐ Observe constraints on the release of all information imposed by the EOC Director.
- ☐ Establish contacts with the media and provide whatever assistance is required.
- ☐ Establish an Information Center for the media. Schedule regular briefings. Post briefing schedule.
- ☐ Establish separate voice mail telephone hotlines for media and public use. Update regularly.
- ☐ If required, establish a field PIO team, including those from other jurisdictions to assist.
- ☐ Gather and disseminate instructions, warnings, and announcements.
- ☐ Release news and information. Post the information in the EOC and Media Center. Ensure that field units receive copies of all releases.
- ☐ In the case of a multi-jurisdictional event, coordinate the release of public information through a Joint Information Center (JIC).
- ☐ Arrange for escort and briefing service for the media and VIPs.
- ☐ Attend all EOC briefings and meetings. Update information releases.
- ☐ Schedule expert speakers for media briefings.
- ☐ Monitor television and radio transmissions.
- ☐ Issue warnings about unsafe areas, structures, and facilities.
- ☐ Working with the County, utilize EDIS, EAS, or other communications systems to issue warnings.
- ☐ Issue special information releases addressing rumors. Identify them as such, and provide correct information, if available.
- ☐ Provide information to the public on available transportation routes, closures, etc.

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- ☐ Release an official list of water distribution centers.
- ☐ Ensure that announcements and information are translated for special populations.
- ☐ Maintain a log noting messages received; releases published; interviews granted; and other activities.
- ☐ Complete an After Action Report that should include a brief overview of support provided during the operation and suggested Corrective Actions to improve operations. Use the following format:
 - Issue
 - Corrective Action
 - Assigned to and due date for completion

**SCOTTS VALLEY WATER DISTRICT
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Liaison Officer

The Liaison Officer is a direct representative of the EOC Director. The Liaison Officer is the conduit for information flow between the District and other jurisdictions, notably the City of Scotts Valley. They also act as point of contact for personnel who have been assigned to the event response from assisting or cooperating agencies. This may include, but is not limited to law enforcement agencies, the Fire Service, Public Works, other water districts, the Red Cross, hospitals, schools, etc. The Liaison Officer ensures that these organizations are informed and involved in the event response.

(Assigned to: District Staff as Required by Event)

Action Checklist

- ☐ Identify yourself as the Liaison Officer.
- ☐ Read this entire Checklist.
- ☐ Obtain a briefing on the extent of the emergency and recommended initial objectives from the EOC Director.
- ☐ Maintain a Unit Log noting messages received; decisions made and actions taken.
- ☐ Report to the City of Scotts Valley's EOC at the direction of the EOC Director.
- ☐ Be a point of contact for other Agency Representatives.
- ☐ Maintain a list of assisting and cooperating agencies and Agency Representatives.
- ☐ Assist in establishing and coordinating interagency contacts.
- ☐ Keep agencies supporting the incident aware of event status.
- ☐ Refer to **ANNEX D** for Threat and Water System Attack Procedures.
- ☐ Monitor incident operations to identify current or potential inter-organizational problems.
- ☐ Participate in planning meetings, providing current resource status, including limitations and capability of assisting agency resources.
- ☐ Assign assistants as needed.
- ☐ Complete an After Action Report that should include a brief overview of support provided during the operation and suggested Corrective Actions to improve operations. Use the following format:
 - Issue
 - Corrective Action
 - Assigned to and due date for completion

**SCOTTS VALLEY WATER DISTRICT
EMERGENCY RESPONSE PLAN**

Operations Section Chief

The Operations Chief is responsible for the overall strategic management and coordination of the District's Water system operation.

(Assigned to: Operations Manager, District Supervisory Staff)

Action Checklist

- ☐ Identify yourself as the Operations Section Chief.
- ☐ Read this entire Checklist.
- ☐ Obtain a briefing from the EOC Director.
- ☐ Evaluate the field conditions associated with the emergency. Ensure that all District facilities are being checked for damage and problems.
- ☐ Manage the overall Operations related response.
- ☐ Determine what District resources are committed to the event.
- ☐ Coordinate the use of outside contractors for major repairs.
- ☐ Coordinate the need for local water utility mutual aid for immediate priority problems.
- ☐ Refer to **ANNEX D** for Threat and Water System Attack Procedures.
- ☐ Coordinate with the Santa Cruz County Public Works Coordinator (EOC) on major problems, actions taken, and resources available or needed.
- ☐ Coordinate resource needs with the Logistics Section Chief.
- ☐ Establish and maintain staging areas for operations related equipment and personnel.
- ☐ Arrange for feeding and sheltering of mutual aid Water Sector personnel as necessary with the Logistics Section.
- ☐ Assist the Planning and Intelligence Chief in the development of the Action Plan.
- ☐ If required, contact the Liaison with the Scotts Valley Fire District for the status of fire response, special problems, and its availability to respond. Advise the EOC Director and Planning and Intelligence Section of major problems and the general fire situation.
- ☐ In coordination with the Santa Cruz County EOC and the American Red Cross, determine shelter sites and review their water needs.
- ☐ Prepare the initial damage estimate to the Districts facilities. Collect and record the type and estimated value of damage.
- ☐ Working through either the Scotts Valley EOC or the Santa Cruz County EOC, request structural inspection personnel if needed.

**SCOTTS VALLEY WATER DISTRICT
EMERGENCY RESPONSE PLAN**

- ☐ Set priorities for utility requirements to support immediate and extended operations. Coordinate with PG&E and County OES to correct deficiencies.
- ☐ Coordinate with the County Health Officer to determine public health hazards and establish standards for control of public health issues related to Water treatment and distribution.
- ☐ Establish additional field communications using interoperable systems as available.
- ☐ Receive, evaluate, and disseminate information relative to the operation of the emergency.
- ☐ Develop a follow-up briefing for the EOC Director.
- ☐ Maintain an OPERATIONS SECTION LOG noting messages received, decisions made, actions taken, and other activities. Maintain a record of personnel on duty.
- ☐ Complete an After Action Report to include a brief overview of support provided during the operation and suggested Corrective Actions to improve operations. Use the following format:
 - Issue
 - Corrective Action
 - Assigned to and due date for completion

**SCOTTS VALLEY WATER DISTRICT
EMERGENCY RESPONSE PLAN**

Planning & Intelligence Section Chief

The Planning and Intelligence Section Chief is responsible for the collection, evaluation, documentation, and dissemination of incident information and intelligence within the EOC. Also, the Planning and Intelligence Section Chief is responsible for preparation of the Action Plan and the After Action Report, as well as other reports that may be required.

(Assigned to: District Engineer, Other District Staff)

Action Checklist

- ☐ Identify yourself as the Planning and Intelligence Section Chief.
- ☐ Read this entire Checklist.
- ☐ Obtain a briefing on the extent of the emergency from the EOC Director.
- ☐ Assess the impact of the emergency on the District including the initial damage assessment by District staff and other field units.
- ☐ Provide for an authentication process in case of conflicting status reports on events.
- ☐ Initiate a display indicating the condition of the District's Water treatment and distribution infrastructure.
- ☐ Initiate a display of other significant events in and around the District, including transportation and life safety issues.
- ☐ Insure that situation maps and displays are continually posted with current information.
- ☐ Prepare a Situation Report, an evaluation of the disaster or emergency situation as it specifically relates to the District, including predictions on the course of the disaster or emergency, and forward it to the EOC Director to be used in briefings to the Board. In addition, a copy should be forwarded to the Santa Cruz County EOC for their information.
- ☐ Develop an Action Plan identifying EOC Section objectives, significant response needs, and other issues that would affect EOC operations in an 8 to 12 hour time frame.
- ☐ Establish incident files relating to the emergency, and check for the accuracy.
- ☐ Maintain a file on all EOC messages.
- ☐ Establish EOC meeting schedules for use in preparing future Action Plans.
- ☐ Complete an After Action Report, which should indicate what Corrective Actions are needed, including who is responsible for the actions and when they are to be completed.

**SCOTTS VALLEY WATER DISTRICT
EMERGENCY RESPONSE PLAN**

Logistics Section Chief

Responsible for all the services and support needs of the event. This includes procuring and maintaining essential personnel, facilities, equipment and supplies. They are also responsible for maintaining the EOC in operational order by procuring and repairing equipment, as well as obtaining supplies as needed. The Logistics Chief cooperates closely with the Operations Section to determine resources currently in place and what resources may be needed.

(Assigned to: District Staff)

Action Checklist

- ☐ Identify yourself as the Logistics Section Chief.
- ☐ Read this entire Action Checklist.
- ☐ Obtain a briefing on the extent of the emergency from the EOC Director.
- ☐ Obtain initial instructions concerning District work activities and priorities. For extended operations, consideration should be given to relief personnel. Shifts should not exceed 12 hour periods. Establish personnel schedule and rosters.
- ☐ Review with other Section Chiefs of existing Logistics resources and Logistics requirements for planned and expected operations.
- ☐ Provide office supplies and support as required to the other EOC Sections.
- ☐ Identify and coordinate for the procurement of additional service and support requirements of personnel, supplies and equipment to support planned and expected operations. Areas should include food, catering, janitorial, equipment repair and maintenance, temporary employment, and any other service needed during disaster operations.
- ☐ Coordinate with other outside companies and agencies about sources of services, equipment, and supplies.
- ☐ Alert personnel, contractors, and established vendors of any possible needs.
- ☐ As needed, prepare inventory of all District supplies and equipment on-hand.
- ☐ Assist in the initial development and review of the Action Plan.
- ☐ Coordinate with the Finance Section for the administration of all financial matters pertaining to vendor contracts, open purchase orders, and service contracts.
- ☐ Brief and update the EOC Director of all logistics resources and support concerns.
- ☐ Prepare a Demobilization Plan to ensure the efficient return of non-expendable property, the inventory and disposition of remaining expendable property, payment of vouchers and control of documentation.
- ☐ Continually coordinate with the Operations Section Chief and Planning and Intelligence Section Chief to ensure timely and efficient logistical support.

**SCOTTS VALLEY WATER DISTRICT
EMERGENCY RESPONSE PLAN**

- ☐ Ensure that all volunteers are registered as Disaster Service Volunteer Workers. Refer to the State Disaster Service Worker Volunteer Program Guidance handbook.
- ☐ Forward all personnel and volunteer time records and documentation to the Finance Section Chief.
- ☐ At the conclusion of the event, insure that the EOC is re-stocked and all equipment is in proper working order.
- ☐ The After Action Report should include a brief overview of support provided during the operation and suggested Corrective Actions to improve operations. Use the following format:
 - Issue
 - Corrective Action
 - Assigned to and due date for completion

**SCOTTS VALLEY WATER DISTRICT
EMERGENCY RESPONSE PLAN**

Finance and Administration Section Chief

The Finance and Administration Chief provides advice and support to the EOC Director regarding financial issues, and insures that adequate records are maintained to support requests for State and federal assistance. They also insure that personnel time worked by all those involved in the incident is also tracked, while providing cost analysis and projections. They also manage all legal claims for compensation filed against the District.

(Assigned to: Finance Manager, Other District Staff)

Action Checklist

- ☐ Identify yourself as the Finance Section Chief.
- ☐ Read this entire Checklist.
- ☐ Obtain a briefing on the extent of the emergency from the EOC Director.
- ☐ Obtain initial instructions concerning work activities and priorities.
- ☐ Maintain a record of all personnel time worked at the emergency, which includes all volunteers.
- ☐ Determine the need for Compensation for Injury and Claims assistance from contracted specialists.
- ☐ Assist in the initial development and review of the Action Plan.
- ☐ Collect cost data, complete cost effectiveness analysis and determine cost estimates and make recommendations for cost savings.
- ☐ Insure that a Finance Section log is maintained, noting messages received, decisions made and actions taken, and personnel on duty.
- ☐ Insure that all records are current or complete prior to demobilization.
- ☐ Make recommendations for cost savings to the EOC Director.
- ☐ Provide for records security.
- ☐ Complete a Finance After Action Report that should include a brief overview of support provided during the operation and suggested Corrective Actions to improve operations. Use the following format:
 - Issue
 - Corrective Action
 - Assigned to and due date for completion

APPENDIX 1

DISTRICT EMERGENCY PERSONNEL

**SCOTTS VALLEY WATER DISTRICT
EMERGENCY RESPONSE PLAN**

District Emergency Personnel

Piret Harmon, General Manager

EOC Assignment: **EOC Director (WUEOCM)**

Bus: (831) 600-1902

Mobile: (650) 868-0209

E-mail: pharmon@svwd.org

David McNair, Operations Manager

EOC Assignment: **Operations Chief (WUERM) / EOC Director (WUEOCM)**

Bus: (831) 600-1903

Mobile: (831) 234-6339

Radio: 651

E-mail: dmcnair@svwd.org

Mike Legg, Operations Supervisor

EOC Assignment: **Operations Chief (WUERM)**

Bus: (831) 600-1914

Mobile: (831) 818-6050

Radio: 655

E-mail: mlegg@svwd.org

Donna Paul, Assistant to the General Manager

EOC Assignment: **Public Information Officer (PIO)**

Bus: (831) 600-1919

Mobile: (831) 818-9562

E-mail: dpaul@svwd.org

LeAnne Ravinale, Water Use Efficiency Coordinator

EOC Assignment: **Public Information Officer (PIO)**

Bus: (831) 600-1907

Mobile: (831) 588-5688

Radio: 656

E-mail: lravinale@svwd.org

Kathy Chang, Finance Manager

EOC Assignment: **Finance Section Chief**

Bus: (831) 600-1904

E-mail: kchang@svwd.org

**SCOTTS VALLEY WATER DISTRICT
EMERGENCY RESPONSE PLAN**

Eileen Eisner-Streller, Engineering Technician

EOC Assignment: **Planning & Intelligence Section Chief**

Bus 2: (831) 600-1905

Mobile: (831) 588-6818

Radio: 652

E-mail: estreller@svwd.org

Kathy Ballinger, Utility Service Representative (Office)

EOC Assignment: **Logistics Section Chief / Planning & Intelligence Section Chief**

Bus: (831) 600-1918

Radio: 658

E-mail: kballinger@svwd.org

Renee Coleman, Utility Service Representative (Office)

EOC Assignment: **Logistics Section Chief / Planning & Intelligence Section Chief**

Title: Utility Service Representative, Office

Bus : (831) 600-1901

Radio: 658

E-mail: rcoleman@svwd.org

Ryan Kinney, Accounting Specialist

EOC Assignment: **Finance Section Chief / Logistics Section Chief**

Ryan Kinney

Title: Accounting Specialist

Bus: (831) 600-1906

E-mail: rkinney@svwd.org

Ross Albert, Lead Water Facilities Operator

Bus: (831) 600-1912

Mobile: (831) 332-7807

Radio: 653

E-mail: ralbert@svwd.org

Hugo Rivera, Lead Water Facilities Operator

Bus: (831) 600-1911

Mobile: (831) 331-9381

Radio: 660

E-mail: hrivera@svwd.org

**SCOTTS VALLEY WATER DISTRICT
EMERGENCY RESPONSE PLAN**

Ryan Ritchie, Water Facilities Operator III

Bus: (831) 600-1916

Mobile: (831) 818-8379

Radio: 660

E-mail: rritchie@svwd.org

Dan Scott, Water Facilities Operator III

Bus: (831) 600-1916

Mobile: (831) 331-6791

Radio: 662

E-mail: dscott@svwd.org

Tony Alvarez, Water Facilities Operator II

Bus: (831) 600-1916

Mobile: (831) 319-8085

Radio: 657

E-mail: talvarez@svwd.org

Sam Spilman, Water Facilities Operator II

Bus: (831) 600-1916

Mobile: (831) 588-4019

Radio: 661

E-mail: sspillman@svwd.org

Rhett Beaton, Water Facilities Operator I

Bus: (831) 600-1916

Mobile: (831) 332-7808

Radio: 654

E-mail: rbeatton@svwd.org

Nick Emmert, Utility Service Representative (Field)

Bus: 831-600-1916

Mobile: (831) 234-6254

E-mail: nemmert@svwd.org

APPENDIX 2

OUTSIDE AGENCY CONTACT INFORMATION

**INCLUDING:
CRITICAL WATER SYSTEM CUSTOMERS**

**SCOTTS VALLEY WATER DISTRICT
EMERGENCY RESPONSE PLAN**

Outside Agencies

AGENCY	PHONE NUMBER	CONTACT INFORMATION	
Emergency	911	(831) 440-5670	SVPD Dispatch
County Dispatch Center	(831) 429-1580	NETCOM	
City of Scotts Valley			
SV Fire District	(831) 438-0211		
SV Police Department	(831) 438-2326	Lt. Steve Walpole	
SV Police Department	(831) 438-2323	City # goes to police	
SV Police Department	(831) 440-5670		
SV Public Works - Main Number	(831) 438-5854	Scott Hamby	
SV Public Works - Maintenance	(831) 438-8689		
SV Wastewater / Treatment Plant	(831) 438-0732		
County of Santa Cruz			
County Office of Emergency Services	(831) 458-7150	Emergency Alert System	
Hazardous Materials & Environmental Health	(831) 454-2022		
Public Works	(831) 454-2160 NETCOM After Hours	John Presleigh	
State Agencies			
DPH – Monterey – District Engineer	(831) 655-6939	Jan Sweigert	
DPH – Monterey Office – Sanitary Engineer	(831) 655-6942	Regina Grimm	Home Phone (831) 884-0419
CDC Emergency Hotline	(770) 488-7100	For Bioterrorism questions call: (404) 639-0385	
Regional Water Quality Control BD	(805)542-4649	Higgins fax: (805) 788-3532	
Water Districts			
San Lorenzo Valley Water District	(831) 338-2153		
Lompico Water	(831) 335-5200	429-7743 (Emergency)	
Citizens Water	(831) 335-1915	335-5260 (call center)	
Santa Cruz Water	(831) 420-5160	(831) 420-5220 (Emergency)	
Forest Lake Water	(831) 335-5774	Felton, California	
Soquel Creek Water District	(831) 475-8500	Front Desk/After Hours	
Soquel Creek Water District	(831) 688-2288	Non-public number	
Aromas Water	(831) 726-3155		
Castroville Water	(831) 633-2560		
Central Water	(831) 688-2767	Aptos Foothills	
Pajaro Valley Water	(831) 722-9292		
Services			
PG&E	(800) 743-5000 (800) 468-4743	Emergency Info Customer Service	
PG&E	(800) 743-5002	Power Outage	
PG&E	(415) 973-7000 Corporate number	(831) 426-8300 (831) 688-1918	
SBC Phone Company	611	(800) 332-1321	
Soil Control Laboratory	(831) 724-5422		

**SCOTTS VALLEY WATER DISTRICT
EMERGENCY RESPONSE PLAN**

Devco Oil Inc.	(831) 423-2121	Diesel Supplier
Hutchinson and Bloodgood, LLP	(831) 724-2441	Internet/Intranet Tech
SyCal Engineering	(650) 246-1850	Doug Martinsen SCADA programmer
Eurofins Eaton Analytical (Formerly MWH Laboratories)	(626) 386-1100	
Sequoia Analytical Labs (Sacramento, CA)	(916) 920-4009	
Local Radio Stations		
KPIG	(831) 722-9000 FAX: (832) 722-7548	Emergency Services Contact Station
KUSP	(831) 476-2800	(800) 655-5877
KION	(831) 755-8181	Studio (831) 633-1460
KSCO	(831) 475-1080 FAX: (831) 475-2967	
KWAV	(831) 649-0969	(800) 304-5928
KDON	(831) 754-3090	
KGO	(415) 954-7926 FAX: (415) 995-7099	
Local Television Stations		
KSBW	(831) 758-8888	
KION/KCBA	(831) 757-6397	Newsroom (408) 247-7560
Local HAM Radio Operators		
ARES	(831) 429-1290	Cap Pennell
Local Hospitals		
Dominican Hospital (Santa Cruz)	(831) 462-7700	
Community Hospital (Watsonville)	(831) 724-4741	
Palo Alto Medical Foundation (Scotts Valley)	(831) 458-6330	4663 Scotts Valley Drive
Santa Cruz Surgery Center (Santa Cruz)	(831) 462-5512	
Sutter Maternity & Surgery Center	(831) 477-2200	
Other		
American Red Cross (Santa Cruz)	(831) 462-2881	
Poison Control Center	(800) 222-1222	
Centers for Disease Control & Prevention	(800) 311-3435	(800) 232-4636
Toxic Chemical and Oil Spills	(800) 698-6942	(800) 424-8802
Shortwave	463.775 MZ	

**SCOTTS VALLEY WATER DISTRICT
EMERGENCY RESPONSE PLAN**

Critical Water System Customers

Medical Groups

Santa Cruz Medical Clinic, 4663 Scotts Valley Drive
(831) 458-6330

Resneck-Sannes, David MD, 5403 Scotts Valley Drive # A
(831) 438-5222

Scotts Valley Medical Clinic, 2980 El Rancho Drive
(831) 438-1430

Dentists

Estrada, David DDS, 4736 Scotts Valley Drive # C
(831) 438-0554

Ebrahimian, Max DDS, 5 Erba Lane # A
(831) 438-4411

Black Jr, David W DDS, 4736 Scotts Valley Drive # C
(831) 438-0554

Graf, Steven J DDS, 4738 Scotts Valley Drive # C
(831) 438-5052

Tsai, Wandy W DDS, 5268 Scotts Valley Drive
(831) 438-8503

Police

SV Police Department (831) 440-5670

Fire Department

SV Fire Department (831) 438-0211

Retirement Homes

Scotts Valley Senior Center, 370 Kings Village Road
(831) 438-8666

Renaissance at Oak Tree Villa, 100 Lockwood Lane
(831) 438-7533 (SVWD SUPPLIES ONLY FIRE PROTECTION)

Schools

Vine Hill Elementary School, 151 Vine Hill School Road
(831) 438-1090

Scotts Valley Middle School, 8 Bean Creek Road
(831) 438-0610

**SCOTTS VALLEY WATER DISTRICT
EMERGENCY RESPONSE PLAN**

Scotts Valley High School, 555 Glenwood Drive
(831) 439-9555

Scotts Valley Unified School District Office, 4444 Scotts Valley Drive # 5B
(831) 438-1820

Baymonte Christian School, 5000 Granite Creek Road # B
(831) 438-0100

Family Montessori School, 123 South Navarra Drive
(831) 439-9313

Day Care

A Child's Connection, 106 Vine Hill School Road
(831) 438-4813

Baymonte Christian Preschool Too, 4901 Scotts Valley Drive
(831) 440-9248

Baymonte Christian School, 5000 Granite Creek Road # B
(831) 438-0100

Circle of Friends Preschool, 111 Navarra Drive
(831) 461-1366

Early Childhood Learning Center, 800 Bethany Drive
(831) 438-7980

In Kirsten's Care, 300 S Navarra Drive
(831) 439-8721

Kids Art, 226 Mount Hermon Road # D
(831) 439-9233

Scotts Valley Children's Center, 255 Mount Hermon Road # B
(831) 461-9330

APPENDIX 3

VENDOR CONTACT INFORMATION

APPENDIX 3

EMERGENCY NOTIFICATION PLAN and WATER SYSTEM INFORMATION

**SCOTTS VALLEY WATER DISTRICT
EMERGENCY RESPONSE PLAN**

**Scotts Valley Water District
Water System Information**

System Identification Number	CA 4410013	
System Name and Address	Scotts Valley Water District 2 Civic Center Drive Scotts Valley, CA 95066	
Number of Service connections and Population Served	***** Service connections	***** Population
Type of Source	Well Water	
Type of Treatment Provided	***** Treatment	
Number of Storage Tanks	* - Treated Water	0 - Raw Water
Average Water Demand	*** MGD	
Maximum and Peak Water Demand	*****	*****



State Water Resources Control Board

Division of Drinking Water

EDMUND G. BROWN JR.
Governor

WATER QUALITY EMERGENCY NOTIFICATION PLAN

Name of Utility: Scotts Valley Water District

Physical Location/Address: 2 Civic Center Drive, Scotts Valley, CA 95066

The following persons have been designated to implement the plan upon notification by the State Water Resources Control Board Division of Drinking Water that an imminent danger to the health of the water users exists:

Water Utility:			
Contact Name & Title	Email Address	Day	Cell Phone
1. Piret Harmon, General Manager	pharmon@svwd.org	831-600-1902	650-868-0209
2. David McNair, Operations Mgr.	dmcnair@svwd.org	831-600-1903	831-234-6339
3. Michael Legg, Operations Supvr.	mlegg@svwd.org	831-600-1914	831-818-6050

The implementation of the plan will be carried out with the following SWRCB DDW and County Health Department personnel:

SWRCB & County Health Departments:		Telephone	
Contact Name & Title		Day	Evening
1. Jan Sweigert, District Engineer SWRCB DDW		(831) 655-6939	(831) 595-0058
2. Querube Moltrup, Sanitary Engineer SWRCB DDW		(831) 655-6936	(831) 769-0294
3. Troy Boone Santa Cruz County Environmental Health		(831) 454-3069	(831) 419-9395

4. If the above personnel cannot be reached, contact:

Office of Emergency Services Warning Center (24 hrs) (800) 852-7550 or (916) 845-8911
When reporting a water quality emergency to the Warning Center, please ask for the State Water Resources Control Board – Division of Drinking Water Duty Officer.

NOTIFICATION PLAN

Attach a written description of the method or combination of methods to be used (radio, television, door-to-door, sound truck, etc.) to notify customers in an emergency. For each section of your plan give an estimate of the time required, necessary personnel, estimated coverage, etc. Consideration must be given to special organizations (such as schools), non-English speaking groups, and outlying water users. Ensure that the notification procedures you describe are practical and that you will be able to actually implement them in the event of an emergency. Examples of notification plans are attached for large, medium and small communities.

Report prepared by:

Signature and Title

Date

**SCOTTS VALLEY WATER DISTRICT
EMERGENCY RESPONSE PLAN**

PUBLIC INFORMATION NOTIFICATION PLAN

When an incident occurs which causes the water system to become compromised (including a loss of water supply issue), public notification becomes the responsibility of the General Manager. All notifications, as well as all news media notifications, will be released from the General Manager with assistance from other District staff as needed. This would also include notifications to State and County public health officials, and all other involved agencies that are included in this Appendix. Special attention should also be made to organizations that include schools, health care facilities, and non-English speaking groups.

At the direction of the General Manager, some of the methods of notifying the public may include:

- News Releases that contain unsafe water orders to media outlets. Unsafe water orders are included in **ANNEX F** of this Plan. Media outlet contact information is contained in **APPENDIX 2** of this Plan.
- Television and radio interviews.
- Public address messages in neighborhoods using bull horns.
- Strategically placed roadway barricades with easily readable unsafe water messages attached to them.
- Distribution of door hangers.
- Specific information listed on the District's web site.
- The use of District personnel who would staff the District's phone line to answer questions from the public.

**SCOTTS VALLEY WATER DISTRICT
EMERGENCY RESPONSE PLAN**

Additional Required Notifications

Local Law Enforcement

Agency	Person Notified	By	Time/Date

Local Fire Departments

Agency	Person Notified	By	Time/Date

Federal Law Enforcement

Agency	Person Notified	By	Time/Date

County and State Office of Emergency Services

Agency	Person Notified	By	Time/Date

**SCOTTS VALLEY WATER DISTRICT
EMERGENCY RESPONSE PLAN**

Federal Regulatory and Health Agencies

Agency	Person Notified	By	Time/Date

Other Agencies as Needed (WQ Control Board, Fish & Wildlife, etc.)

Agency	Person Notified	By	Time/Date

Hospitals, Clinics, Physicians, Poison Control Centers

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APPENDIX 5

DISTRICT INFRASTRUCTURE

SYSTEM REQUIREMENTS

EQUIPMENT LIST

**SCOTTS VALLEY WATER DISTRICT
EMERGENCY OPERATIONS PLAN**

Scotts Valley Water District - System Infrastructure and Components

Wells		
Asset	Location	Description
Well 11A	Access road between 5007 and 5015 Scotts Valley Dr.	Fenced with locked gate. Feeds El Pueblo WTP.
Well 11B	Adjacent to 5165 Scotts Valley Dr.	Fenced with locked gate. Feeds El Pueblo WTP.
Well 7A	Adjacent to 6500 Orchard Run Rd.	Fenced with locked gate. High pressure Dual Media water treatment plant on site.
Well 3B	Sucinto Drive and Orchard Run Rd.	Fenced with locked gate. Feeds Orchard Run WTP.
Well 10A	Between 255 and 259 Mt. Hermon Rd. in the Mt. Hermon Shopping Center. Behind McDonalds and beside Long's Drugstore.	Fenced with a locked gate. Dual media treatment facility on site.
Well 9	Adjacent to 370 Blue Bonnet Ln. Near the intersection of Blue Bonnet Ln and Kings Village Rd.	Fenced with a locked gate. GAC water treatment facility on site.
Water Treatment Plants		
Asset	Location	Description
El Pueblo Water Treatment Plant	70 El Pueblo Rd.	Fenced with a locked gate. Telephone for entry during business hours. 0.4 MG storage on Site. Can receive water from Camp Evers pressure zone through storage tank.
Orchard Run Water Treatment Plant	Adjacent to 6500 Orchard Run Rd.	Locked gate. Sulphur and Ammonia odor is standard for facility.
Well 10 Water Treatment Plant	Between 255 and 259 Mt. Hermon Rd. in the Mt. Hermon Shopping Center. Behind McDonalds and beside Long's Drugstore.	Locked gate. Locked door to treatment facility building.
Well 9 Water Treatment Plant	Adjacent to 370 Blue Bonnet Ln. Near the intersection of Blue Bonnet Ln and Kings Village Rd.	Fenced with a Locked Gate.

**SCOTTS VALLEY WATER DISTRICT
EMERGENCY OPERATIONS PLAN**

Wells		
Asset	Location	Description
Water Storage Tanks		
Sequoia Tank – 1.25 MG	Take access road between 233 and 317 Southwood Dr.	Fenced with a Locked Gate. Storage for the Camp Evers Pressure Zone.
Glenwood Tank – 1.00 MG	Access road off Glenwood Dr. Turn east by Deerfield Dr (across from high school).	Fenced with a Locked Gate. Storage for MacDorsa Pressure Zone.
MacDorsa Tank – 0.75 MG	Access Rd. at the intersection of Ridgecrest Dr and Cadillac Dr.	Fenced with a Locked Gate. Storage for MacDorsa Pressure Zone. Regularly closed main able to supply Hacienda Pressure Zone at low pressures in case of Hacienda Booster failure or Hacienda/Macdorsa standard connection failure.
Southwood tank – 0.4 MG	Access across from 8 Timber Ridge Ln.	Fenced with a Locked Gate. Storage for Southwood Zone.
El Pueblo Tank – 0.4 MG	70 El Pueblo Rd.	Fenced with a Locked Gate. Call for entry during business hours.
Bethany Tank – 0.4 MG	Access of the end of Tabor Rd. (past 795 Tabor Rd.)	Fenced with a Locked gate.
Mt. Roberta Tank – 0.05 MG	Across from 701 Canham Rd.	Fenced with a Locked Gate
Villa Fontenay Tank – 0.03 MG	Adjacent to 103 Charles Hill Ct.	Fenced with a Locked Gate
Boosters		
Crescent Booster	Between Crescent Dr. and Crescent Ct.	Fenced with a Locked Gate
Bethany Booster	Adjacent to 570 Bethany Dr.	Fenced with a Locked Gate
Southwood Booster	In front of 3002 Granite Creek Rd.	Fenced with a Locked Gate
Monte Fiore Booster	200 yards west of La Madrona on Silverwood Dr.	Fenced with a Locked Gate
Hacienda Booster	Between 372 and 374 Hacienda Dr.	Fenced with a Locked Gate
Sand Hill Booster	Adjacent to 400 Sand Hill Rd.	Fenced with a Locked Gate
Pressure Regulating Valves		
Scotts Valley Drive PRV	In front of 4803 Scotts Valley Dr.	Vaulted. Requires breaker bar.
Watkins Johnson PRV	Industrial complex at the end of Blue Bonnet Ln	Vaulted. Requires breaker bar, adjustable wrench.
Barn PRV	On Orchard Run Road adjacent to the historical barn building.	Fenced with Locked Gate.

**SCOTTS VALLEY WATER DISTRICT
EMERGENCY OPERATIONS PLAN**

Wells		
Asset	Location	Description
Orchard Run PRV	Adjacent to Orchard Run WTP	Fenced with Locked Gate.
Pressure Regulating Valves		
Sand Hill PRV	In front of 400 Sand Hill Rd.	Vaulted. Requires breaker bar, adjustable wrench.
Northridge PRV	In front of 489 Northridge Rd.	Vaulted. Requires breaker bar, adjustable wrench.

**SCOTTS VALLEY WATER DISTRICT
EMERGENCY OPERATIONS PLAN**

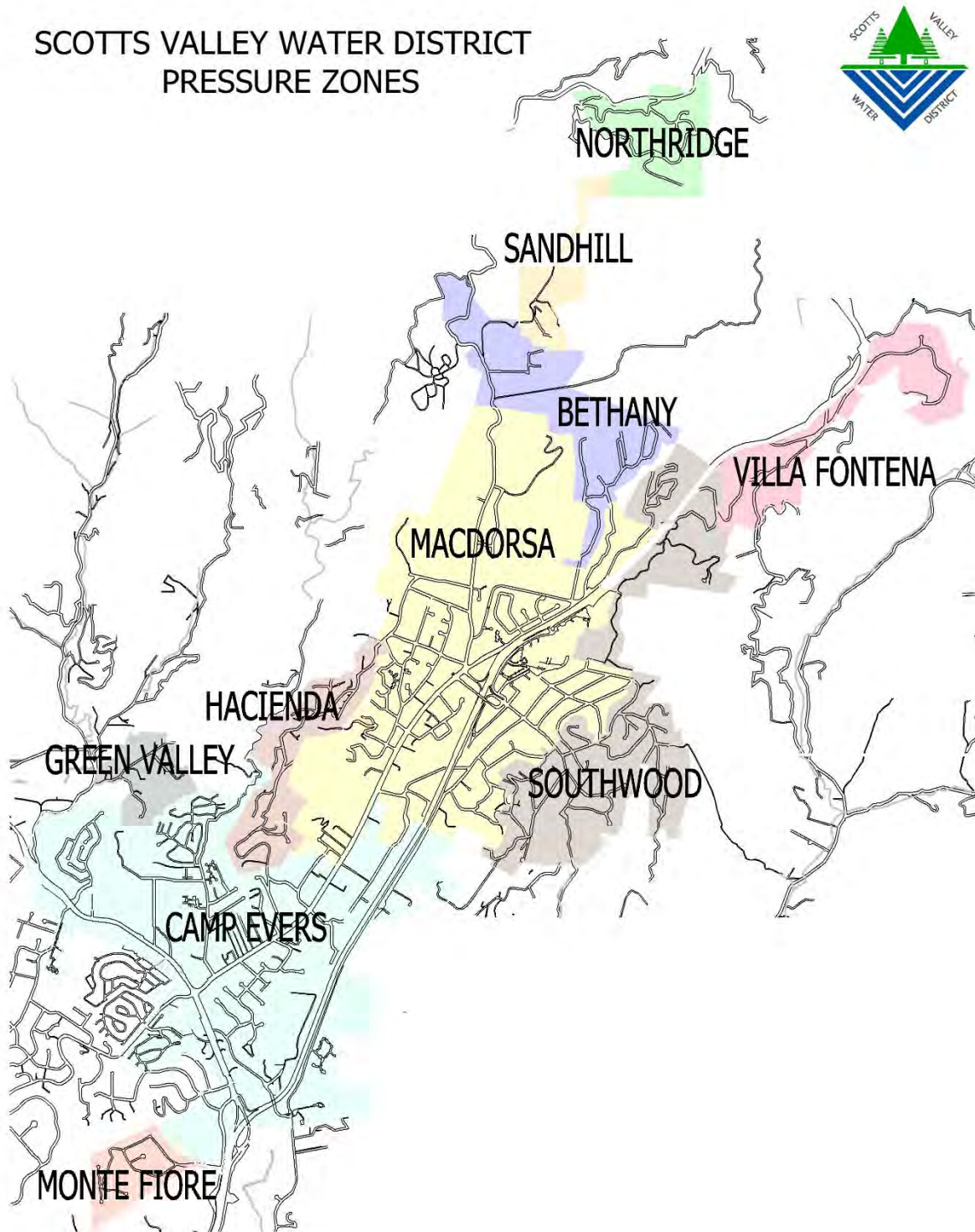
Distribution System Map

**SCOTTS VALLEY WATER DISTRICT
DISTRIBUTION SYSTEM**



**SCOTTS VALLEY WATER DISTRICT
EMERGENCY OPERATIONS PLAN**

Pressure Boundary Map



SCOTTS VALLEY WATER DISTRICT EMERGENCY OPERATIONS PLAN

Amount of Water Needed for Various Durations

Scotts Valley Water District has found it useful to develop an estimate for the quantity of supplemental water required for a number of potential outage scenarios. Demand Table 1 shows the quantity of water necessary to maintain service at average demand. Demand Table 2 shows baseline quantity of water required by the districts customers. If the district is unable to provide water through the distribution system Demand Table 2 outlines the quantities to be supplied through alternate sources that are listed on **Page 12**.

Demand Table 1

Outage Period	Number of Customers (Service Connections) Affected	Quantity Needed (at average demand)
1 hour	3719	67,377 gallons
12 hours	3719	808,524 gallons
1 day	3719	1,617,059 gallons
2 days	3719	3,234,118 gallons
1 week	3719	11,319,415 gallons

Demand Table 2

Outage Period	Number of Customers (Service Connections) Affected	Quantity Needed (at 2 gallons/person day)
1 hour	3719	1023 gallons
12 hours	3719	12,273 gallons
1 day	3719	24,546 gallons
2 days	3719	49,092 gallons
1 week	3719	171,822 gallons

Estimated Emergency Supply of Water

Scotts Valley Water District has estimated the amount of water storage available in the system under an emergency situation according to the following formula:

$$\text{Emergency supply of water} = (\text{amount of storage} + \text{backup/emergency supply}) / (\text{system demand})$$

Calculations for Scotts Valley Water District:

Amount of storage = 4,280,000 gallons

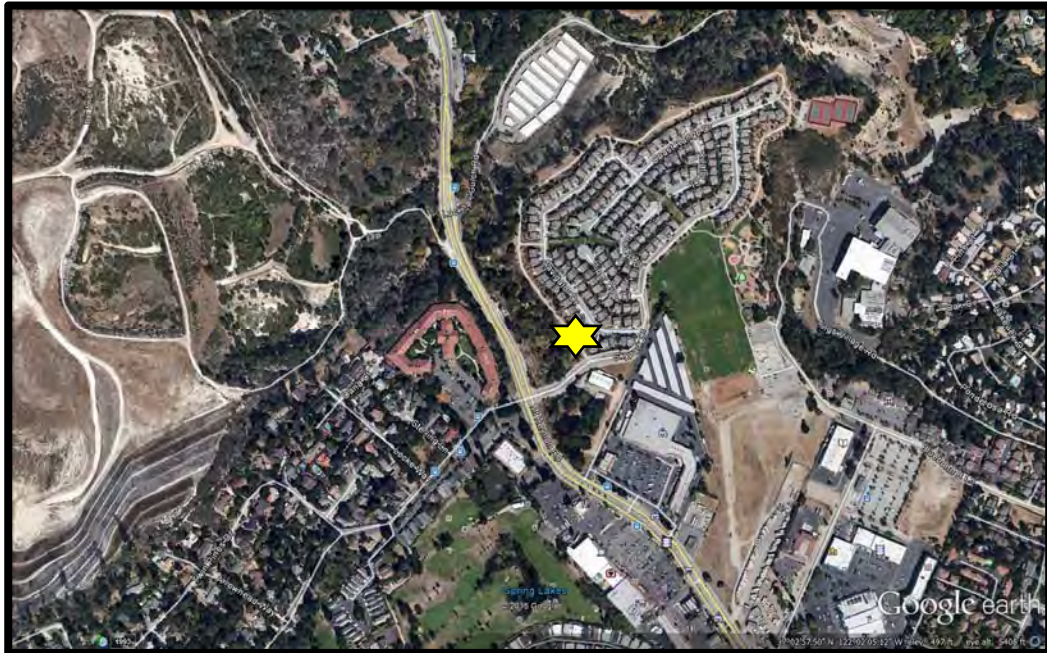
System Demand = 1,123 gpm Average, 1,609 gpm Maximum

Emergency Supply = 2.65 days at Average Demand, 1.85 days at Max Demand

SCOTTS VALLEY WATER DISTRICT EMERGENCY OPERATIONS PLAN

Interconnects and Agreements with Other Utilities

The Scotts Valley Water District and the San Lorenzo Valley Water District (SLVW) have an interconnection to allow cross-distribution of treated water. A manual bypass turnout valve between the Districts water distribution systems is located at 0 Skypark Drive in Scotts Valley, north of Mt. Hermon Road. The 8" intertie allows for up to 650 gpm to be transferred. Refer to the separate Standard Operating Procedure (SOP) document.



Location of SVWD & SLVWD Intertie Connection

Possible alternate water supply options for short-term outages include:

Retail Short-term water supply options

- Local supermarkets
- Local bottled water companies
- Crystal Springs Water Co. (831) 423-8956
- Pure Valley Water Inc. (831) 428-6400
- Pure Water of Scott's Valley (831) 439-9077

Additional water supply equipment is available from:

- National Guard
- Red Cross
- Santa Cruz County OES (Mutual Aid Water Bagging Machines)

SCOTTS VALLEY WATER DISTRICT EMERGENCY OPERATIONS PLAN

District Equipment

Vehicle List

- 1 - Honda Civic passenger vehicle
- 1 - Dodge Voyager passenger vehicle
- 1 - Ford Ranger light duty truck
- 1 - Ford F150 pickup truck
- 6 - Ford F250 pickup trucks
- 2 - Ford F350 pickup trucks
- 1 - Ford F550 2 yard dump-truck
- 1 - International 5 yard dump-truck

Specialized Vehicles

- 1 - 310 John Deer backhoe
- 1 - Bobcat Mini Excavator & trailer
- 1 - Forklift
- 1 - Wachs Trav-L-Vac, hydraulic valve machine, trailer mounted hydraulic turning equipment, high pressure water & vacuum systems
- 1 - Air Compressor trailer, 75 cfm

Manual Equipment

- 2 - Chain saws
- 2 - Walk behind street saws
- 2 - Cutoff pipe saws
- 3 - Portable trash pumps (2", 3")

SCOTTS VALLEY WATER DISTRICT EMERGENCY OPERATIONS PLAN

Portable Generators

- 1 - White portable generator - 50 kW, stored at El Pueblo yard
 - a. Fuel tank- Max Capacity 15 gal
 - b. Refuel intervals - 2 hours
 - c. Used at Bethany Booster Station, Southwood Booster Station
- 1 - Green Generators Cummins - 150 kW, stored at El Pueblo yard
 - a. Fuel tank - max capacity 135 gal
 - b. Uses 2.5 gal per hour
 - c. Runs well 9, Well 10, Well 11b, Monte Fiore, Sandhill Boosters
- 1 - Red Baldor Generator - 79 kW, stored at El Pueblo yard
 - a. Fuel tank capacity- 110 gal
 - b. Uses 2.5 gal per hour
 - c. Runs Crescent Boosters, 2 Civic, Bethany, Well 11a
- 3 - Small portable lighting generators

Stationary Generators

- El Pueblo, Cat Generator Max 350 kW
 - a. Max fuel level - 600 gal
 - b. Consumption - estimated usage 15 - 18 gal per hour
- Orchard Run, Onan Generator Max 500 kW
 - a. Max fuel level - 850 gal
 - b. Consumption - 31.5 gal per hour on a full load
- Monte Fiore - Max 125 kW
 - a. Max fuel level 250 gal
 - b. Consumption - 2.5 gal per hour

APPENDIX 6

EOC FORMS

**Scotts Valley Water District - Emergency Operations Center
Message Form**

Message Information	Date:	Time:	Msg#:	Inc#:	Priority
Received From: Telephone ☐ Fax ☐ Gov't Radio ☐ Other Agency ☐ Walk In ☐					Check One
Message To:			Phone:		☐ Life Threatening
Message From:			Phone:		☐ Urgent
Received/Sent By:			Phone:		☐ Non-Urgent
ROUTING OF FORM			Message		
Management	ACTION	INFO			
EOC Director					
Legal Officer					
Operations	ACTION	INFO			
Operations Section Chief					
Planning & Intelligence	ACTION	INFO			
P&I Section Chief					
Logistics	ACTION	INFO			
Logistics Section Chief					
Finance	ACTION	INFO			
Finance Section Chief					

Original: Recipient

Yellow: Sender

Pink: Documentation Unit

**Scotts Valley Water District - Emergency Operations Center
Message Form**

Message Information	Date:	Time:	Msg#:	Inc#:	Priority
Received From: Telephone ☐ Fax ☐ Gov't Radio ☐ Other Agency ☐ Walk In ☐					Check One
Message To:			Phone:		☐ Life Threatening
Message From:			Phone:		☐ Urgent
Received/Sent By:			Phone:		☐ Non-Urgent
ROUTING OF FORM			Message		
Management	ACTION	INFO			
EOC Director					
Legal Officer					
Operations	ACTION	INFO			
Operations Section Chief					
Planning & Intelligence	ACTION	INFO			
P&I Section Chief					
Logistics	ACTION	INFO			
Logistics Section Chief					
Finance	ACTION	INFO			
Finance Section Chief					

Original: Recipient

Yellow: Sender

Pink: Documentation Unit

EOC ACTION PLAN



SCOTTS VALLEY
WATER DISTRICT

OPERATIONAL PERIOD	
DATE:	TIME:

- EVENT BRIEFING -

EVENT NAME:

DATE PREPARED:

TIME PREPARED:

CURRENT OPERATIONAL PERIOD (DATE/ TIME):

Scotts Valley Water District



Special District

MAP SKETCH:

PREPARED BY:

APPROVED BY:

- SUMMARY OF PRIORITIES, OBJECTIVES & ACTIONS -

OVERALL EVENT PRIORITIES

MANAGEMENT SECTION OBJECTIVES

OPERATIONS SECTION OBJECTIVES

PLANNING & INTELLIGENCE SECTION OBJECTIVES

LOGISTICS SECTION OBJECTIVES

FINANCE SECTION OBJECTIVES

ADDITIONAL INFORMATION:

- ORGANIZATION ASSIGNMENTS LIST -

EVENT NAME:

DATE PREPARED:

TIME PREPARED:

CURRENT OPERATIONAL PERIOD (DATE/ TIME):

ACTIVATION LEVEL:

☐ LEVEL ONE ☐ LEVEL TWO ☐ LEVEL THREE

EOC STAFFING

EOC POSITION	INDIVIDUAL'S NAME	PHONE NUMBER
EOC Director		
Operations Section Chief		
Legal Officer		
Planning and Intelligence Section Chief		
Logistics Section Chief		
Finance Section Chief		

Current Actions:

WEATHER FORECAST:

TEMPERATURE:

WIND SPEED:

ADDITIONAL FORECAST INFORMATION:

ATTACHMENTS:

☐ Preserve Status Form

☐ Other

☐ Other

☐ Other

PREPARED BY:

APPROVED BY (EOC Director):



SCOTTS VALLEY
WATER DISTRICT

Emergency Operations Center Situation Status Report

Date:

Time:

1. SITUATION SUMMARY

(Narrative)

2. FACILITIES STATUS:

3. INJURIES or FATALITIES:

(Informational Purposes Only)

4. COMMUNICATION SYSTEM STATUS:

5. LIST OF DISTRICT ISSUES TO BE ADDRESSED:

6. ADDITIONAL PERSONNEL & EQUIPMENT REQUIREMENTS:

7. ADDITIONAL INFORMATION:

By (EOC Director): _____

EOC Unit Log

(ICS 214 - Modified)

[illegible]

APPENDIX 7

HAZARD SPECIFIC CHECKLISTS

SCOTTS VALLEY WATER DISTRICT
EMERGENCY RESPONSE PLAN

Emergency Operating Procedures

Hazard-Specific Checklists

All events are unique. Following are lists of various considerations for specific types of emergencies. These checklists are designed to be used in conjunction with the general duties of the positions outlined in **Section 3** (EOC Positional Checklists).

Table of Contents

Earthquake	5
Winter Storms	7
Wildland Fire	9
Hazardous Materials Incidents (HAZMAT)	11
Potential Terrorism Event or Damage to Infrastructure.....	ANNEX D

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

Earthquake

- ☐ Obtain Shake Map from USGS website to view the shaking intensity from the event.
- ☐ Determine the locations of structural damage. Attention should be focused on locations with trapped people.
- ☐ Determine the status of transportation infrastructures, such as bridges and roadways.
- ☐ Determine the status of communications systems to include broadcast television and radio media.
- ☐ Determine the locations of major firefighting efforts, both controlled and out-of-control fires.
- ☐ Determine the locations and severity of Hazardous Material releases and the impact on the general public.
- ☐ Determine the operational capability of critical facilities, i.e., wells and water treatment systems, the City's wastewater treatment system, electrical substations, etc.
- ☐ If evacuation is required, contact the EOC Director and Operations Section immediately. All evacuation activities should be coordinated throughout the Operations Section.
- ☐ Coordinate with the County EOC and the Red Cross, other public agencies, and / or non-profit agencies for shelter operations.
- ☐ Determine Public Safety needs, i.e., security, traffic control, and law enforcement needs. Communicate these to the County EOC.
- ☐ Work with the City or the County to develop a system for building inspectors and structural engineers to inspect critical District facilities.
- ☐ Remove critical equipment and supplies stored in damaged facilities to prevent further damage or deterioration due to aftershocks and/or weather exposure.
- ☐ Continue to monitor USGS information about the earthquake such as magnitude, epicenter location, and date and time of occurrence.
- ☐ Use Shake Map data to deploy to the areas with most serious damage. The emergency response focus should be on search and rescue, emergency medical response, sheltering for the injured and displaced persons, and the prioritization of bridges, roadways, and other critical facilities.
- ☐ Obtain a status report of critical facilities that may have been damaged, then direct emergency personnel to those areas as needed. Major earthquakes may have the most widespread impact on the Town of any emergency.

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

- ☐ Obtain a status report on nearby highways and roads so District personnel can undertake emergency operations.
- ☐ Initiate a Critical Facilities log that indicates which of those facilities have been checked and their disposition. Refer to APPENDIX 6 - EOC Forms.
- ☐ Be prepared to inform PG&E of any known electrical and gas complications.
- ☐ Be prepared to inform the City and the County on water system damage.
- ☐ In the event of a significant aftershock, repeat the above steps.

Winter Storms

- ☐ Coordinate with the National Weather Service for timely watches and warnings affecting the area.

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

- ☐ Stay in contact with the Contra Costa County EOC for updated flood information.
- ☐ Ensure the public is well informed regarding both storm and flooding watches and warnings.
- ☐ Obtain a status report on nearby highways and roads. Develop a consistent plan for the flow of traffic. Ensure adequate traffic control is in place to assist emergency vehicles with ingress and egress to incident scenes.
- ☐ Determine the need to conduct evacuations and sheltering activities.
- ☐ If evacuation is required, work with the General Manager and the County to distribute the information immediately. All evacuation activities should be coordinated throughout the Operations Section.
- ☐ Coordinate with local broadcast media to ensure timely and accurate Emergency Alert System activation.
- ☐ As a point of reference, evacuation is the assisted removal of people before a threat arrives, while rescue is an issue that deals with the removal of persons once the threat is upon them.
- ☐ Ensure that field personnel are checking for downed power lines and inform PG&E immediately to prevent electrocution hazards.
- ☐ Coordinate with PG&E to share information concerning power outages.
- ☐ Floodwaters may carry additional health and safety risks, such as bacteria, raw sewage or hazardous substances. Sandbags tend to act as sponges for these hidden dangers, so ensure precautions are taken when handling them or coming into contact with the water itself.
- ☐ Ensure that field personnel watch potable water treatment facility tanks, wastewater treatment plant storage facilities for inundation or overflow.
- ☐ Coordinate with schools, daycare centers, etc. about proper precautions and emergency actions related to the storm.
- ☐ Determine the availability of shelters through the County and the American Red Cross.
- ☐ Coordinate with the County, the Red Cross, other public agencies, and / or non-profit agencies for shelter operations.

**SCOTTS VALLEY WATER DISTRICT
EMERGENCY RESPONSE PLAN**

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Wildland Fire

- ☐ EOC staffing levels will vary with the complexity and needs of the Town's response to the fire. At a minimum, the EOC Director and the Operations Section will likely be needed.

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

- ☐ Immediately establish a liaison with the Fire Incident Commander (IC).
- ☐ Working through the Incident Command Post (ICP), determine the size of the involved area, both actual and potential.
- ☐ Working through the ICP, determine the apparent direction the fire is traveling and what lies in its path.
- ☐ If appropriate, the Director of Emergency Service could make a local Emergency Declaration.
- ☐ Obtain current and forecasted weather to project potential spread of the wildfire.
- ☐ Determine the need to conduct evacuations and sheltering activities.
- ☐ If evacuation is required, work with the General Manager and the County to distribute the information immediately. All evacuation activities should be coordinated throughout the Operations Section.
- ☐ As a point of reference, evacuation is the assisted removal of people before a threat arrives, while rescue is an issue that deals with the removal of persons once the threat is upon them.
- ☐ Constantly be aware of the potential for toxic smoke or fumes.
- ☐ Maintain ingress and egress routes for emergency vehicles.
- ☐ Establish a perimeter control, keeping unauthorized vehicles and pedestrians out of the involved areas.
- ☐ Notify all EOC Sections, the EOC Director, the PIO, support agencies, adjacent jurisdictions, and / or any agency liaisons of situational changes.
- ☐ Determine the need for additional resources and request as necessary through the Logistics Section.
- ☐ If required, work with other agencies to establish a Joint Information Center (JIC) or coordinate with JIC(s) established by other jurisdictions.
- ☐ Formulate emergency public information messages and media responses using “one message, many voices” concepts.
- ☐ Ensure that reports of injuries, deaths, and major equipment damage due to wildfire response are communicated and coordinated with the EOC Director and the County prior to public dissemination.

**SCOTTS VALLEY WATER DISTRICT
EMERGENCY RESPONSE PLAN**

- ☐ Activate and implement applicable mitigation plans, community recovery procedures, and Continuity of Operations Plan (if required) until normal daily operations can be completely restored.

Hazardous Materials Incidents (HAZMAT)

- ☐ EOC staffing levels will vary with the complexity and needs of the Town's response to the Hazardous Materials (HAZMAT) incident. At a minimum, the EOC Director and the Operations Section will likely be needed.

**SCOTTS VALLEY WATER DISTRICT
EMERGENCY RESPONSE PLAN**

- ☐ Immediately establish a liaison with the Fire District Incident Commander and / or Police Incident Commander (IC).
- ☐ Working through the Incident Command Post (ICP), determine the size of the involved area, both actual and potential.
- ☐ Working through the ICP, determine the apparent direction the plume (if one exists) is traveling and what lies in its path.
- ☐ Consider the potential effects of weather such as wind, rain, heat, etc.
- ☐ Be aware that a sudden release of hazardous materials may allow little time for an organized response. Field personnel may take the action of locking down individuals or have them “shelter in place.”
- ☐ The Operations Section may assist field personnel on coordinating the evacuation of the affected area. Ensure that individuals in the hazardous area are warned and directed to leave the area by appropriate routes. The Section may also assist field personnel in the coordination of setting up a perimeter to prevent entry to the hazardous area.
- ☐ Ensure that field personnel stay upwind, uphill, and / or upstream from the HAZMAT location and at a safe distance.
- ☐ To ensure that the EOC Director and the Operations Section are aware of the material and what the incident involves, staff should consult the orange Emergency Response Guidebook for specific warnings, cautions and handling guidelines.
- ☐ Determine the need to conduct evacuations and sheltering activities.
- ☐ If evacuation is required, work with the General Manager and the County to distribute the information immediately. All evacuation activities should be coordinated throughout the Operations Section.
- ☐ Coordinate with the County, the Red Cross, other public agencies, and / or non-profit agencies for shelter operations.
- ☐ As a point of reference, evacuation is the assisted removal of people before a threat arrives, while rescue is an issue that deals with the removal of persons once the threat is upon them.
- ☐ Be aware that in the event that helicopters are required for medical evacuations, consider the potential spreading effect of the rotor downdraft. If required, work with the IC to choose a remote landing area.
- ☐ The Operations Section Chief should remain aware of the HAZMAT cleanup status.
- ☐ If required, the Public Works Branch may assist field personnel with obtaining equipment and personnel to deal with emergency debris clearance.

**SCOTTS VALLEY WATER DISTRICT
EMERGENCY RESPONSE PLAN**

- ☐ If required, the Logistics Section will coordinate with field personnel for the provision of emergency lights, power generation, and other equipment and supplies as needed.
- ☐ If required, work with other agencies to establish a Joint Information Center (JIC) or coordinate with JIC(s) established by other jurisdictions.
- ☐ Formulate emergency public information messages and media responses using “one message, many voices” concepts.
- ☐ Ensure that reports of injuries, deaths, and major equipment damage due to a HAZMAT incident are communicated and coordinated with the EOC Director and the County prior to public dissemination.

APPENDIX 8

GLOSSARY AND ACRONYMS LIST

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

Glossary

A

Action Plan: See Incident Action Plan.

Agency: An agency is a division of government with a specific function, or a nongovernmental organization (e.g., private contractor, business, etc.) that offers a particular kind of assistance. In ICS, agencies are defined as jurisdictional (having statutory responsibility for incident mitigation) or assisting and/or cooperating (providing resources and/or assistance). (See Assisting Agency, Cooperating Agency, Jurisdictional Agency, and Multiagency Incident.)

Agency Administrator or Executive: Chief executive officer (or designee) of the agency or jurisdiction that has responsibility for the incident.

Agency Dispatch: The agency or jurisdictional facility from which resources are allocated to incidents.

Agency Representative: An individual assigned to an incident from an assisting or cooperating agency who has been delegated authority to make decisions on matters affecting that agency's participation at the incident. Agency Representatives report to the Incident Liaison Officer.

Air Operations Branch Director: The person primarily responsible for preparing and implementing the air operations portion of the Incident Action Plan. Also responsible for providing logistical support to helicopters operating on the incident.

Allocated Resources: Resources dispatched to an incident.

All-Risk: Any incident or event, natural or human-caused, that warrants action to protect life, property, environment, and public health and safety, and minimize disruption of governmental, social, and economic activities.

Area Command (Unified Area Command): An organization established to oversee the management of (1) multiple incidents that are each being handled by an ICS organization, or (2) large or multiple incidents to which several Incident Management Teams have been assigned. Area Command has the responsibility to set overall strategy and priorities, allocate critical resources according to priorities, ensure that incidents are properly managed, and ensure that objectives are met and strategies followed. Area Command becomes Unified Area Command when incidents are multijurisdictional. Area Command may be established at an emergency operations center facility or at some location other than an Incident Command Post.

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

Assigned Resources: Resources checked in and assigned work tasks on an incident.

Assignments: Tasks given to resources to perform within a given operational period, based upon tactical objectives in the Incident Action Plan.

Assistant: Title for subordinates of the Command Staff positions. The title indicates a level of technical capability, qualifications, and responsibility subordinate to the primary positions.

Assisting Agency: An agency or organization providing personnel, services, or other resources to the agency with direct responsibility for incident management.

Available Resources: Resources assigned to an incident, checked in, and available for a mission assignment, normally located in a Staging Area

B

Base: The location at which primary Logistics functions for an incident are coordinated and administered. There is only one Base per incident. (Incident name or other designator will be added to the term Base.) The Incident Command Post may be collocated with the Base.

Branch: The organizational level having functional or geographic responsibility for major parts of the Operations or Logistics functions. The Branch level is organizationally between Section and Division/Group in the Operations Section, and between Section and Units in the Logistics Section. Branches are identified by the use of Roman numerals or by functional name (e.g., medical, security, etc.).

C

Cache: A pre-determined complement of tools, equipment, and/or supplies stored in a designated location, available for incident use.

Camp: A geographical site, within the general incident area, separate from the Incident Base, equipped and staffed to provide sleeping, food, water, and sanitary services to incident personnel.

Chain of Command: A series of management positions in order of authority.

Check-In: The process whereby resources first report to an incident. Check-in locations include: Incident Command Post (Resources Unit), Incident Base, Camps, Staging Areas, Helibases, Helispots, and Division Supervisors (for direct line assignments).

Chief: The ICS title for individuals responsible for functional Sections: Operations, Planning, Logistics, and Finance/Administration.

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

Clear Text: The use of plain English in radio communications transmissions. No Ten Codes or agency-specific codes are used when utilizing clear text.

Command: The act of directing and/or controlling resources by virtue of explicit legal, agency, or delegated authority. May also refer to the Incident Commander.

Command Post: See Incident Command Post.

Command Staff: The Command Staff consists of the Public Information Officer, Safety Officer, and Liaison Officer. They report directly to the Incident Commander. They may have an Assistant or Assistants, as needed.

Communications Unit: An organizational Unit in the Logistics Section responsible for providing communication services at an incident. A Communications Unit may also be a facility (e.g., a trailer or mobile van) used to provide the major part of an Incident Communications Center.

Compacts: Formal working agreements among agencies to obtain mutual aid.

Compensation/Claims Unit: Functional Unit within the Finance/Administration Section responsible for financial concerns resulting from property damage, injuries, or fatalities at the incident.

Complex: Two or more individual incidents located in the same general area that are assigned to a single Incident Commander or to Unified Command.

Cooperating Agency: An agency supplying assistance other than direct operational or support functions or resources to the incident management effort.

Coordination: The process of systematically analyzing a situation, developing relevant information, and informing appropriate command authority of viable alternatives for selection of the most effective combination of available resources to meet specific objectives. The coordination process (which can be either intra- or interagency) does not involve dispatch actions. However, personnel responsible for coordination may perform command or dispatch functions within the limits established by specific agency delegations, procedures, legal authority, etc.

Coordination Center: A facility that is used for the coordination of agency or jurisdictional resources in support of one or more incidents.

Cost Sharing Agreements: Agreements between agencies or jurisdictions to share designated costs related to incidents. Cost sharing agreements are normally written but may also be oral between authorized agency or jurisdictional representatives at the incident.

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

Cost Unit: Functional Unit within the Finance/Administration Section responsible for tracking costs, analyzing cost data, making cost estimates, and recommending cost-saving measures.

Crew: See Single Resource.

D

Delegation of Authority: A statement provided to the Incident Commander by the Agency Executive delegating authority and assigning responsibility. The Delegation of Authority can include objectives, priorities, expectations, constraints, and other considerations or guidelines as needed. Many agencies require written Delegation of Authority to be given to Incident Commanders prior to their assuming command on larger incidents.

Demobilization Unit: Functional Unit within the Planning Section responsible for assuring orderly, safe, and efficient demobilization of incident resources.

Deputy: A fully qualified individual who, in the absence of a superior, could be delegated the authority to manage a functional operation or perform a specific task. In some cases, a Deputy could act as relief for a superior and therefore must be fully qualified in the position. Deputies can be assigned to the Incident Commander, General Staff, and Branch Directors.

Director: The ICS title for individuals responsible for supervision of a Branch.

Dispatch: The implementation of a command decision to move a resource or resources from one place to another.

Dispatch Center: A facility from which resources are ordered, mobilized, and assigned to an incident.

Division: Divisions are used to divide an incident into geographical areas of operation. A Division is located within the ICS organization between the Branch and the Task Force/Strike Team. (See Group.) Divisions are identified by alphabetic characters for horizontal applications and, often, by floor numbers when used in buildings.

Documentation Unit: Functional Unit within the Planning Section responsible for collecting, recording, and safeguarding all documents relevant to the incident.

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

E

Emergency: Absent a Presidentially declared emergency, any incident(s), human-caused or natural, that requires responsive action to protect life or property. Under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, an emergency means any occasion or instance for which, in the determination of the President, Federal assistance is needed to supplement State and local efforts and capabilities to save lives and to protect property and public health and safety, or to lessen or avert the threat of a catastrophe in any part of the United States.

Emergency Management Coordinator/Director: The individual within each political subdivision that has coordination responsibility for jurisdictional emergency management.

Emergency Operations Centers (EOCs): The physical location at which the coordination of information and resources to support domestic incident management activities normally takes place. An EOC may be a temporary facility or may be located in a more central or permanently established facility, perhaps at a higher level of organization within a jurisdiction. EOCs may be organized by major functional disciplines (e.g., fire, law enforcement, and medical services), by jurisdiction (e.g., Federal, State, regional, county, city, tribal), or some combination thereof.

Emergency Operations Plan (EOP): The plan that each jurisdiction has and maintains for responding to appropriate hazards.

Event: A planned, non-emergency activity. ICS can be used as the management system for a wide range of events, e.g., parades, concerts, or sporting events.

F

Facilities Unit: Functional Unit within the Support Branch of the Logistics Section that provides fixed facilities for the incident. These facilities may include the Incident Base, feeding areas, sleeping areas, sanitary facilities, etc.

Federal: Of or pertaining to the Federal Government of the United States of America.

Field Operations Guide: (FOG) A pocket-size manual of instructions on the application of the Incident Command System.

Finance/Administration Section: The Section responsible for all incident costs and financial considerations. Includes the Time Unit, Procurement Unit, Compensation/Claims Unit, and Cost Unit.

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

Food Unit: Functional Unit within the Service Branch of the Logistics Section responsible for providing meals for incident personnel.

Function: Function refers to the five major activities in ICS: Command, Operations, Planning, Logistics, and Finance/Administration. The term function is also used when describing the activity involved, e.g., the planning function. A sixth function, Intelligence, may be established, if required, to meet incident management needs.

G

General Staff: A group of incident management personnel organized according to function and reporting to the Incident Commander. The General Staff normally consists of the Operations Section Chief, Planning Section Chief, Logistics Section Chief, and Finance/Administration Section Chief.

Ground Support Unit: Functional Unit within the Support Branch of the Logistics Section responsible for the fueling, maintaining, and repairing of vehicles, and the transportation of personnel and supplies.

Group: Groups are established to divide the incident into functional areas of operation. Groups are composed of resources assembled to perform a special function not necessarily within a single geographic division. (See Division.) Groups are located between Branches (when activated) and Resources in the Operations Section.

H

Hazard: Something that is potentially dangerous or harmful, often the root cause of an unwanted outcome.

Helibase: The main location for parking, fueling, maintenance, and loading of helicopters operating in support of an incident. It is usually located at or near the incident Base.

Helispot: Any designated location where a helicopter can safely take off and land. Some Helispots may be used for loading of supplies, equipment, or personnel.

Hierarchy of Command: See Chain of Command.

I

Incident: An occurrence or event, either natural or human-caused that requires an emergency response to protect life or property. Incidents can, for example, include major disasters, emergencies, terrorist attacks, terrorist threats, wildland and urban fires, floods, hazardous materials spills, nuclear accidents, aircraft accidents, earthquakes, hurricanes,

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tornadoes, tropical storms, war-related disasters, public health and medical emergencies, and other occurrences requiring an emergency response.

Incident Action Plan (IAP): An oral or written plan containing general objectives reflecting the overall strategy for managing an incident. It may include the identification of operational resources and assignments. It may also include attachments that provide direction and important information for management of the incident during one or more operational periods.

Incident Base: Location at the incident where the primary Logistics functions are coordinated and administered. (Incident name or other designator will be added to the term Base.) The Incident Command Post may be collocated with the Base. There is only one Base per incident.

Incident Commander (IC): The individual responsible for all incident activities, including the development of strategies and tactics and the ordering and the release of resources. The IC has overall authority and responsibility for conducting incident operations and is responsible for the management of all incident operations at the incident site.

Incident Command Post (ICP): The field location at which the primary tactical-level, on-scene incident command functions are performed. The ICP may be collocated with the incident base or other incident facilities and is normally identified by a green rotating or flashing light.

Incident Command System (ICS): A standardized on-scene emergency management construct specifically designed to provide for the adoption of an integrated organizational structure that reflects the complexity and demands of single or multiple incidents, without being hindered by jurisdictional boundaries. ICS is the combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure, designed to aid in the management of resources during incidents. It is used for all kinds of emergencies and is applicable to small as well as large and complex incidents. ICS is used by various jurisdictions and functional agencies, both public and private, to organize field-level incident management operations.

Incident Communications Center: The location of the Communications Unit and the Message Center.

Incident Management Team (IMT): The Incident Commander and appropriate Command and General Staff personnel assigned to an incident.

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Incident Objectives: Statements of guidance and direction necessary for the selection of appropriate strategy(ies), and the tactical direction of resources. Incident objectives are based on realistic expectations of what can be accomplished when all allocated resources have been effectively deployed. Incident objectives must be achievable and measurable, yet flexible enough to allow for strategic and tactical alternatives.

Incident Types: Incidents are categorized by five types based on complexity. Type 5 incidents are the least complex and Type 1 the most complex.

Incident Support Organization: Includes any off-incident support provided to an incident. Examples would be Agency Dispatch Centers, Airports, Mobilization Centers, etc.

Initial Action: The actions taken by resources that are the first to arrive at an incident site.

Initial Response: Resources initially committed to an incident.

Intelligence Officer: The intelligence officer is responsible for managing internal information, intelligence, and operational security requirements supporting incident management activities. These may include information security and operational security activities, as well as the complex task of ensuring that sensitive information of all types (e.g., classified information, law enforcement sensitive information, proprietary information, or export-controlled information) is handled in a way that not only safeguards the information, but also ensures that it gets to those who need access to it to perform their missions effectively and safely.

J

Joint Information Center (JIC): A facility established to coordinate all incident-related public information activities. It is the central point of contact for all news media at the scene of the incident. Public information officials from all participating agencies should collocate at the JIC.

Joint Information System (JIS): Integrates incident information and public affairs into a cohesive organization designed to provide consistent, coordinated, timely information during crisis or incident operations. The mission of the JIS is to provide a structure and system for developing and delivering coordinated interagency messages; developing, recommending, and executing public information plans and strategies on behalf of the Incident Commander; advising the Incident Commander concerning public affairs issues that could affect a response effort; and controlling rumors and inaccurate information that could undermine public confidence in the emergency response effort.

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Jurisdiction: A range or sphere of authority. Public agencies have jurisdiction at an incident related to their legal responsibilities and authority. Jurisdictional authority at an incident can be political or geographical (e.g., city, county, tribal, State, or Federal boundary lines) or functional (e.g., law enforcement, public health).

Jurisdictional Agency: The agency having jurisdiction and responsibility for a specific geographical area, or a mandated function.

K

Kinds of Resources: Describe what the resource is (e.g., medic, firefighter, Planning Section Chief, helicopters, ambulances, combustible gas indicators, bulldozers).

L

Landing Zone: See Helispot.

Leader: The ICS title for an individual responsible for a Task Force, Strike Team, or functional unit.

Liaison: A form of communication for establishing and maintaining mutual understanding and cooperation.

Liaison Officer (LNO): A member of the Command Staff responsible for coordinating with representatives from cooperating and assisting agencies. The Liaison Officer may have Assistants.

Logistics: Providing resources and other services to support incident management.

Logistics Section: The Section responsible for providing facilities, services, and materials for the incident.

Local Government: A county, municipality, city, town, township, local public authority, school district, special district, intrastate district, council of governments (regardless of whether the council of governments is incorporated as a nonprofit corporation under State law), regional or interstate government entity, or agency or instrumentality of a local government; an Indian tribe or authorized tribal organization, or in Alaska a Native village or Alaska Regional Native Corporation; a rural community, unincorporated town or village, or other public entity. See Section 2 (10), Homeland Security Act of 2002, Public Law 107-296, 116 Stat. 2135 (2002).

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M

Major Disaster: As defined under the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5122), a major disaster is any natural catastrophe (including any hurricane, tornado, storm, high water, wind-driven water, tidal wave, tsunami, earthquake, volcanic eruption, landslide, mudslide, snowstorm, or drought), or, regardless of cause, any fire, flood, or explosion, in any part of the United States, which in the determination of the President causes damage of sufficient severity and magnitude to warrant major disaster assistance under this Act to supplement the efforts and available resources of States, tribes, local governments, and disaster relief organizations in alleviating the damage, loss, hardship, or suffering caused thereby.

Management by Objective: A management approach that involves a four-step process for achieving the incident goal. The Management by Objectives approach includes the following: establishing overarching objectives; developing and issuing assignments, plans, procedures, and protocols; establishing specific, measurable objectives for various incident management functional activities and directing efforts to fulfill them, in support of defined strategic objectives; and documenting results to measure performance and facilitate corrective action.

Managers: Individuals within ICS organizational Units that are assigned specific managerial responsibilities, e.g., Staging Area Manager or Camp Manager.

Medical Unit: Functional Unit within the Service Branch of the Logistics Section responsible for the development of the Medical Emergency Plan, and for providing emergency medical treatment of incident personnel.

Message Center: The Message Center is part of the Incident Communications Center and is collocated or placed adjacent to it. It receives, records, and routes information about resources reporting to the incident, resource status, and administrative and tactical traffic.

Mitigation: The activities designed to reduce or eliminate risks to persons or property or to lessen the actual or potential effects or consequences of an incident. Mitigation measures may be implemented prior to, during, or after an incident. Mitigation measures are often formed by lessons learned from prior incidents. Mitigation involves ongoing actions to reduce exposure to, probability of, or potential loss from hazards. Measures may include zoning and building codes, floodplain buyouts, and analysis of hazard-related data to determine where it is safe to build or locate temporary facilities. Mitigation can include efforts to educate governments, businesses, and the public on measures they can take to reduce loss and injury.

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Mobilization: The process and procedures used by all organizations (Federal, State, and local) for activating, assembling, and transporting all resources that have been requested to respond to or support an incident.

Mobilization Center: An off-incident location at which emergency service personnel and equipment are temporarily located pending assignment, release, or reassignment.

Multiagency Coordination (MAC): The coordination of assisting agency resources and support to emergency operations.

Multiagency Coordination Systems (MACS): Multiagency coordination systems provide the architecture to support coordination for incident prioritization, critical resource allocation, communications systems integration, and information coordination.

Multiagency Incident: An incident where one or more agencies assist a jurisdictional agency or agencies. May be single or unified command.

Mutual-Aid Agreement: Written agreement between agencies and/or jurisdictions that they will assist one another on request, by furnishing personnel, equipment, and/or expertise in a specified manner.

N

National Incident Management System (NIMS): A system mandated by HSPD-5 that provides a consistent nationwide approach for Federal, State, local, and tribal governments; the private sector; and nongovernmental organizations to work effectively and efficiently together to prepare for, respond to, and recover from domestic incidents, regardless of cause, size, or complexity. To provide for interoperability and compatibility among Federal, State, local, and tribal capabilities, the NIMS includes a core set of concepts, principles, and terminology. HSPD-5 identifies these as the ICS; multiagency coordination systems; training; identification and management of resources (including systems for classifying types of resources); qualification and certification; and the collection, tracking, and reporting of incident information and incident resources.

O

Officer: The ICS title for the personnel responsible for the Command Staff positions of Safety, Liaison, and Public Information.

Operational Period: The period of time scheduled for execution of a given set of operation actions as specified in the Incident Action Plan. Operational Periods can be of various lengths, although usually not over 24 hours.

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Operations Section: The Section responsible for all tactical operations at the incident. Includes Branches, Divisions and/or Groups, Task Forces, Strike Teams, Single Resources, and Staging Areas.

Out-of-Service Resources: Resources assigned to an incident but unable to respond for mechanical, rest, or personnel reasons.

P

Planning Meeting: A meeting held as needed throughout the duration of an incident, to select specific strategies and tactics for incident control operations, and for service and support planning. On larger incidents, the Planning Meeting is a major element in the development of the Incident Action Plan.

Planning Section: Responsible for the collection, evaluation, and dissemination of information related to the incident, and for the preparation and documentation of Incident Action Plans. The Section also maintains information on the current and forecasted situation, and on the status of resources assigned to the incident. Includes the Situation, Resources, Documentation, and Demobilization Units, as well as Technical Specialists.

Preparedness: The range of deliberate, critical tasks and activities necessary to build, sustain, and improve the operational capability to prevent, protect against, respond to, and recover from domestic incidents. Preparedness is a continuous process. Preparedness involves efforts at all levels of government and between government and private-sector and nongovernmental organizations to identify threats, determine vulnerabilities, and identify required resources. Within the NIMS, preparedness is operationally focused on establishing guidelines, protocols, and standards for planning, training and exercises, personnel qualification and certification, equipment certification, and publication management.

Preparedness Organizations: The groups that provide interagency coordination for domestic incident management activities in a nonemergency context. Preparedness organizations can include all agencies with a role in incident management, for prevention, preparedness, response, or recovery activities. They represent a wide variety of committees, planning groups, and other organizations that meet and coordinate to ensure the proper level of planning, training, equipping, and other preparedness requirements within a jurisdiction or area.

Prevention: Actions to avoid an incident or to intervene to stop an incident from occurring. Prevention involves actions to protect lives and property. It involves applying intelligence and other information to a range of activities that may include such countermeasures as deterrence operations; heightened inspections; improved surveillance and security operations; investigations to determine the full nature and source of the threat; public health and agricultural surveillance and testing processes; immunizations, isolation, or

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quarantine; and, as appropriate, specific law enforcement operations aimed at deterring, preempting, interdicting, or disrupting illegal activity and apprehending potential perpetrators and bringing them to justice.

Procurement Unit: Functional Unit within the Finance/Administration Section responsible for financial matters involving vendor contracts.

Public Information Officer (PIO): A member of the Command Staff responsible for interfacing with the public and media or with other agencies with incident-related information requirements.

R

Recognition Primed Decision Making: A model that describes how experts make decisions under stressful situations that are time critical and rapidly changing.

Recorders: Individuals within ICS organizational units who are responsible for recording information. Recorders may be found in Planning, Logistics, and Finance/Administration Units.

Reinforced Response: Those resources requested in addition to the initial response.

Reporting Locations: Location or facilities where incoming resources can check in at the incident. (See Check-In.)

Resources: Personnel and major items of equipment, supplies, and facilities available or potentially available for assignment to incident operations and for which status is maintained. Resources are described by kind and type and may be used in operational support or supervisory capacities at an incident or at an EOC.

Recovery: The development, coordination, and execution of service- and site-restoration plans; the reconstitution of government operations and services; individual, private-sector, nongovernmental, and public-assistance programs to provide housing and to promote restoration; long-term care and treatment of affected persons; additional measures for social, political, environmental, and economic restoration; evaluation of the incident to identify lessons learned; post-incident reporting; and development of initiatives to mitigate the effects of future incidents.

Resource Management: Efficient incident management requires a system for identifying available resources at all jurisdictional levels to enable timely and unimpeded access to resources needed to prepare for, respond to, or recover from an incident. Resource management under the NIMS includes mutual-aid agreements; the use of special Federal, State, local, and tribal teams; and resource mobilization protocols.

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Resources Unit: Functional Unit within the Planning Section responsible for recording the status of resources committed to the incident. The Unit also evaluates resources currently committed to the incident, the impact that additional responding resources will have on the incident, and anticipated resource needs.

Response: Activities that address the short-term, direct effects of an incident. Response includes immediate actions to save lives, protect property, and meet basic human needs. Response also includes the execution of emergency operations plans and of mitigation activities designed to limit the loss of life, personal injury, property damage, and other unfavorable outcomes. As indicated by the situation, response activities include applying intelligence and other information to lessen the effects or consequences of an incident; increased security operations; continuing investigations into nature and source of the threat; ongoing public health and agricultural surveillance and testing processes; immunizations, isolation, or quarantine; and specific law enforcement operations aimed at preempting, interdicting, or disrupting illegal activity, and apprehending actual perpetrators and bringing them to justice.

S

Safety Officer: A member of the Command Staff responsible for monitoring and assessing safety hazards or unsafe situations, and for developing measures for ensuring personnel safety. The Safety Officer may have Assistants.

Section: The organizational level having responsibility for a major functional area of incident management, e.g., Operations, Planning, Logistics, Finance/Administration, and Intelligence (if established). The section is organizationally situated between the Branch and the Incident Command.

Segment: A geographical area in which a Task Force/Strike Team Leader or Supervisor of a single resource is assigned authority and responsibility for the coordination of resources and implementation of planned tactics. A segment may be a portion of a Division or an area inside or outside the perimeter of an incident. Segments are identified with Arabic numbers.

Service Branch: A Branch within the Logistics Section responsible for service activities at the incident. Includes the Communication, Medical, and Food Units.

Single Resource: An individual, a piece of equipment and its personnel complement, or a crew or team of individuals with an identified work Supervisor that can be used on an incident.

Situation Unit: Functional Unit within the Planning Section responsible for the collection, organization, and analysis of incident status information, and for analysis of the situation as it progresses. Reports to the Planning Section Chief.

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Span of Control: The number of individuals a supervisor is responsible for, usually expressed as the ratio of supervisors to individuals. (Under the NIMS, an appropriate span of control is between 1:3 and 1:7.)

Staging Area: Location established where resources can be placed while awaiting a tactical assignment. The Operations Section manages Staging Areas.

Standard Operating Procedure (SOP): Complete reference document or an operations manual that provides the purpose, authorities, duration, and details for the preferred method of performing a single function or a number of interrelated functions in a uniform manner.

State: When capitalized, refers to any State of the United States, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, and any possession of the United States. See Section 2 (14), Homeland Security Act of 2002, Public Law 107-296, 116 Stat. 2135 (2002).

Strategy: The general direction selected to accomplish incident objectives set by the Incident Commander.

Strategic: Strategic elements of incident management are characterized by continuous long-term, high-level planning by organizations headed by elected or other senior officials. These elements involve the adoption of long-range goals and objectives, the setting of priorities, the establishment of budgets and other fiscal decisions, policy development, and the application of measures of performance or effectiveness.

Strike Team: A specified combination of the same kind and type of resources with common communications and a Leader.

Supervisor: The ICS title for individuals responsible for a Division or Group.

Supply Unit: Functional Unit within the Support Branch of the Logistics Section responsible for ordering equipment and supplies required for incident operations.

Support Branch: A Branch within the Logistics Section responsible for providing personnel, equipment, and supplies to support incident operations. Includes the Supply, Facilities, and Ground Support Units.

Supporting Materials: Refers to the several attachments that may be included with an Incident Action Plan, e.g., Communications Plan, Map, Safety Plan, Traffic Plan, and Medical Plan.

Support Resources: Non-tactical resources under the supervision of the Logistics, Planning, or Finance/Administration Sections, or the Command Staff.

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T

Tactical Direction: Direction given by the Operations Section Chief that includes the tactics required to implement the selected strategy, the selection and assignment of resources to carry out the tactics, directions for tactics implementation, and performance monitoring for each operational period.

Tactics: Deploying and directing resources on an incident to accomplish incident strategy and objectives.

Task Force: A combination of single resources assembled for a particular tactical need with common communications and a Leader.

Team: See Single Resource.

Technical Specialists: Personnel with special skills that can be used anywhere within the ICS organization.

Threat: An indication of possible violence, harm, or danger.

Time Unit: Functional Unit within the Finance/Administration Section responsible for recording time for incident personnel and hired equipment.

Type: A classification of resources in the ICS that refers to capability. Type 1 is generally considered to be more capable than Types 2, 3, or 4, respectively, because of size, power, capacity, or, in the case of Incident Management Teams, experience and qualifications.

Tools: Those instruments and capabilities that allow for the professional performance of tasks, such as information systems, agreements, doctrine, capabilities, and legislative authorities.

Tribal: Any Indian tribe, band, nation, or other organized group or community, including any Alaskan Native Village as defined in or established pursuant to the Alaskan Native Claims Settlement Act (85 Stat. 688) (43 U.S.C.A. and 1601 et seq.), that is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians.

U

Unified Area Command: A Unified Area Command is established when incidents under an Area Command are multijurisdictional. (See Area Command and Unified Command.)

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Unified Command: An application of ICS used when there is more than one agency with incident jurisdiction or when incidents cross political jurisdictions. Agencies work together through the designated members of the Unified Command, often the senior person from agencies and/or disciplines participating in the Unified Command, to establish a common set of objectives and strategies and a single Incident Action Plan.

Unit: The organizational element having functional responsibility for a specific incident Planning, Logistics, or Finance/Administration activity.

Unity of Command: The concept by which each person within an organization reports to one and only one designated person. The purpose of unity of command is to ensure unity of effort under one responsible commander for every objective.

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List of NIMS and Emergency Management Acronyms

ALS - Advanced Life Support

COG - Continuity of Government

CONOPS - Concept of Operations

COOP - Continuity of Operations

DES - Department of Emergency Services

DHS - Department of Homeland Security

DOC - Department Operations Center

EMAC - Emergency Management Assistance Compact

EMD - Emergency Medical Dispatch

EMI - Emergency Management Institute

EOC - Emergency Operations Center

EOP - Emergency Operations Plan

ERT - Emergency Response Team

FD - Fire Department

FEMA - Federal Emergency Management Agency

FOG - Field Operations Guide

GIS - Geographic Information System

GPS - Global Positioning System

HAZMAT - Hazardous Material

HSPD-5 - Homeland Security Presidential Directive-5

HSC - Homeland Security Council

HSOC - Homeland Security Operations Center

HSPD-8 - Homeland Security Presidential Directive-8

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IAEM - International Association of Emergency Managers

IAFF - International Association of Firefighters (union)

IAFC - International Association of Fire Chiefs (non-union)

IAP - Incident Action Plan

IC - Incident Commander

ICP - Incident Command Post

ICS - Incident Command System

IC or UC - Incident Command or Unified Command

IMAT - Incident Management Assistance Team

IS - Independent Study

JIC - Joint Information Center

JIS - Joint Information System

JOC - Joint Operations Center

LEOP - Local Emergency Operations Plan

LNO - Liaison Officer

NEMA - National Emergency Managers Association

NDMS - National Disaster Medical System

NFA - National Fireman's Association

NGO - Nongovernmental Organization

NIC - NIMS Integration Center

NIMS - National Incident Management System

NIMSCAST - National Incident Management System Capability Assessment Tool

NRCC - National Response Coordination Center

NRP - National Response Plan

ODP -Pollution Report

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PIO - Public Information Officer

PVO - Private Voluntary Organizations

R&D - Research and Development

RESTAT - Resources Status

ROSS - Resource Ordering and Status System

RRCC - Regional Response Coordination Center

SDO - Standards Development Organizations

SEOP - State Emergency Operations Plan

SITREP - Situation Report

SO - Safety Officer

SOP - Standard Operating Procedure

UAC - Unified Area Command

UC - Unified Commander

US&R - Urban Search and Rescue

WMD - Weapons of Mass Destruction

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List of Additional Water-Related Acronyms

AB - Assembly Bill

ABAG - Association of Bay Area Governments

ACL - Administrative Civil Liability

ACWA - Association of California Water Agencies

Af (or AF) - acre foot

AG - Attorney General

ALJ - Administrative Law Judge

APM - Administrative Procedures Manual

ARAR - Applicable or Relevant and Appropriate Requirements

ARB - Air Resources Board

ASBS - Areas of Special Biological Significance

ASIWPCA - Association of State and Interstate Water Pollution Control Administrators

ASPIS - Abandoned Site Program Information System

AWMC - Agricultural Water Management Council

AWQC - Areas of Water Quality Concern

BAT - Best Available Technology

BCDC - San Francisco Bay Conservation and Development Commission

BCP - Budget Change Proposal

BDO - Board, Department or Office within Cal/EPA

BLM - Bureau of Land Management

BMPs - Best Management Practices

BPT - Best Practicable Control Technology currently available

BPTCP - Bay Protection and Toxic Cleanup Program

BOF - Board of Forestry

BOD - Biochemical Oxygen Demand

BTU - British Thermal Unit

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CAO - Cleanup and abatement order

CAA - Cleanup and Abatement Account

CAF - Confined Animal Facilities (such as dairies and feedlots)

CAFO - Concentrated Animal Feeding Operations

Cal/EPA - California Environmental Protection Agency

CALFED - State-Federal Program focusing on Bay-Delta issues

CAL FIRE - California Department of Forestry and Fire Protection

CALPIRG - California Public Interest Research Group

CAO (also C&A) - Cleanup and Abatement Order (Water Code Section 13304)

CAPS - California Association of Professional Scientists

CASA - California Association of Sanitation Agencies

Cal Fire - California Department of Forestry

CalTrans - California Department of Transportation

CBE - Citizens for a Better Environment

CCC - California Coastal Commission

CCR - California Code of Regulations (State Water Board regulations are in Title 23)

CDO - Cease and Desist Order

CDAA - California District Attorneys Association

CDFA - California Department of Food and Agriculture

CEEIN - California Environmental Education Interagency Network

CEC - California Energy Resources Conservation and Development Commission

CEQA - California Environmental Quality Act

CERCLA - Comprehensive Environmental Response, Compensation and Liability Act of 1980

CESA - California Endangered Species Act

CFR - Code of Federal Regulations

cfs - cubic feet per second

CIWQS - California Integrated Water Quality System

COD - Chemical Oxygen Demand

COE - U.S. Army Corps of Engineers

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COG - Council of Governments
CSO - Combined Sewer Overflow
CHP - California Highway Patrol
CIWMB - California Integrated Waste Management Board
CLEAN - Cleanup Loans and Environmental Assistance Neighborhoods
COPP - California Office of Privacy Protection
CRMP - Coordinated Resource Management and Planning (refers to watershed groups)
CSAC - California State Association of Counties
CSD - Community Services District
CTR - California Toxics Rule
CSU - California State Universities and Colleges
CUPA - Certified Unified Program Agency
CVP - Central Valley Project
CWA - Clean Water Act
CWAP - California Water Pollution Control Association
CWEA - California Water Environment Association
CZARA - Coastal Zone Act Reauthorization Amendments
CZMA - Coastal Zone Management Act

DBCP - 1,2-Dibromo-3-chloropropane
DBW - Department of Boating and Waterways
DFG - Department of Fish and Game
DGS - Department of General Services
DHS - Department of Health Services
DMR - Discharge Monitoring Report
DNAPL - Dense Non-Aqueous Phase Liquid
DO - Dissolved Oxygen
DOC - Department of Conservation
DoD - Department of Defense (Federal)

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DPA - Department of Personnel Administration

DPR - Department of Pesticide Regulation

DTSC - Department of Toxic Substances Control

DWR - Department of Water Resources

DWR - Division of Water Rights

DWQ - Division of Water Quality

EBEP - Enclosed Bays and Estuaries Plan

EBMUD - East Bay Municipal Utility District

ECPP - Environmental Circuit Prosecutor Project

EDF - Environmental Defense Fund

EIA - Economic Impact Assessment

EIR - Environmental Impact Report

EIS - Environmental Impact Study

EJ - Environmental Justice

EPA - United States Environmental Protection Agency

ESA - Endangered Species Act

ET - Evapotranspiration

FEA - Federal Energy Administration

FERC - Federal Energy Regulatory Commission

FIFRA - Federal Insecticide, Fungicide and Rodenticide Act

FPPA - Federal Pollution Prevention Act

GAC - Granular Activated Carbon Treatment

GAMA - Groundwater Ambient Monitoring and Assessment

GIS - Geographic Information System

gpd - gallons per day

gpm - gallons per minute

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GWPS - Groundwater Protection Strategy

GWPS - Groundwater Protection Standard

HAR - Hydrogeologic Assessment Report

HSAR - Hydrogeologic Site Assessment Report

Hg - Mercury

HAZMAT - Hazardous Material

HFC - Hydrofluorocarbon

HWCA - Hazardous Waste Control Act

HWCL - Hazardous Waste Control Law

HWG - Hazardous Waste Generator

HWT - Hazardous Waste Treatment

IID - Imperial Irrigation District

ISWP - Inland Surface Waters Plan

IWMA - Integrated Waste Management Act

JPA - Joint Powers Authority

LA - Load Allocation

LAO - Legislative Analyst's Office

LACFCD - Los Angeles County Flood Control District

LCP - Local Coastal Program

LDR - Land Disposal Restrictions

LEA - local enforcement agency

LI - Langelier Index

LIA - Local Implementing Agency

LIAC - Local Implementing Agency Committee

LID - Low Impact Development

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LLNL - Lawrence Livermore National Laboratory

LLRW - Low-Level Radioactive Waste

LOCC - League of California Cities

LOP - Local Oversight Program (underground tanks program)

LTMS - Long-Term Management Strategy

LUFT - Leaking Underground Fuel Tank

LUST - Leaking Underground Storage Tank

MCC - Management Coordinating Committee

MCP - Municipal Compliance Plan

mcl - maximum contaminant level

MDL or mdl - maximum daily load or Method Detection Limit

mg - Milligram

mg/l - milligrams per litre

mgd - million gallons per day (a typical measurement of effluent flow rate)

MMA - Marine Managed Area

MMP - Mandatory Minimum Penalty

MOA - Memorandum of Agreement

MOU - Memorandum of Understanding

MPRSA - Marine Protection, Research and Sanctuaries Act

MSCA - Multi-Site Cooperative Agreement

MSW - Municipal solid waste

MTBE - Methyl Tertiary Butyl Ether

MS4s - Municipal Separate Storm Sewer Systems

MWD - Metropolitan Water District of Southern California

NAIL - Non-Aqueous Phase Liquid

NEPA - National Environmental Policy Act of 1969

NMFS - National Marine Fisheries Service

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NOI - Notice of Intent

NOAA - National Oceanic and Atmospheric Administration

NOHSCP - National Oil and Hazardous Substances Contingency Plan

NPDES - National Pollutant Discharge Elimination System

NPL - National Priorities List

NPS - Nonpoint Source

NRDC - Natural Resource Defense Council

NRT - National Response Team

NTR - National Toxics Rule

OAL - Office of Administrative Law

OCC - Office of Chief Counsel

OCSD - Orange County Sanitation District

OEHHA - Office of Environmental Health Hazard Assessment

OES - Office of Emergency Services

OPA - Office of Public Affairs

OPR - Governor's Office of Planning and Research

ONRW - Outstanding Natural Resource Waters

OSC - On-Scene Coordinator

PCB - Polychlorinated Biphenyls

PCE - Perchloroethylene

PCP - Pentachlorophenol (also Tetrachloroethylene)

PCDD - Polychlorinated Dibenzo-p-dioxins

PCDF - Polychlorinated Dibenzofurans

PECG - Professional Engineers in California Government

PIC - Products of Incomplete Combustion

POTW - Publicly Owned Treatment Work

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ppb - parts per billion

ppm - parts per million

PPP - Pollution prevention plans

Prop. 65 - Safe Drinking Water and Toxic Enforcement Act of 1996

PRP - Potentially Responsible Party

PSI - Pollutant Standards Index

PUC - Public Utilities Commission

PUD - Public Utility District

PY - Personnel Year

QA/QC - Quality Assurance/Quality Control

QNCR - Quarterly Noncompliance Report

QSA - Quantification Settlement Agreement

RA - Resources Agency

RCD - Resource Conservation District

RCRA - Resource Conservation and Recovery Act

RFP - Request for Proposal

ROWD - Report of Waste Discharge

SAA - Streambed Alteration Agreements

SAP - State Assistance Program

SARA - Superfund Amendments and Reauthorization Act of 1986

SAWPA - Santa Ana Watershed Project Authority

SB - Senate Bill

SBE - State Board of Education

SCC - State Coastal Conservancy

SCCWRP - Southern California Waters Research Project

SDE - State Department of Education

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SDWA - Safe Drinking Water Act

SEP - Supplemental Environmental Project

SFM - State Fire Marshal

SIP - Statewide Implementation Policy

SITE - Superfund Innovative Technology Evaluation Program

SLC - State Lands Commission

SLIC - spills, leaks, investigations and cleanups

SMBRP - Santa Monica Bay Restoration Project

SMCRA - Surface Mining Control and Reclamation Act (1977)

SMW - State Mussel Watch

SNC - Significant Noncompliance

SOC - Synthetic Organic Chemical

SPCC - Spill Prevention, Containment and Countermeasures Plan

SPII - State Personal Information Inventory

SRF - State Revolving Fund

SSO - Sanitary Sewer Overflow

SWAT - Solid Waste Assessment Test

SWIM - System for Water Information Management (now referred to as WIN)

SWP - State Water Project

SWQPA - State Water Quality Protection Area

SWRCB - State Water Resources Control Board – official and formal name

TAC - Technical Advisory Committee

TBT - Tributyltin

TCA - Trade and Commerce Agency

TCE - Trichloroethylene

TDS - Total Dissolved Solids

THP - Timber Harvest Plan

THM - Trihalomethane

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TMDL - Total Maximum Daily Load

TPCA - Toxic Pits Cleanup Act

TQM - Total Quality Management

TRPA - Tahoe Regional Planning Agency

TSCA - Toxic Substances Control Act

TSM - Toxic Substances Monitoring

TTLC - Total Threshold Limit Concentration

UC - University of California

ug/l - Micrograms per liter

UIC - Underground Injection Control

USBR - United States Bureau of Reclamation

USDA - United States Department of Agriculture

U.S.EPA - United States Environmental Protection Agency

USFS - United States Forestry Service

USGS - United States Geological Survey

UST - Underground Storage Tanks

USTCF - Underground Storage Tank Cleanup Fund

VOC - Volatile Organic Compound

WDID - Waste Discharge Identification

WDIS - Waste Discharger Information System

WDR - Waste discharge requirements

WIN - Water Information Network

WLA - Waste Load Allocation

WMU - Waste management unit

WQA - San Gabriel Water Quality Authority

WQCC - Water Quality Coordinating Committee

WSP - Waste Stabilization Ponds

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WSWC - Western States Water Council

WWD - Westlands Water District

WWTP - Wastewater Treatment Plant

ANNEX A

DISASTER SERVICE WORKER POLICY

WHAT TO DO DURING A DISASTER

SCOTTS VALLEY WATER DISTRICT EMERGENCY OPERATIONS PLAN

Background

All employees of the Scotts Valley Water District are designated by state law to be “Disaster Service Workers.” In the event of a declared emergency or any undeclared emergency or natural disaster that threatens the life, health and/or safety of the public, employees may be assigned to assist rescue and relief workers. Such assignments may be in locations, during hours and performing work significantly different from the employees’ normal work assignments and may continue through the recovery phase of the emergency.

Disaster Service Workers subject to such disaster services as may be assigned to them by their superiors or by law is stated in California Government Code, Chapter 8, Division 4, Title 1, Section 3100 through 3109.

Disaster Service Workers provide for the protection of the general health and safety of the people and property of California from the effects of natural, man-made, or war-caused emergencies which result in conditions of disaster or extreme peril to life, property, and resources.

Procedures

When a local emergency has been declared, District employees have the added and extremely important role of helping the community. Depending on the magnitude of the disaster, District employees may be directed to act outside the ordinary scope of their employment to support the community’s emergency response.

Responding to a Disaster While at Work

- Employee safety is paramount. Once safety has been established, employees are encouraged to contact family members and loved ones to ensure their safety.
- Personnel with pre-established emergency response assignments shall respond in accordance with those assignments.
- Personnel with no pre-established emergency response assignments are expected to remain at work if it is safe to do so. Supervisors will provide information regarding specific assigned duties and reporting locations.

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Responding to Work Following a Disaster Outside of Normal Working Hours

- Family and loved ones are priority. Employees shall make certain that their family is safe and afforded shelter before reporting to work.
- Personnel with pre-established emergency response assignments shall respond in accordance with those assignments.
- All employees without pre-established emergency response assignments shall call their supervisor as soon as practical to receive reporting instructions. If a supervisor is unavailable, the employee is instructed to call the District Office at (831) 438-2363 for reporting instructions. It may take some time for disaster operations to mobilize; check back often for reporting updates.
- Employees who are unable to report for disaster service work should contact their supervisor as soon as possible and advise why they are unable to report for work and when they expect to be able to come to work. The employee shall update their supervisor every 24 hours regarding his/her inability to report to work.
- District employees are expected to report to work at their normally scheduled time unless they are informed otherwise.

What to Expect

The State of California recognizes 13 DSW job categories that fall within two divisions: *specialized* and *general*. Most, if not all, employees will fall under the general job category, which includes administration, human services, laborer, and logistics. When possible, employees will be assigned duties that as closely as possible resemble their current job classification duties. Duties may require employees to work at locations, times, and conditions that differ from the employee's normal scope of work. Employees will not be assigned a duty or function they do not know how to perform or have not received adequate training to complete.

Compensation

- The District will compensate employees performing disaster service work, as long as the employee has taken and subscribed to the Loyalty Oath, which all employees are required to sign at the commencement of District employment.
- When a disaster service duty is assigned, employees are required to document start and end times of their shifts.

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- If an employee is unable to report to work, or wishes to leave work to check on family members or private property affected by a disaster, the employee shall follow established policies regarding leave.

Prepare Your Home and Train Your Family

By nature, disasters are unpredictable, but employees can take several precautions to protect themselves and their loved ones in a time of crisis. Develop a family emergency plan, establish a method for communicating with separated family members, and create a home emergency cache and a vehicle “go bag” that contain important supplies such as food, water, a change of clothes, or anything else that would be helpful during an emergency. See **ANNEX H** of this plan for additional information.

Training

- Upon employment, District employees will be made aware of the District’s Disaster Service Worker Policy.
- Whenever possible, employees are encouraged to participate in Incident Command System (ICS) or Standardized Emergency Management System (SEMS) training. Many of these courses are available online through the Federal Emergency Management Agency.
- Additional trainings will be scheduled on an as needed basis.

ANNEX B

BOARD DUTIES AND RESPONSIBILITIES

SCOTTS VALLEY WATER DISTRICT EMERGENCY OPERATIONS PLAN

The role of the District's Governing Board during an emergency is to support the EOC Director and the activities of the Emergency Operation Center (EOC). The Chair and Board members do not have a direct role in the emergency operation.

Action Checklist

- ☐ Respond when called to the EOC to receive a briefing from the EOC Director on the nature and status of the emergency.
- ☐ Assist the EOC Director in providing liaison to other elected officials and government agencies.
- ☐ If requested by the EOC Director, act as the Scotts Valley Water District liaison to the City of Scotts Valley's EOC.
- ☐ Liaison with public or community organizations (e.g., HOAs, media, schools, service clubs, business organizations.)
- ☐ Ratify an emergency proclamation (if one is declared) at a special Board meeting within seven (7) days after its issuance by the EOC Director.
- ☐ Hold Board meetings as required to address legal or policy issues arising from the emergency.
- ☐ Be available for public information purposes as requested by the EOC Director.

ANNEX C

WATER EMERGENCY FIELD RESPONSE

THE INCIDENT COMMAND SYSTEM (ICS)

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

The Use of the ICS in Water Emergencies

As stated in Section 1 of this Plan, the Field Response Level is where District personnel and resources, under the direction of an Incident Commander, carry out tactical decisions and activities in direct response to a water or wastewater-related emergency.

General ICS Information

The Incident Command System is used to manage an emergency incident or a non-emergency event. It can be used for both small and large situations.

The system has considerable internal flexibility. It can grow or shrink to meet differing needs, which makes it a very cost-effective and efficient management system. Listed below are examples of the kinds of incidents and events that can use the ICS.

Use of the Incident Command System includes the following applications:

- Fires, HAZMAT, and multi-casualty incidents
- Multi-jurisdictional and multi-agency disasters
- Wide-area search and rescue missions
- Pest eradication programs
- Oil spill response and recovery incidents
- Single- and multi-agency law enforcement incidents
- Air, rail, water, and ground transportation accidents
- Planned events, such as celebrations, concerts, and parades
- Private sector emergency management programs
- State and local major natural hazard management
- Water and waste-water system emergency incidents

General ICS Organization

The organization of the Incident Command System is built around the same five major management activities as SEMS. These five management activities are the foundation upon which the incident management develops. They apply whether handling a routine emergency, organizing a major event, or managing a major response to a disaster.

Command Section

The Command section sets objectives and priorities. Command has overall responsibility at the incident.

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Incident Commander

The Incident Commander (IC) is the person who is in charge at the incident and who must be fully qualified to manage the incident. As incidents grow in size or become more complex, a more highly qualified person may be assigned as IC by the responsible jurisdiction or agency.

Public Information Officer

At the event, the Public Information Officer (PIO) is the point of contact for the media or other organizations seeking information directly from the incident.

Safety Officer

The Safety Officer monitors safety conditions and develops measures for assuring the safety of all assigned personnel.

Liaison Officer

The Liaison Officer, on larger incidents or events, communicates with representatives from other agencies to coordinate each agency's involvement. The Liaison Officer will be their primary contact.

Operations Section

The Operations section conducts tactical operations to carry out the plan, while developing the tactical objectives, organization, and direction for all resources.

Divisions

Divisions are established to divide an incident geographically or to describe some geographical area related to incident operations.

Groups

Groups are established to describe functional areas of operation. Which groups are established will be determined by the needs of the incident. Groups work wherever they are needed and are not assigned to any single division. Divisions and Groups are at an equal level in the organization.

Branches

Branches are established as another level of organization within the Operations section to increase the span of control, define another functional structure, or organize the incident around jurisdictional lines.

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

Units

Functional Units may not all be required, and they will be established based upon the need. The titles of the units are self-descriptive.

Air Operations

Operated at the branch level, Air Operations are established separately at an incident where there are complex needs for the use of aircraft in both tactical and logistical operations

Planning and Intelligence Section

The Planning and Intelligence section develops the action plan to accomplish the objectives. Planning and Intelligence collects and evaluates information.

Logistics Section

The Logistics section provides support to meet incident needs. It also provides resources and all other services needed to support the incident response.

Finance and Administration Section

The Finance and Administration section monitors costs related to the incident, while providing accounting, procurement, time recording, and cost analyses.

Incident Facilities

Facilities will be established depending upon the kind and complexity of the incident or event. Not all facilities will necessarily be used.

Incident Command Post (ICP)

The Incident Command Post is the location from which the incident Commander oversees all incident operations. There is only one ICP for each incident or event. Every incident or event must have some form of ICP.

Staging Area

Staging Areas are established wherever necessary to temporarily locate resources awaiting assignment.

Base

A Base is the location at large incidents where primary service and support activities are performed.

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

Camps

Incident locations are where resources may be kept to support incident operations. Camps differ from staging areas in that essential support operations are done at camps, and resources at camps are not always immediately available.

Helibase

The Helibase is a location in and around an incident area at which helicopters may be parked, maintained, fueled, and equipped for incident operations.

Helispot

Helispots are temporary locations at which helicopters can land and load/off-load personnel, equipment, and supplies.

Incident Action Plan

Every incident must have an oral or written action plan. The purpose of the plan is to provide all incident supervisory personnel with direction for future actions. Action plans will include the measurable tactical operations to be achieved. They are always prepared around a timeframe called an Operational Period.

Operational Periods can be of various lengths but should be no longer than 24 hours. The planning of an Operational Period must be done far enough in advance to ensure that requested resources are available when the Operational Period begins. The Incident Action Plan must be known to all incident supervisory personnel. This can be done through briefings, by distributing a written plan prior to the start of the Operational Period, or by both methods.

The Incident Action Plan must be known to all incident supervisory personnel. This communication can be performed through briefings, by distributing a written plan prior to the start of the Operational Period, or by both methods.

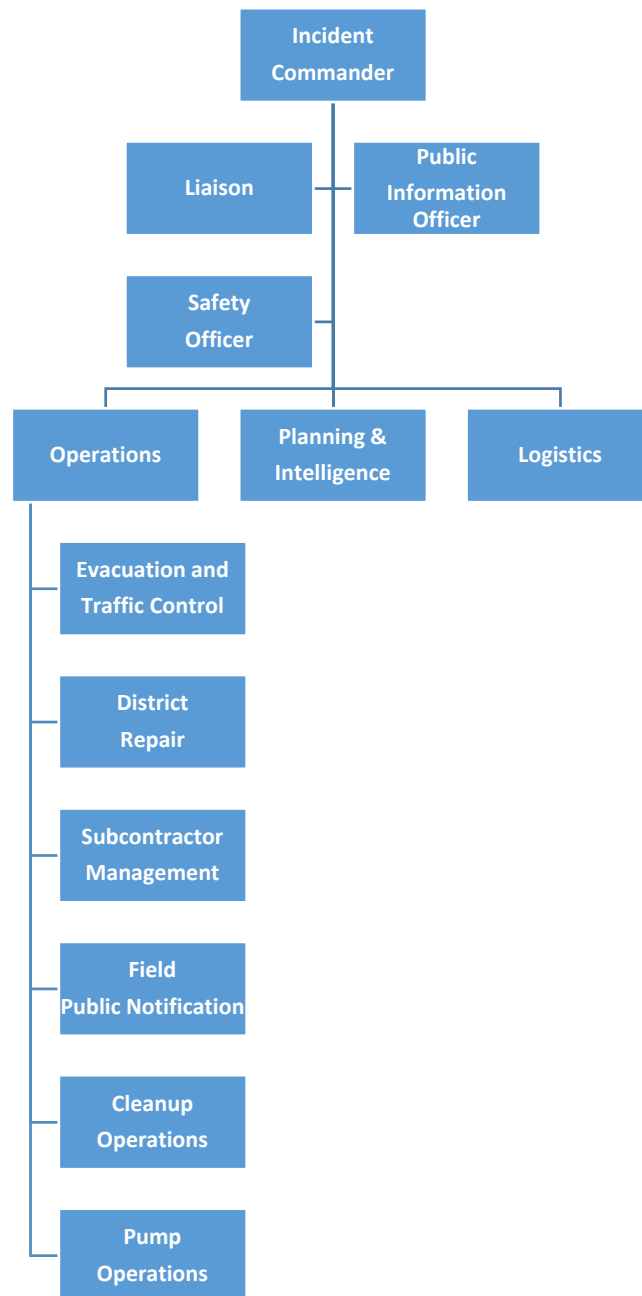
Essential Incident Action Plan Elements

- Statement of Objectives - Appropriate to the overall incident.
- Organization - Describes which parts of the ICS organization will be in place for each Operational Period.
- Assignments to Accomplish Objectives - These assignments are normally prepared for each Division or Group and include the strategy, tactics, and resources to be used.
- Supporting Material - Examples of supporting material can include maps of the incident, a communications plan, a medical plan, a traffic plan, etc.

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

ICS Organization for the Scotts Valley Water District

The Scotts Valley Water District has modified the Incident Command System to meet the functional needs of the organization. Although the structure and functionality of the District's ICS differs from the ICS that is used by Public Safety agencies, it follows all principles of the system, as it was intended to be used.



**SCOTTS VALLEY WATER DISTRICT
EMERGENCY RESPONSE PLAN**

Scotts Valley Water District ICS Positional Checklists

Incident Commander

The Incident Commander's responsibility is the overall management of the incident. In most incidents, the command activity is carried out by a single Incident Commander. The Incident Commander is selected by qualifications and experience. Note that some of the tasks are one-time actions; others are ongoing or repetitive for the duration of the incident.

Action Checklist

- ☐ When on scene, assess the current situation. Assume the role of Incident Commander.
- ☐ Review the current incident status.
- ☐ Map out the tactics required to stabilize and repair the event.
- ☐ Bring in additional resources, as needed.
- ☐ Brief the General Manager on the extent of the emergency and what additional support is required from the District Office.
- ☐ Assign staff, as necessary, to manage the event using the Incident Command System.
- ☐ Ensure the safety of all District and contract personnel at the scene of the incident.
- ☐ Ensure that all personnel are properly supervised.
- ☐ If appropriate, establish contact with other on-scene agencies (public and private) to obtain their plans for dealing with the incident.
- ☐ Appoint a Safety Officer, if dealing with a large incident.
- ☐ Identify incident objectives and any District policy directives for the management of the incident.
- ☐ Determine the need for an Incident Action Plan (IAP). Direct the Planning and Intelligence Section Chief to arrange for a planning meeting in order to develop the IAP.
- ☐ Working with the General Manager, authorize the release of public information to the media.
- ☐ Ensure that water quality staff have been informed of the situation.
- ☐ Periodically check progress on assigned tasks to the Sections and Units.
- ☐ Ensure that the Liaison Officer is making periodic contact with participating agencies.
- ☐ Obtain regular briefings by the Operations, Planning and Intelligence, and Logistics Section Chiefs.
- ☐ Update the General Manager, as necessary.
- ☐ Maintain a log that notes messages received, decisions made, actions taken, and other activities that are relevant to the incident.

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Public Information Officer

In coordination with the General Manager, the Public Information Officer is responsible for developing and releasing information about the incident to the news media, to incident personnel, and to other appropriate agencies and organizations. Note that some of the tasks are one-time actions; others are ongoing or repetitive for the duration of the incident.

Action Checklist

- ☐ Prior to arrival, read this entire Checklist, and become acquainted with the duties of the Public Information Officer.
- ☐ Upon arrival, obtain a briefing from the Incident Commander. Determine the current status of the incident, and identify resources currently on the scene. Discuss repair issues with the Operations Section Chief.
- ☐ Determine whether or not any evacuation or severe traffic control issues exist.
- ☐ Determine the current media presence.
- ☐ In cooperation with the Incident Commander and the General Manager, determine whether or not any constraints exist on the information process. If so, provide a standard statement that can be given to the media regarding general requests for information.
- ☐ Coordinate the development of an additional door-to-door statement with the Operations Section, and arrange for the statement to be delivered by the Field Public Notification Unit.
- ☐ Also working with the Field Public Notification Unit, assess any needs for special alert and warning efforts, including the hearing impaired, non-English speaking people, and locations at risk for water denial, which may need advance notice in order to shut down processes.
- ☐ Establish contact with local and national media representatives, as appropriate.
- ☐ Establish a location to distribute information to the media, locating it away from the Command Post.
- ☐ If required, establish a schedule for news briefings.
- ☐ Coordinate with the District Office regarding the staffing of phone lines to deal with "rumor control" in order to answer questions from the public.
- ☐ Confirm details to ensure no conflicting information is released.
- ☐ Confirm the process for the release of information concerning incident-related injuries.
- ☐ Contact the media to correct erroneous or misleading information being provided to the public.
- ☐ Coordinate information releases with information staff from other impacted agencies and jurisdictions.
- ☐ Ensure that information provided to the public is consistent across jurisdictional boundaries (cities and counties) when appropriate.

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- ☐ As appropriate and when approved, respond to special requests for information.
- ☐ Maintain a log noting messages received, decisions made, actions taken, and other activities in which the Unit is involved.

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Safety Officer

The Safety Officer's function is to develop and recommend measures for assuring personnel safety, and to assess and/or anticipate hazardous and unsafe situations. Only one Safety Officer will be assigned for each incident. The Safety Officer may have assistants, as necessary, and the assistants may also represent subcontractor and/or assisting agencies. Safety assistants may have specific responsibilities, such as hazardous materials, etc.

Action Checklist

- ☐ Prior to arrival, read this entire Checklist, and become acquainted with the duties of the Safety Officer.
- ☐ Upon arrival, obtain a briefing from the Incident Commander.
- ☐ Identify hazardous situations associated with the incident. Ensure that adequate levels of protective equipment are available and are being used.
- ☐ In incidents involving outside resources and subcontractors, consider the use of an Assistant Safety Officer from each organization.
- ☐ Identify potentially unsafe acts.
- ☐ Identify corrective actions, and ensure implementation. Coordinate corrective action with the Incident Commander and Operations Section Chief.
- ☐ Participate in planning meetings.
- ☐ Listen to repair operations being considered. If any are potentially unsafe, assist in identifying options, protective actions, or alternate tactics.
- ☐ Review accidents or injuries that may have already occurred.
 - ☐ Ensure that the accident scene is preserved for investigation.
 - ☐ Ensure that the accident is properly documented.
 - ☐ Coordinate with the General Manager and the District's Safety Manager.
 - ☐ Prepare an accident report, according to company procedures and direction.
 - ☐ Recommend corrective actions to the Incident Commander and the General Manager.
- ☐ Coordinate critical incident stress, hazardous materials, and other debriefings, as necessary.
- ☐ Maintain a log that notes messages received, decisions made, actions taken, and other activities in which the Unit is involved.

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Liaison Officer

Water emergency incidents in the field are normally multijurisdictional and have several agencies involved. This situation may require the establishment of the Liaison Officer position on the Command Staff. The Liaison Officer is the contact for the personnel who are assigned to the incident by assisting or cooperating agencies. Note that some of the tasks are one-time actions; others are ongoing or repetitive for the duration of the incident.

Action Checklist

- ☐ Prior to arrival, read this entire Checklist, and become acquainted with the duties of the Liaison Officer.
- ☐ Upon arrival, obtain a briefing from the Incident Commander.
- ☐ Obtain a summary of the incident organization.
- ☐ Determine which companies, agencies, or non-governmental organizations are already involved in the incident, and whether they are assisting (have equipment and / or personnel assigned to the event) or cooperating (operating in a support mode "outside" of the repair operation).
- ☐ Obtain cooperating and assisting agency information, including the following:
 - ☐ Contact person(s)
 - ☐ Phone numbers
 - ☐ Cooperative agreement
 - ☐ The types of resources that are available
 - ☐ Number of personnel
 - ☐ Condition of personnel and equipment
 - ☐ Agency constraints/limitations
- ☐ Establish a workspace for the Liaison function (ICP), and notify agency representatives of location.
- ☐ Contact and brief assisting or cooperating agency representatives.
- ☐ Interview agency representatives concerning resources, capabilities, and any restrictions about their use. Provide this information at planning meetings.
- ☐ Work with the Public Information Officer and Incident Commander to coordinate media releases that are associated with inter-agency cooperation issues.
- ☐ Monitor incident operations to identify potential inter-organizational problems. Keep the Incident Commander apprised of such issues.
- ☐ Maintain a log that notes messages received, decisions made, actions taken, and other activities in which the Unit is involved.

**SCOTTS VALLEY WATER DISTRICT
EMERGENCY RESPONSE PLAN**

Operations Section Chief

The Operations Section Chief is responsible for managing field operations and for supervising the Units in the Section. The Chief also requests resources needed to implement and support the Operation's tactics, as a part of the Incident Action Plan. In addition, the Chief ensures safe operations and requests additional actions. Note that some of the tasks are one-time; others are ongoing or repetitive for the duration of the incident.

Action Checklist

- ☐ Prior to arrival, read this entire Checklist, and become acquainted with the duties of the Operations Section Chief.
- ☐ Obtain a briefing from the Incident Commander.
- ☐ If required, assume the role of the Incident Commander, and assign the Operations Section Chief position to another qualified personnel member on scene or enroute.
- ☐ Determine strategies for the repair, and create short-term and long-term objectives, as necessary.
- ☐ Determine the need for each of the Units assigned to the Operations Section, and make those assignments as necessary.
- ☐ Determine the status and location of resources, along with the supplies and materials that are required. Coordinate further needs with the Logistics Section Chief.
- ☐ Organize the Operations Section to ensure efficiency and personnel safety.
- ☐ Evaluate the field conditions associated with the water emergency. Relay the resources committed to the Incident Commander.
- ☐ If necessary, establish a Staging Area to temporarily store supplies and materials.
- ☐ As required, receive briefings from the Units about how their assignments are proceeding and any issues that are evolving.
- ☐ Provide regular briefings to the Operations Section personnel regarding the status of the incident and how operations are proceeding.
- ☐ Ensure that the Units within the Section are communicating regarding the status of the event.
- ☐ Direct Operations Unit Leaders to maintain up-to-date charts, reports, and Unit-specific maps.
- ☐ If required, assist the Planning and Intelligence Chief in the development of the Action Plan.
- ☐ Provide all relevant emergency information to the Incident Commander and the Public Information Officer.
- ☐ Maintain a log that notes messages received, decisions made, actions taken, and other activities in which the Section is involved.

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Evacuation and Traffic Control Unit

The Evacuation and Traffic Control Unit is responsible for the immediate evacuation of people from their homes, businesses, or other locations that are affected by the water emergency; as well as coordinating traffic issues related to the event on both public roadways and private property. Note that some of the tasks are one-time actions; others are ongoing or repetitive for the duration of the incident.

Action Checklist

- ☐ Prior to arrival, read this entire Checklist, and become acquainted with the duties of the Evacuation and Traffic Control Unit.
- ☐ Upon arrival, obtain a briefing from the Operations Section Chief or the Incident Commander.
- ☐ Make contact with Law Enforcement, Fire, Public Works, or other first responders who are on scene in order to coordinate traffic control.
- ☐ Make an assessment for pedestrian safety within the immediate area.
- ☐ Make an assessment of traffic safety.
- ☐ Evacuate homes, business, schools, or any other buildings that are in danger due to damage or water flow.
- ☐ Notify other agencies that are on scene to assist in evacuations as needed.
- ☐ Determine the need for additional personnel to assist in evacuations, and advise the Field Operations Section Chief.
- ☐ Determine the necessity to close roadways and sidewalks due to damage and/or water flow.
- ☐ Determine need for additional personnel to conduct traffic control and advise the Field Operations Section Chief.
- ☐ Make an assessment as to the number and types of traffic control devices that will be required.
- ☐ Determine the need for contracted traffic control resources, and notify the Logistics Section Chief.
- ☐ Provide all relevant emergency information to the Public Information Officer.
- ☐ Develop a traffic control plan. If the operations will be on-going, develop a long-term plan.
- ☐ Brief the Operations Section Chief or the Incident Commander on the traffic control plan and the numbers and types of resources to be used.
- ☐ Determine the need to notify city or county traffic engineering and inspection personnel.
- ☐ Coordinate the activities of District and contract personnel and all other agencies involved in the evacuation and traffic control operation.
- ☐ Assign specific work tasks to various personnel assigned to the Unit.

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- ☐ Relieve evacuation and traffic control personnel, as needed.
- ☐ If the operation is going to be extended, coordinate with the Logistics Section for replacement personnel and resources for the duration of the event.
- ☐ Establish a plan to demobilize personnel and resources throughout the course of the operation.
- ☐ Maintain a log that notes messages received, decisions made, actions taken, and other activities in which the Unit is involved.

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District Repair Unit

The District Repair Unit is responsible for supervising repair operations using District personnel at the event. This Unit also works with the Subcontractor Management Unit to coordinate the contractor response and repair operation. Note that some of the tasks are one-time actions; others are ongoing or repetitive for the duration of the incident.

Action Checklist

- ☐ Prior to arrival, read this entire Checklist, and become acquainted with the duties of the District Repair Unit.
- ☐ Upon arrival, obtain a briefing from the Operations Section Chief or the Incident Commander if those positions have been filled.
- ☐ Isolate the leak, and shut off water to the problem area.
- ☐ Assess the situation, and determine the extent of the damage to the system.
- ☐ Based on the incident (leak) location, contact USA and other utilities, as required.
- ☐ If required, ask for assistance, and request the activation of the other Operations Section Units, such as Evacuation and Traffic Control, Field Public Notification, Cleanup Operations, and Pump Operations.
- ☐ When activated, coordinate with the other Units regarding their response to the event.
- ☐ Determine the need for outside contractors to assist District personnel to repair the damage.
- ☐ If outside contractors are required, consider the need for activating the Subcontractor Management Unit.
- ☐ Brief the Operations Section Chief and the Incident Commander about decisions made and the anticipated course of action to resolve the water emergency.
- ☐ Determine the need for additional equipment, shoring, and immediate safety requirements.
- ☐ Review the Plat to determine the need for supplies and materials.
- ☐ If a Logistics Section is already in place, have members of that section obtain the materials required. If no Logistics Section has been established, contact the District Office, and instruct that they be delivered to the scene.
- ☐ Provide all relevant emergency information to the Public Information Officer.
- ☐ Supervise District repair personnel during the operation.
- ☐ Coordinate the repair operation with the Subcontractor Management Unit, if it has been activated.
- ☐ Ensure that short-term site restoration is being handled, after the repair is made.
- ☐ Work with the other sections on long-term site restoration, as required.

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- ☐ If the operation is going to be extended, coordinate with the Logistics Section for replacement personnel and resources for the duration of the event.
- ☐ Establish a plan to demobilize personnel and resources throughout the course of the operation.
- ☐ Maintain a log that notes messages received, decisions made, actions taken, and other activities in which the Unit is involved.
- ☐ When the operation has been completed, return the repaired system to normal operation.

**SCOTTS VALLEY WATER DISTRICT
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Subcontractor Management Unit

The Subcontractor Management Unit is responsible for supervising and inspecting all repair operations that are being performed by subcontractors at the event. This Unit also coordinates with the District Repair Unit regarding the work being performed by the District at the site. Note that some of the tasks are one-time actions; others are ongoing or repetitive for the duration of the incident.

Action Checklist

- ☐ Prior to arrival, read this entire Checklist, and become acquainted with the duties of the Subcontractor Management Unit.
- ☐ Upon arrival, obtain a briefing from the Operations Section Chief or the Incident Commander:
- ☐ Understand that the Subcontractor Management Unit has been activated because of the need for outside contractors to assist District personnel in repairing the damage.
- ☐ Obtain a briefing from the District Repair Unit to assess the situation and determine the extent of the damage to the system.
- ☐ Determine what equipment, supplies, and materials the subcontractors are required to bring with them. Be sure that information is communicated to them before they respond to the scene.
- ☐ Ensure that there is the ability to remain in contact the superintendent(s) of the subcontracting firm(s) while they are enroute. Brief the superintendent(s) when they arrive on the scene, and discuss their anticipated course of action.
- ☐ Along with the District Repair Unit, discuss the role of District repair personnel during the operation. Determine the need for additional equipment and materials that can be supplied by the District.
- ☐ Brief the Operations Section Chief and the Incident Commander about decisions made and the anticipated course of action to repair the leak.
- ☐ During the repair operation, review and inspect the work of the subcontractor(s) to ensure that it is being done correctly.
- ☐ If the operation is going to be extended, coordinate with the Logistics Section for replacement personnel and resources for the duration of the event.
- ☐ Working with the District Repair Unit, establish a plan to demobilize personnel and resources throughout the course of the operation.
- ☐ Maintain a log that notes messages received, decisions made, actions taken, and other activities in which the Unit is involved.
- ☐ When the operation has been completed, ensure that District personnel have returned the repaired system to normal operation.

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Field Public Notification Unit

The Field Public Notification Unit is responsible for personal notification of people about water denial issues that are based on the event. This is done at their homes, businesses, or other locations that are affected by the water emergency. The Unit also coordinates with the Public Information Officer and the District Office regarding the information that is to be delivered. Note that some of the tasks are one-time actions; others are ongoing or repetitive for the duration of the incident.

Action Checklist

- ☐ Prior to arrival, read this entire Checklist, and become acquainted with the duties of the Field Public Notification Unit.
- ☐ Upon arrival, obtain a briefing from the Operations Section Chief or the Incident Commander.
- ☐ Assess the situation, and determine the extent of the water outage to the immediate area.
- ☐ Using the plat sheets, determine which parcels require notification of the water emergency.
- ☐ In consultation with the District Repair Unit and the Operations Section Chief, determine the time frame that the water outage is expected to last.
- ☐ Determine the staffing levels that are required in order to carry out the notification process.
- ☐ Coordinate with the District Office to obtain the needed personnel.
- ☐ Ensure that the District Office delivers the appropriate amount of Notification Tags.
- ☐ Coordinate with the Public Information Officer and the General Manager regarding specific outage information that should be relayed to the customers.
- ☐ Be sure that information that is being learned in the field (Rumor Control) is being reported back to the Public Information Officer and the District Office so that it can be dealt with as customers call in.
- ☐ Determine the need to provide drinking water to customers who may need it until the repair has been made and service is restored.
- ☐ Inform the Operations Section Chief and the Incident Commander of any customer-related issues that need to be addressed in the field.
- ☐ Maintain a log that notes messages received, decisions made, actions taken, and other activities in which the Unit is involved.

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Cleanup Operations Unit

The Cleanup Operations Unit is responsible for cleanup from the damage caused by the water emergency. The cleanup operation takes place on public and private roadways, public and private property, homes, businesses, and any and all locations that are affected by the incident. Note that some of the tasks are one-time actions; others are ongoing or repetitive for the duration of the incident.

Action Checklist

- ☐ Prior to arrival, read this entire Checklist, and become acquainted with the duties of the Cleanup Operations Unit.
- ☐ Upon arrival, obtain a briefing from the Operations Section Chief or the Incident Commander:
- ☐ With Best Practices in mind, size up the event, and assess the scope of the damage.
- ☐ Determine the need for additional District personnel to assist in cleanup operations, and advise the Field Operations Section Chief.
- ☐ Determine the need for outside cleanup contractors and vendors.
- ☐ Coordinate with Field Public Notification Unit personnel regarding specific issues related to the event.
- ☐ Determine the entire extent of the damage, including long-term cleanup issues.
- ☐ Advise the Incident Commander of any large problems and issues that require immediate attention by the Company.
- ☐ Properly document damage, ensuring that photographs are taken of all damage and that statements from property owners are documented.
- ☐ Supervise District cleanup staff, and oversee the work of outside contractors.
- ☐ Determine the need for extended on-scene cleanup operations.
- ☐ Ensure that the governmental agencies that are represented at the event are aware of the status and the extent of the cleanup operation.
- ☐ Coordinate with the District Repair Unit and/or Subcontractor Management Unit for situational updates.
- ☐ If the operation is going to be extended, coordinate with the Logistics Section for replacement personnel and resources for the duration of the event.
- ☐ Establish a plan to demobilize personnel and resources throughout the course of the operation.
- ☐ Maintain a log that notes messages received, decisions made, actions taken, and other activities in which the Unit is involved.

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Pump Operations Unit

The Pump Operations Unit is responsible for coordinating all pump operations related to the emergency response. Note that some of the tasks are one-time actions; others are ongoing or repetitive for the duration of the incident.

Action Checklist

- ☐ Prior to arrival, read this entire Checklist, and become acquainted with the duties of the Pump Operations Unit.
- ☐ Upon arrival, obtain a briefing from the Operations Section Chief or the Incident Commander:
- ☐ Coordinate with the District Repair Unit regarding the leak damage and how it affects the system.
- ☐ Depending on the extent of the leak, inspect the pump sites for damage and operational issues.
- ☐ If appropriate, inspect the pumps for any ground water issues.
- ☐ If there is a problem, determine how pump operations are affecting storage capacity.
- ☐ Determine if there are electrical utility issues surrounding pump operations, such as power disruption.
- ☐ If electrical generators are needed, coordinate with the District Office or the Logistics Section in the field to provide them.
- ☐ Determine how pump operations related to the event affect the rest of the distribution and/or collection system.
- ☐ Brief the Operations Section Chief and the Incident Commander about decisions made and the anticipated course of action to resolve the water emergency.
- ☐ Maintain a log that notes messages received, decisions made, actions taken, and other activities in which the Unit is involved.

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Planning and Intelligence Section Chief

The Planning and Intelligence Section Chief is responsible for collecting, evaluating, processing, and disseminating information for use at the incident. Note that some of the tasks are one-time actions; others are ongoing or repetitive for the duration of the incident.

Action Checklist

- ☐ Prior to arrival, read this entire Checklist, and become acquainted with the duties of the Planning and Intelligence Section Chief.
- ☐ Upon arrival, obtain a briefing from the Incident Commander.
- ☐ Determine current situation status, and gather information and intelligence from the Operations Section.
- ☐ Working with the Incident Commander and the Operations Section Chief, develop current incident objectives and strategy.
- ☐ Determine how the event affects the system in the immediate area.
- ☐ Determine how the event affects the rest of the distribution or collection system.
- ☐ Investigate the need for contacting outside water providers to increase flow into the system.
- ☐ Evaluate the field conditions associated with the water emergency. Determine the resources committed and coordinate with the Operations Section Chief to develop a briefing for the General Manager or the Emergency Operations Center (EOC), if it is activated.
- ☐ Working with the Incident Commander and the Operations Section Chief, develop contingency plans.
- ☐ If the Incident Commander requires a written Incident Action Plan (IAP), conduct a Planning Meeting. Issues to cover in the meeting include the following:
 - ☐ Brief the attendees regarding the situation and the resource status
 - ☐ Discuss safety issues
 - ☐ Set and confirm incident objectives
 - ☐ Document tactics for the Operations Unit
 - ☐ Specify resources needed for each Operations Unit
 - ☐ Verify that all support and resource needs are coordinated with the Logistics Section prior to release of the Action Plan
 - ☐ Discuss interagency liaison issues
 - ☐ Discuss Public Information issues
 - ☐ Finalize, approve, and implement plan

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- ☐ Compile and display incident status summary information at the Command Post (ICP).
- ☐ If required, provide predictions on the incident's long-term problems to the distribution system.
- ☐ Identify the need for specialized resources; discuss the need with Operations and Command; facilitate resource requests with Logistics.
- ☐ Working with the Operations Section Units, ensure preparation of a demobilization plan, if appropriate.
- ☐ Maintain a log that notes messages received, decisions made, actions taken, and other activities in which the Section is involved.

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Logistics Section Chief

The Logistics Section Chief is responsible for obtaining all personnel, supplies, materials, and other items required at the scene of the event. Note that some of the tasks are one-time actions; others are ongoing or repetitive for the duration of the incident.

Action Checklist

- ☐ Prior to arrival, read this entire Checklist, and become acquainted with the duties of the Logistics Section Chief.
- ☐ Upon arrival, obtain a briefing from the Incident Commander.
- ☐ Ensure that the Incident Command Post (ICP) has the necessary equipment and supplies required for the management of the event.
- ☐ Consider the need for site and ICP security and communications personnel, depending on the location of the event.
- ☐ Establish a resource ordering process with the District Office.
- ☐ Discuss with the Operations Section Chief the kind and extent of support that Logistics may be asked to provide.
- ☐ Determine resource availability, support needs, identified shortages, and response time-lines for key resources.
- ☐ Identify future operational needs (current, long-term, and contingency) in order to anticipate logistical requirements.
- ☐ Research availability of additional resources.
- ☐ Ensure coordination between Logistics and the other Sections (Command, P&I, Operations).
- ☐ Submit all Logistics documentation to the appropriate personnel at the District Office at the conclusion of the event.
- ☐ Maintain a log that notes messages received, decisions made, actions taken, and other activities in which the Section is involved.

ANNEX D

THREATS TO AND SUSPECTED WATER SYSTEM ATTACK PROCEDURES

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EMERGENCY RESPONSE PLAN**

Threats or Attacks on the District's Water System

Potential Contamination Response Levels

These procedures apply to threats, or the intentional introduction of a contaminant, to the District's water system. The contaminant could be introduced at any point within the system, including raw water, treatment facilities, distribution system including distribution pipes, finished water storage, or pump stations. The adversary may or may not give notice of the contaminant or provide the location. Contamination may have actually occurred or it may be a hoax.

Contamination Response Level 1 - Potential Threat to Water System

Initiate the procedures that follow (starting at **Step A**) if any of the below activities have occurred:

Security Breach

- Unsecured Doors
- Open Hatches
- Unlocked/Forced Gates
- Alarm Triggered

Witness Account

- Suspicious Activity
- Trespassing
- Breaking and Entering
- Tampering with Equipment or Property

Direct Notification by Perpetrator

- Verbal Threat
- Threat in Writing

Notification by Law Enforcement

- Suspicious Activity
- Threat made to Water System

Notification by News Media

- Threat Delivered to News Media
- Media Discovers Threat

Unusual Water Quality Parameters

- Changes in pH, chlorine residual or turbidity
- Unexpected monitoring or sampling results
- Strange odor, color or appearance

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Customer Complaints

- Odor
- Color or Appearance
- Taste

Public Health Notification

- Victims in Emergency Rooms and/or Clinics
- High Incidence of Similar Health Complaints in one Local Area

Step A

- ☐ Complete the Threat Warning Report Forms (that follow) according to the type of threat warning received.
 - *Security Incident Report Form*
 - *Witness Account Report Form*
 - *Phone Threat Report Form (to be filled out during actual phone call)*
 - *Written Threat Report Form*
 - *Water Quality / Consumer Complaint Report Form*
 - *Public Health Information Report Form*

Step B

- ☐ Complete a *Threat Evaluation Worksheet* (**Page 35** of this Annex).

Step C

- ☐ Evaluate the *Threat Evaluation Worksheet* and determine if threat is possible.

If **YES**, go on to **Step D**.

If **NO**, Return to normal operations. Document and record the threat for future reference.

Step D

- ☐ Notify local law enforcement.
- ☐ Notify State DWR contact personnel.
- ☐ Do not disturb site if location could be possible crime scene. Consult *Maintaining Crime Scene Integrity* Form (that follows).
- ☐ Alert staff and emergency response personnel about threat.
- ☐ Consider containment/isolation, elevating chlorination, and/or discharge of suspect water.
- ☐ Evaluate spread of suspect water and potential impact on public health.
- ☐ Define the investigation site.
- ☐ Designate site characterization team members.
- ☐ Conduct preliminary assessment of potential site hazards.

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- ☐ Approach site and conduct field safety screening to detect any hazards to the characterization team.
- ☐ Search for physical evidence (discarded containers, etc.).
- ☐ Investigate records from CCTV cameras.
- ☐ Look for environmental indicators (dead animals or fish, dead vegetation, unusual odors or residues).
- ☐ Perform rapid field testing of the water.
- ☐ Collect water samples according to sampling plan.

Step E

- ☐ Determine if threat is credible based on procedures taken in **Step D**.

If **YES**, go to **Response Level 2 Procedures**.

If **NO**, Return to normal operations. Store water samples for six months.

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Contamination Response Level 2 Procedures - Credible Evidence

Initiate this procedure if there is credible evidence that the water system has been contaminated:

- Additional information collected during the investigation corroborates the threat warning.
- Collective information indicates that contamination is likely.
- Signs of contamination are observed during site characterization.
- Additional water quality data shows unusual trends that are consistent with the initial data and corroborate the threat.
- A pattern of customer complaints emerges.
- Previous threats and incidents corroborate the current threat.

Step A

- ☐ Notify [WUERM] or [Alternate WUERM] immediately upon discovery of credible evidence of threat (if not already notified).
- ☐ Initiate ERP.
- ☐ Initiate partial or full activation of the Emergency Operations Center (EOC). Perform internal and external notifications according to ERP.

Step B

- ☐ Assess results of previous sample analysis.
- ☐ Perform additional site characterization at primary sites as needed.
- ☐ Perform site characterization at any new investigation sites.

- ☐ Perform actions to estimate the contaminated area and predict movement of contamination.
- ☐ Take actions to isolate portions of system containing suspect water.
- ☐ Issue “Boil Water”, “Do not Drink”, or “Do not Use” orders and Press Releases as appropriate. See (**ANNEX F** - DWR Guidance and Notices) for copies of orders.
- ☐ Initiate Alternate Water Supply Plan (**APPENDIX 5** - District Infrastructure and Requirements) to provide alternate water supply for customers and fire protection as necessary.
- ☐ Continue to monitor water quality in suspect parts of system by manual sampling, rapid field testing, or automated means.

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Step C

Determine if threat is confirmed.

If **YES**, go to **Response Level 3 Procedures**.

If **NO**:

- ☐ Verify that water is safe.
- ☐ Notify public that water is safe.
- ☐ Notify outside agencies that water is safe.
- ☐ Return to normal operations. Store water samples for six months.

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Contamination Response Level 3 Procedures - Confirmed Contamination

Initiate this procedure if there is confirmed evidence that the water system has been contaminated:

- ☐ There is **Analytical Confirmation** of the presence of one or more contaminants in the water system.
- ☐ The **Preponderance of the Evidence** confirms that a contamination incident has occurred.
 - There is a security breach with obvious signs of contamination along with unusual water quality and consumer complaints in the vicinity of the security breach.
 - Additional findings (laboratory analysis, field observations) of continued site characterization activities add to other credible evidence of contamination.
 - There is information from public health officials, area hospitals, or 911 call centers indicating a problem with the water supply.
 - Law enforcement agencies have discovered crucial evidence or apprehended a suspect that helps confirm that the water has been contaminated.
 - Specific information on a number of potential contaminants can be used in conjunction with other available information to narrow down the number of contaminant candidates.

Step A

- ☐ Notify [WUERM] or [Alternate WEURM] immediately upon discovery of confirmed evidence of contamination (if not already notified).
- ☐ Initiate full ERP activation.
- ☐ Initiate full activation of Emergency Operations Center (EOC).
- ☐ Engage other organization as needed (DWR, Santa Cruz County Public Health, other response agencies, law enforcement).
- ☐ Perform internal and external notifications according to ERP.

Step B

- ☐ Assess results of previous sample analysis and attempt to identify the contaminant.
- ☐ Confirm the identity of the contaminant.
- ☐ Perform a full characterization of the contaminated area, including contaminant properties, contaminant concentration profiles, and characteristics of the impacted area.
- ☐ Evaluate the likely direction and extent of future movement of the contaminant within the distribution system.
- ☐ Evaluate all available information about the contamination incident

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- ☐ Take actions to isolate portions of system containing suspect water.
- ☐ Shut down system if obvious or confirmed contamination warrants.
- ☐ Issue “Boil Water”, “Do not Drink”, or “Do not Use” orders and Press Releases as appropriate. See (**ANNEX F** - DWR Guidance and Notices) for copies of orders.
- ☐ Initiate Alternate Water Supply Plan (**APPENDIX 5** - District Infrastructure and Requirements) to provide alternate water supply for customers and fire protection as necessary.
- ☐ Revise public health response measures and public notifications as necessary.
- ☐ Continue sampling and analysis to monitor the status and extent of the contamination, and to verify that containment strategies are working.

Step C

- ☐ Consult with appropriate officials to develop a Remediation and Recovery Plan. Refer to **ANNEX G** for information on water system recovery.
- ☐ Evaluate options for treating contaminated water and rehabilitating system components.
- ☐ Select treatment and rehabilitation technology/approach.
- ☐ Develop strategy for disposal of contaminated residuals.
- ☐ Develop sampling and analysis plan to verify remediation.
- ☐ Develop communications and public relations plan.
- ☐ Implement Remediation and Recovery Plan.
- ☐ Verify that water is safe by performing additional sampling and analysis to confirm the progress of system treatment and remediation.
- ☐ Notify public that water is safe.
- ☐ Notify outside agencies that water is safe.
- ☐ Return to normal operations. Store water samples as long as required according to law enforcement officials.

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Threats or Attacks to the District's Water System

SCADA Security

These procedures apply to a cyber-attack on a SCADA network system when the cyber intruder is:

- Conducting DoS (Denial of Service)
- Initiating SCADA/DCS command spoofing
- Attempting to take the SCADA/DCS system down
- Attempting to take control of or is in control of the system

Step A

- ☐ Notify immediately upon discovery of the attack:
 - WUERM and Data (IT) Manager
- ☐ Others as appropriate (for example):
 - Internet Service Provider
 - Computer Equipment Vendor

An attack on SCADA system may be manifested in several different manners and may be quite difficult to initially determine the specific mode of attack or objective of the SCADA threat. Initial areas for investigation are:

- SCADA is not controlling plant parameters
- Complaints from customers
- Quality of water results
- Inadequate throughput

Step B

- ☐ Restrict physical access to the area.
- ☐ Physically unplug any phone lines that could dial in to the attacked computer.
- ☐ Unplug the computer from the network.
- ☐ Determine if the SCADA system needs to be isolated from process operations and taken completely off line.
- ☐ Photograph the scene, including connections to any peripherals.

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- ☐ IF the computer is off, DO NOT turn it on (preferred method is to jumper system disk drive(s) as read only, and perform a post-mortem on a separate computer using suitable tools.)
- ☐ IF the computer is on, DO NOT reboot it.
- ☐ Avoid accessing any files on the compromised machine.
- ☐ Increase sampling at or near system intakes – consider whether to isolate.
- ☐ Preserve latest full battery background test at baseline.
- ☐ Increase sampling efforts.
- ☐ Check for NIPC water sector warnings
- ☐ Monitor unmanned components (storage tanks & pumping stations) – consider whether to isolate.
- ☐ Solicit the assistance of a Computer Emergency Response Team or Network Forensics Specialists.

OR with appropriate training, develop site-specific procedures to:

- ☐ Retrieve logged data from the various equipment and server logs.
- ☐ Collect adequate information (make image copies).
- ☐ With law enforcement/FBI assistance, check for implanted backdoors and other malicious code (i.e., Trojan horse, or worm).
- ☐ Install safeguards and patch to current levels.

Step C

- ☐ Test security breach to ensure plugged (in a safe mode, in case the either the problem hasn't been fixed or some other attack was installed unbeknownst).
- ☐ Assess / implement additional precautions for SCADA system.
- ☐ Turn over evidence to the proper authorities.

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Written Threat Report Form

INSTRUCTIONS

The purpose of this form is to summarize significant information from a written threat received by a drinking water utility. This form should be completed by the WUERM or an individual designated by incident command to evaluate the written threat. The summary information provided in this form is intended to support the threat evaluation process; however, the completed form is not a substitute for the complete written threat, which may contain additional, significant details.

The written threat itself (e.g., the note, letter, e-mail message, etc.) may be considered evidence and thus should be minimally handled (or not handled at all) and placed into a clean plastic bag to preserve any forensic evidence.

SAFETY

A suspicious letter or package could pose a threat in and of itself, so caution should be exercised if such packages are received. The US Postal Service has issued guidance when dealing with suspicious packages (http://www.usps.com/news/2001/press/pr01_1022gsa.htm).

THREAT NOTIFICATION

Name of person receiving the written threat: _____

Person(s) to whom threat was addressed: _____

Date threat received: _ **Time threat received:** _____

How was the written threat received?

☐ US Postal service	☐ Delivery service	☐ Courier
☐ Fax	☐ E-mail	☐ Hand delivered
☐ Other _____		

If mailed, is the return address listed? ☐ Yes ☐ No

If mailed, what is the date and location of the postmark? _____

If delivered, what was the service used (list any tracking numbers)? _____

If Faxed, what is the number of the sending fax? _____

If E-mailed, what is the e-mail address of sender? _____

If hand-delivered, who delivered the message? _____

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DETAILS OF THREAT

Has the water already been contaminated? ☐ Yes ☐ No

Date and time of contaminant introduction known? ☐ Yes ☐ No

Date and time if known: _____

Location of contaminant introduction known? ☐ Yes ☐ No

Site Name: _____

Type of facility

☐ Source water	☐ Treatment plant	☐ Pump station
☐ Ground storage tank	☐ Elevated storage tank	☐ Finished water reservoir
☐ Distribution main	☐ Hydrant	☐ Service connection
☐ Other _____		

Address: _____

Additional Site Information: _____

Name or type of contaminant known? ☐ Yes ☐ No

Type of contaminant

☐ Chemical	☐ Biological	☐ Radiological

Specific contaminant name/description: _____

Mode of contaminant introduction known? ☐ Yes ☐ No

Method of addition: ☐ Single dose ☐ Over time ☐ Other _____

Amount of material: _____

Additional Information: _____

Motive for contamination known? ☐ Yes ☐ No

☐ Retaliation/revenge	☐ Political cause	☐ Religious doctrine
☐ Other _____		

Describe motivation: _____

NOTE CHARACTERISTICS

Perpetrator Information:

Stated name: _____

Affiliation: _____

Phone number: _____

Location/address: _____

Condition of paper/envelop:

☐ Marked personal	☐ Marked confidential	☐ Properly addressed
☐ Neatly typed or written	☐ Clean	☐ Corrected or marked-up
☐ Crumpled or wadded up	☐ Soiled/stained	☐ Torn/tattered
☐ Other: _____		

How was the note prepared?

☐ Handwritten in print	☐ Handwritten in script	☐ Computer typed
☐ Machine typed ☐ Spliced (e.g., from other typed material)		
☐ Other: _____		

If handwritten, does writing look familiar? ☐ Yes ☐ No

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Language:

- ☐ Clear English ☐ Poor English
☐ Another language: _____
☐ Mixed languages: _____

Writing Style

- ☐ Educated ☐ Proper grammar ☐ Logical
☐ Uneducated ☐ Poor grammar/spelling ☐ Incoherent
☐ Use of slang ☐ Obscene
☐ Other: _____

Writing Tone

- ☐ Clear ☐ Direct ☐ Sincere
☐ Condescending ☐ Accusatory ☐ Angry
☐ Agitated ☐ Nervous ☐ Irrational
☐ Other: _____

SIGNOFF

Name of individual who received the threat:

Print name _____

Signature _____ Date/Time: _____

Name of person completing form (if different from written threat recipient):

Print name _____

Signature _____ Date/Time: _____

Source: EPA Response Protocol Toolbox Module 2, Section 8.6 – Interim Final December 2003

**SCOTTS VALLEY WATER DISTRICT
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Security Incident Report Form**

INSTRUCTIONS

The purpose of this form is to help organize information about a security incident, typically a security breach, which may be related to a water contamination threat. The individual who discovered the security incident, such as a security supervisor, the WUERM, or another designated individual may complete this form. This form is intended to summarize information about a security breach that may be relevant to the threat evaluation process. This form should be completed for each location where a security incident was discovered.

DISCOVERY OF SECURITY INCIDENT

Date/Time security incident discovered: _____

Name of person who discovered security incident: _____

Mode of discovery:

☐ Alarm (building)	☐ Alarm (gate/fence)	☐ Alarm (access hatch)
☐ Video surveillance	☐ Utility staff discovery	☐ Citizen discovery
☐ Suspect confession	☐ Law enforcement discovery	
☐ Other _____		

Did anyone observe the security incident as it occurred? ☐ Yes ☐ No

If "Yes", complete the 'Witness Account Report Form'

SITE DESCRIPTION

Site Name: _____

Type of facility

☐ Source water	☐ Treatment plant	☐ Pump station
☐ Ground storage tank	☐ Elevated storage tank	☐ Finished water reservoir
☐ Distribution main	☐ Hydrant	☐ Service connection
☐ Other _____		

Address: _____

Additional Site Information: _____

BACKGROUND INFORMATION

Have the following "normal activities" been investigated as potential causes of the security incident?

☐ Alarms with known and harmless causes	☐ Utility staff inspections
☐ Routine water quality sampling	☐ Construction or maintenance
☐ Contractor activity	☐ Other _____

Was this site recently visited prior to the security incident? ☐ Yes ☐ No

If "Yes," provide additional detail below

Date and time of previous visit: _____

Name of individual who visited the site: _____

Additional Information: _____

Has this location been the site of previous security incidents? ☐ Yes ☐ No

If "Yes," provide additional detail below

Date and time of most recent security incident: _____

Description of incident: _____

What were the results of the threat evaluation for this incident?

☐ 'Possible'	☐ 'Credible'	☐ 'Confirmed'

Have security incidents occurred at other locations recently? ☐ Yes ☐ No

If "Yes", complete additional 'Security Incident Reports' (Appendix 8.3) for each site

Name of 1st additional site: _____

Name of 2nd additional site: _____

Name of 3rd additional site: _____

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SECURITY INCIDENT DETAILS

Was there an alarm(s) associated with the security incident? ☐ Yes ☐ No

If "Yes," provide additional detail below

Are there sequential alarms (e.g., alarm on a gate and a hatch)? ☐ Yes ☐ No

Date and time of alarm(s): _____

Describe alarm(s): _____

Is video surveillance available from the site of the security incident? ☐ Yes ☐ No

If "Yes," provide additional detail below

Date and time of video surveillance: _____

Describe surveillance: _____

Unusual equipment found at the site and time of discovery of the security incident:

☐ Discarded PPE (e.g., gloves, masks)	☐ Empty containers (e.g., bottles, drums)
☐ Tools (e.g., wrenches, bolt cutters)	☐ Hardware (e.g., valves, pipe)
☐ Lab equipment (e.g., beakers, tubing)	☐ Pumps or hoses
☐ None	☐ Other _____

Describe equipment: _____

Unusual vehicles found at the site and time of discovery of the security incident:

☐ Car/sedan	☐ SUV	☐ Pickup truck
☐ Flatbed truck	☐ Construction vehicle	☐ None
☐ Other _____		

Describe vehicles (including make/model/year/color, license plate #, and logos or markings): _____

Signs of tampering at the site and time of discovery of the security incident:

☐ Cut locks/fences	☐ Open/damaged gates, doors, or windows
☐ Open/damaged access hatches	☐ Missing/damaged equipment
☐ Facility in disarray	☐ None
☐ Other _____	

Are there signs of sequential intrusion (e.g., locks removed from a gate and hatch)? ☐ Yes ☐ No

Describe signs of tampering: _____

Signs of hazard at the site and time of discovery of the security incident:

☐ Unexplained or unusual odors	☐ Unexplained dead animals
☐ Unexplained dead or stressed vegetation	☐ Unexplained liquids
☐ Unexplained clouds or vapors	☐ None
☐ Other _____	

Describe signs of hazard: _____

SIGNOFF

Name of person responsible for documenting the security incident:

Print name _____
Signature _____ Date/Time: _____

Source: EPA Response Protocol Toolbox Module 2, Section 8.3 – Interim Final December 2003

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EMERGENCY OPERATIONS PLAN

SUSPECT DESCRIPTION FORM

GENERAL APPEARANCE

Gender:

Male
Female

Race:

☐ White
☐ Black
☐ Middle Eastern
☐ Hispanic
☐ Asian
☐ Native American

Other _____

Hair:

Color
Style
Texture
Sideburns

Eyes:

Color
Shape
Glasses (type)

Physical Characteristics:

Age
Height
Weight
Build

Distinguishing Marks (describe):

Scars
Tattoos
Gang Insignia

Other:

Left Handed / Right Handed

SUSPECT Demeanor

☐ Apologetic
☐ Calm
☐ Belligerent
☐ Angry
☐ Threatening
☐ Nervous
☐ Confused

Distinguishing Traits

Speech
Accent
Gait / Limp

CLOTHING

Color/Type:

Layered Shirts/Blouse

Cap/Hat

Coat/Jacket

Tie

Pants

Shoes

Stockings

Gloves

Jewelry

Bag/Backpack

Purse/Briefcase

FACIAL CHARACTERISTICS

Skin:

Color
Texture

Describe shape of:

Mouth
Lips
Ears
Cheeks
(full or sunken)
Nose
Neck
Eyes
Eyebrows

Presence of:

Adam's Apple
Chin clefts
Wrinkles

Hair:

Mustache
Beard
Other

Describe any:

Facial piercing
Ear piercing

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EMERGENCY OPERATIONS PLAN**

WEAPON (describe if any)

- ☐ Handgun
- ☐ Long gun
- ☐ Knife

Direction of Escape

What did the suspect say?

VEHICLE

Color
Make
Model
Body Style
Damage / Rust
Antenna
Bumper Sticker
Wheel Covers

**License
Number** _____

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Phone Threat Report Form

INSTRUCTIONS

This form is intended to be used by utility staff that regularly answer phone calls from the public (e.g., call center operators). The purpose of this form is to help these staff capture as much information from a threatening phone call while the caller is on the line. It is important that the operator keep the caller on the line as long as possible in order to collect additional information. Since this form will be used during the call, it is important that operators become familiar with the content of the form. The sections of the form are organized with the information that should be collected during the call at the front of the form (i.e., Basic Call Information and Details of Threat) and information that can be completed immediately following the call at the end of the form (i.e., the description of the caller). The information collected on this form will be critical to the threat evaluation process.

THREAT NOTIFICATION

Name of person receiving the call: _____

Date phone call received: _____ **Time phone call received:** _____

Time phone call ended: _____ **Duration of phone call:** _____

Originating number: _____ **Originating name:** _____

*If the number/name is not displayed on the caller ID, press *57 (or call trace) at the end of the call and inform law enforcement that the phone company may have trace information.*

Is the connection clear? ☐ Yes ☐ No

Could call be from a wireless phone? ☐ Yes ☐ No

DETAILS OF THREAT

Has the water already been contaminated? ☐ Yes ☐ No

Date and time of contaminant introduction known? ☐ Yes ☐ No

Date and time if known: _____

Location of contaminant introduction known? ☐ Yes ☐ No

Site Name: _____

Type of facility

☐ Source water	☐ Treatment plant	☐ Pump station
☐ Ground storage tank	☐ Elevated storage tank	☐ Finished water reservoir
☐ Distribution main	☐ Hydrant	☐ Service connection
☐ Other _____		

Address: _____

Additional Site Information: _____

Name or type of contaminant known? ☐ Yes ☐ No

Type of contaminant

☐ Chemical	☐ Biological	☐ Radiological

Specific contaminant name/description: _____

Mode of contaminant introduction known? ☐ Yes ☐ No

Method of addition: ☐ Single dose ☐ Over time ☐ Other _____

Amount of material: _____

Additional Information: _____

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Motive for contamination known? ☐ Yes ☐ No
☐ Retaliation/revenge ☐ Political cause ☐ Religious doctrine
☐ Other _____

Describe motivation: _____

CALLER INFORMATION

Basic Information:

Stated name: _____

Affiliation: _____

Phone number: _____

Location/address: _____

Caller's Voice:

Did the voice sound disguised or altered? ☐ Yes ☐ No

Did the call sound like a recording? ☐ Yes ☐ No

Did the voice sound? ☐ Male / ☐ Female ☐ Young / ☐ Old

Did the voice sound familiar? ☐ Yes ☐ No

If 'Yes,' who did it sound like? _____

Did the caller have an accent? ☐ Yes ☐ No

If 'Yes,' what nationality? _____

How did the caller sound or speak?

☐ Educated ☐ Well spoken ☐ Illiterate

☐ Irrational ☐ Obscene ☐ Incoherent

☐ Reading a script ☐ Other _____

What was the caller's tone of voice?

☐ Calm ☐ Angry ☐ Lisperg ☐ Stuttering/broken

☐ Excited ☐ Nervous ☐ Sincere ☐ Insincere

☐ Slow ☐ Rapid ☐ Normal ☐ Slurred

☐ Soft ☐ Loud ☐ Nasal ☐ Clearing throat

☐ Laughing ☐ Crying ☐ Clear ☐ Deep breathing

☐ Deep ☐ High ☐ Raspy ☐ Cracking

☐ Other _____

Were there background noises coming from the caller's end?

☐ Silence

☐ Voices describe _____

☐ Children describe _____

☐ Animals describe _____

☐ Factory sounds describe _____

☐ Office sounds describe _____

☐ Music describe _____

☐ Traffic/street sounds describe _____

☐ Airplanes describe _____

☐ Trains describe _____

☐ Ships or large boats describe _____

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☐ Other: _____

SIGNOFF

Name of call recipient:

Print name _____

Signature _____ Date/Time: ____

Name of person completing form (if different from call recipient):

Print name _____

Signature _____ Date/Time: _____

Source: EPA Response Protocol Toolbox Module 2, Section 8.5 – Interim Final December 2003

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BOMB THREAT CHECKLIST

Be Calm and Courteous

Give a co-worker a signal to “listen in”

Date:

_____ Time call started:

_____ Time call ended:

Check call display for phone number (if available)

EXACT WORDING OF BOMB THREAT:

What can you tell me?

When is the bomb going to explode?

What kind of bomb is it?

Where is the bomb right now?

What does the bomb look like?

What will cause the bomb to explode?

Did you place the bomb?

Why?

What is your name?

REMARKS:

FAMILIARITY WITH FACILITY

☐ Much

☐ Some

☐ None

Inform the caller that the building is occupied and the detonation of a bomb could result in death or serious injury to many innocent people.

CALLER'S VOICE

- ☐ Male
☐ Female

- ☐ Old (Age?)____
☐ Young (Age?)____

- ☐ Calm
☐ Excited

- ☐ Soft
☐ Loud

- ☐ Angry
☐ Cracking Voice

- ☐ Laughter
☐ Crying

- ☐ Normal
☐ Disguised

- ☐ High pitched
☐ Deep
☐ Nasal
☐ Slurred
☐ Ragged

- ☐ Rapid
☐ Slow

- ☐ Raspy
☐ Stutter

- ☐ Lisp
☐ Heavy Breather

- ☐ Clearing Throat
☐ Intoxicated
☐ Pleasant

☐ Familiar (who?)_____

☐ _Accent (type?) _____

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BACKGROUND SOUNDS

- ☐ Street
- ☐ Party Sounds
-
- ☐ Office Noises
- ☐ Train
-
- ☐ Voices
- ☐ Airplane
-
- ☐ PA System
- ☐ Animals
-
- ☐ Local Music
- ☐ Static on line
-
- ☐ Long Distance
- ☐ Motors
-
- ☐ Bells
- ☐ Whistles
-
- ☐ Factory Machinery
- ☐ Crockery
-
- ☐ Household sounds
- ☐ Bedlam
-
- ___ Chanting
- ___ Other

BOMB THREAT LANGUAGE

- ☐ Well Spoken
- ☐ Incoherent
-
- ☐ Foul
- ☐ Irrational
-
- ☐ Taped
- ☐ Deliberate
-
- ☐ Abusive
- ☐ Righteous
-
- ☐ Message read by threat maker

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Water Quality / Consumer Complaint Report Form

INSTRUCTIONS - This form is provided to guide the individual responsible for evaluating unusual water quality data or consumer complaints. It is designed to prompt the analyst to consider various factors or information when evaluating the unusual data. The actual data used in this analysis should be compiled separately and appended to this form. The form can be used to support the threat evaluation due to a threat warning from unusual water quality or consumer complaints, or another type of threat warning in which water quality data or consumer complaints are used to support the evaluation. Note that in this form, water quality refers to both specific water quality parameters and the general aesthetic characteristics of the water that might result in consumer complaints.

Threat warning is based on: ☐ Water quality ☐ Consumer complaints ☐ Other

What is the water quality parameter or complaint under consideration?

Are unusual consumer complaints corroborated by unusual water quality data?

Is the unusual water quality indicative of a particular contaminant of concern? For example, is the color, odor, or taste associated with a particular contaminant?

Are consumers in the affected area experiencing any unusual health symptoms?

What is 'typical' for consumer complaints for the current season and water quality?

Number of complaints.

Nature of complaints.

Clustering of complaints

What is considered to be 'normal' water quality (i.e., what is the baseline water quality data or level of consumer complaints)?

What is reliability of the method or instrumentation used for the water quality analysis?

Are standards and reagents OK?

Is the method/instrument functioning properly?

Based on recent data, does the unusual water quality appear to be part of a gradual trend (i.e., occurring over several days or longer)?

Are the unusual water quality observations sporadic over a wide area, or are they clustered in a particular area?

What is the extent of the area? Pressure zone. Neighborhood. City block. Street. Building.

If the unusual condition isolated to a specific area:

Is this area being supplied by a particular plant or source water?

Have there been any operational changes at the plant or in the affected area of the system?

Has there been any flushing or distribution system maintenance in the affected area?

Has there been any repair or construction in the area that could impact water quality?

SIGNOFF

Name of person completing form:

Print name _____

Signature _____ Date/Time: _____

Source: EPA Response Protocol Toolbox Module 2, Section 8.7 – Interim Final December 2003

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Witness Account Report Form

INSTRUCTIONS

The purpose of this form is to document the observations of a witness to activities that might be considered an incident warning. The individual interviewing the witness, or potentially the witness, should complete this form. This may be the WUERM or an individual designated by incident command to perform the interview. If law enforcement is conducting the interview (which may often be the case), then this form may serve as a prompt for "utility relevant information" that should be pursued during the interview. This form is intended to consolidate the details of the witness account that may be relevant to the threat evaluation process. This form should be completed for each witness that is interviewed.

BASIC INFORMATION

Date/Time of interview: _____

Name of person interviewing the witness: _____

Witness contact information

Full Name: _____

Address: _____

Day-time phone: _____

Evening phone: _____

E-mail address: _____

Reason the witness was in the vicinity of the suspicious activity:

WITNESS ACCOUNT

Date/Time of activity: _____

Location of activity:

Site Name: _____

☐ Source water	☐ Treatment plant	☐ Pump station
☐ Ground storage tank	☐ Elevated storage tank	☐ Finished water reservoir
☐ Distribution main	☐ Hydrant	☐ Service connection
☐		

Other _____

Address: _____

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Additional Site Information:

Type of activity

- ☐ Trespassing ☐ Vandalism ☐ Breaking and entering
☐ Theft ☐ Tampering ☐ Surveillance
☐ Other _____

Additional description of the activity

Description of suspects

Were suspects present at the site? ☐ Yes ☐ No

How many suspects were present? _____

Describe each suspect's appearance:

Suspect #	Sex	Race	Hair color	Clothing	Voice
1					
2					
3					
4					
5					
6					

Where any of the suspects wearing uniforms?

☐ Yes ☐ No

If "Yes," describe the uniform(s): _____

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Describe any other unusual characteristics of the suspects:

Did any of the suspects notice the witness? ☐ Yes ☐ No

If "Yes," how did they respond: _____

Vehicles at the site

Were vehicles present at the site? ☐ Yes ☐ No

Did the vehicles appear to belong to the suspects? ☐ Yes ☐ No

How many vehicles were present? _____

Vehicle #	Type	Color	Make	Model	License plate
1					
2					
3					
4					

Where there any logos or distinguishing markings on the vehicles? ☐ Yes ☐ No

If "Yes," describe: _____

Provide any additional detail about the vehicles and how they were used (if at all): _____

Equipment at the site

Was any unusual equipment present at the site? ☐ Yes ☐ No

☐ Explosive or incendiary devices ☐ Firearms

☐ PPE (e.g., gloves, masks) ☐ Containers (e.g., bottles, drums)

☐ Tools (e.g., wrenches, bolt cutters) ☐ Hardware (e.g., valves, pipe, hoses)

☐ Lab equipment (e.g., beakers, tubing) ☐ Pumps and related equipment

☐ Other _____ Describe the equipment and how it was being used by the suspects (if at all):

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Unusual conditions at the site

Were there any unusual conditions at the Site? ☐ Yes ☐ No

☐ Explosions or fires ☐ Fogs or vapors ☐ Unusual odors

☐ Dead/stressed vegetation ☐ Dead animals ☐ Unusual noises

☐ Other

Describe the site conditions: _____

Additional observations

Describe any additional details from the witness account:

SIGNOFF

Name of interviewer:

Print
name

Signature

Date/Time:

Name of witness:

Print
name

Signature

Date/Time: _____

Source: EPA Response Protocol Toolbox Module 2, Section 8.4 – Interim Final December 2003

**SCOTTS VALLEY WATER DISTRICT
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Threat Evaluation Worksheet

INSTRUCTIONS

The purpose of this worksheet is to help organize information about a contamination threat warning that would be used during the Threat Evaluation Process. The individual responsible for conducting the Threat Evaluation (e.g., the WUERM) should complete this worksheet. The worksheet is generic to accommodate information from different types of threat warnings; thus, there will likely be information that is unavailable or not immediately available. Other forms in the Appendices are provided to augment the information in this worksheet.

THREAT WARNING INFORMATION

Date/Time threat warning discovered: _____

Name of person who discovered threat warning: _____

Type of threat warning:

☐ Security breach	☐ Witness account	☐ Phone threat
☐ Written threat	☐ Law enforcement	☐ Unusual water quality
☐ News media	☐ Consumer complaints	☐ Public health notification
☐ Other _____		

Identity of the contaminant: ☐ Known ☐ Suspected ☐ Unknown

If known or suspected, provide additional detail below

☐ Chemical ☐ Biological ☐ Radiological

Describe _____

Time of contamination: ☐ Known ☐ Estimated ☐ Unknown

If known or estimated, provide additional detail below

Date and time of contamination: _____

Additional Information: _____

Mode of contamination: ☐ Known ☐ Suspected ☐ Unknown

If known or suspected, provide additional detail below

Method of addition: ☐ Single dose ☐ Over time ☐ Other _____

Amount of material: _____

Additional Information: _____

Site of contamination: ☐ Known ☐ Suspected ☐ Unknown

If known or suspected, provide additional detail below

Number of sites: _____

Provide the following information for each site.

Site #1

Site Name: _____

Type of facility

☐ Source water	☐ Treatment plant	☐ Pump station
☐ Ground storage tank	☐ Elevated storage tank	☐ Finished water reservoir
☐ Distribution main	☐ Hydrant	☐ Service connection
☐ Other _____		

Address: _____

Additional Site Information: _____

Site #2

Site Name: _____

Type of facility

☐ Source water	☐ Treatment plant	☐ Pump station
☐ Ground storage tank	☐ Elevated storage tank	☐ Finished water reservoir
☐ Distribution main	☐ Hydrant	☐ Service connection
☐ Other _____		

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Address: _____
Additional Site Information: _____

Site #3

Site Name: _____

Type of facility

☐ Source water	☐ Treatment plant	☐ Pump station
☐ Ground storage tank	☐ Elevated storage tank	☐ Finished water reservoir
☐ Distribution main	☐ Hydrant	☐ Service connection
☐ Other _____		

Address: _____

Additional Site Information: _____

ADDITIONAL INFORMATION

Has there been a breach of security at the suspected site? ☐ Yes ☐ No

If "Yes", review the completed 'Security Incident Report'

Are there any witness accounts of the suspected incident? ☐ Yes ☐ No

If "Yes", review the completed 'Witness Account Report'

Was the threat made verbally over the phone? ☐ Yes ☐ No

If "Yes", review the completed 'Phone Threat Report'

Was a written threat received? ☐ Yes ☐ No

If "Yes", review the completed 'Written Threat Report'

Are there unusual water quality data or consumer complaints? ☐ Yes ☐ No

If "Yes", review the completed 'Water Quality/Consumer Complaint Report'

Are there unusual symptoms or disease in the population? ☐ Yes ☐ No

If "Yes", review the completed 'Public Health Report'

Is a 'Site Characterization Report' available? ☐ Yes ☐ No

If "Yes", review the completed 'Site Characterization Report'

Are results of sample analysis available? ☐ Yes ☐ No

If "Yes", review the analytical results report, including appropriate QA/QC data

Is a 'Contaminant Identification Report' available? ☐ Yes ☐ No

If "Yes", review the completed 'Sample Analysis Report'

Is there relevant information available from external sources? ☐ Yes ☐ No

Check all that apply

☐ Local law enforcement	☐ FBI	☐ DW primacy agency
☐ Public health agency	☐ Hospitals / 911 call centers	☐ US EPA / Water ISAC
☐ Media reports	☐ Homeland security alerts	☐ Neighboring utilities
☐ Other _____		

Point of Contact: _____

Summary of key information from external sources (provide detail in attachments as necessary):

THREAT EVALUATION

Has normal activity been investigated as the cause of the threat warning? ☐ Yes ☐ No

Normal activities to consider

☐ Utility staff inspections	☐ Routine water quality sampling
☐ Construction or maintenance	☐ Contractor activity
☐ Operational changes	☐ Water quality changes with a known cause

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☐ Other _____

Is the threat 'possible'? ☐ Yes ☐ No

Summarize the basis for this determination: _____

Response to a 'possible' threat:

☐ None ☐ Site characterization ☐ Isolation/containment

☐ Increased monitoring/security ☐ Other _____

Is the threat 'credible'? ☐ Yes ☐ No

Summarize the basis for this determination: _____

Response to a 'credible' threat:

☐ Sample analysis ☐ Site characterization ☐ Isolation/containment

☐ Partial EOC activation ☐ Public notification ☐ Provide alternate water supply

☐ Other _____

Has a contamination incident been confirmed? ☐ Yes ☐ No

Summarize the basis for this determination: _____

Response to a confirmed incident:

☐ Sample analysis ☐ Site characterization ☐ Isolation/containment

☐ Full EOC activation ☐ Public notification ☐ Provide alternate water supply

☐ Initiate remediation and recovery

☐ Other _____

How do other organizations characterize the threat?

Organization	Evaluation	Comment
☐ Local Law Enforcement	☐ Possible ☐ Credible ☐ Confirmed	
☐ FBI	☐ Possible ☐ Credible ☐ Confirmed	
☐ Public Health Agency	☐ Possible ☐ Credible ☐ Confirmed	
☐ Drinking Water Primacy Agency	☐ Possible ☐ Credible ☐ Confirmed	
☐ Other	☐ Possible ☐ Credible ☐ Confirmed	
☐ Other	☐ Possible ☐ Credible ☐ Confirmed	

SIGNOFF

Name of person responsible for threat evaluation:

Print name _____

Signature _____

Date/Time: _____

Source: EPA Response Protocol Toolbox Module 2, Section 8.2 – Interim Final December 2003

ANNEX E

WATER SAMPLING PROCEDURES

SCOTTS VALLEY WATER DISTRICT EMERGENCY OPERATIONS PLAN

Water Sampling Information

During an emergency, there are several types of water quality sampling that may need to be analyzed depending on the actual event. If it is natural disaster, flood or power outage, sampling will probably only include bacteriological samples, turbidity and chlorine residual samples if the system is chlorinated. However, if the event is a terrorist act or contamination event, the sampling will include a full scan of Weapons of Mass Destruction (WMD) chemical, radiological, and microbiological (unless the actual contaminant used is known).

Threat of Terrorism Event or Contamination Event

Once a threat warning has occurred and Scotts Valley Water District has deemed the threat confirmed (Refer to **ANNEX E** and **Level 1**, **Level 2**, and **Level 3** Threat Procedures), it will be necessary to collect water quality samples. The decisions made from the time of the threat warning to the time the threat is confirmed is specific to each individual event. This “credibility stage” may take between 2 and 8 hours and should involve consultation with local first responders, DWR (Drinking Water Primacy Agency), Santa Cruz County Health Department, and the regional Federal Bureau of Investigation (FBI) office.

Assuming the threat is credible enough to warrant water quality sampling, several state and federal agencies are involved to collect samples, transport the samples to appropriate laboratory, and analyze the samples.

Scotts Valley Water District’s first step in this process will be to contact the DWR District Engineer so the utility can notify the CDPH-SRLB of the incoming samples. The following steps are described in more detail below:

- Emergency Water Quality Sampling Kit (EWQSK)
- Sample Collection
- Laboratory Required for Analysis
- Sample Transport
- Sample Analysis

Emergency Water Quality Sampling Kit

Scotts Valley Water District’s EWQSK contains sample bottles need for chemical, radiological, and microbiological analysis that can be split into three complete sample sets. The EWQSK should remain sealed before the sample is collected. Since some of the sample bottles contain reagents that expire, the bottles in each kit are replaced annually.

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Sample Collection

Several types of samples may need to be collected depending on the event. Sampling protocol includes:

- Scotts Valley Water District will collect samples for public health to determine if the water is safe for consumption using the EWQSK for public health.
- Scotts Valley Water District will assist the FBI as requested to collect samples for the crime scene investigation.
- Scotts Valley Water District will also provide assistance as requested to responding agencies such as local HAZMAT, FBI, California National Guard Civilian Support Team (CST), or USEPA.
- Proper personal protection material will be used at all times to minimize exposure to any possible agent, and all personnel involved in sampling activities will be properly trained.

Laboratory

Depending on the results of the field screening and actual event, the required laboratories will be notified and prepared to accept the samples. If an EWQSK (supplied by Scotts Valley Water District or DWR) is used, the CAMAL Net and the LRN will be notified and involved in the process for laboratory selection. The first step in this process is for the District Engineer working with Scotts Valley Water District to contact SRLB.

Sample Transport

Depending on the responding agencies and field screening results, the ICS will decide how the samples will be transported to the appropriate lab. Since the samples may be used for the crime investigation, proper chain-of-custody must be maintained. The possible agencies, depending on the event, are the Santa Cruz County HAZMAT Team, SVPD, CHP, FBI, CST, or USEPA.

Sample Analysis

Once the samples are delivered to the appropriate laboratory, they may be split for analysis to different laboratories. The CDPH SRLB laboratory will handle the transport and laboratory testing protocols. Sample results will be shared through the ICS. Sample analysis may take days to weeks to complete depending on the complexity of analysis.

Scotts Valley Water District Water Sampling and Monitoring Procedures

The Scotts Valley Water District in conjunction with the Santa Cruz County HAZMAT Team will have the primary responsibility for all water sampling and monitoring activities during an actual or potential contamination event. The Scotts Valley Water District Treatment Supervisor and Distribution Supervisor will provide technical support and advice to the local emergency management agency and the HAZMAT team as needed throughout the incident.

The Treatment Supervisor will also play a key role in the interpretation and communication of monitoring or lab results and will consult directly with the WUERM on significant findings.

**SCOTTS VALLEY WATER DISTRICT
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Specific information and procedures regarding water sampling and monitoring is included in the following table:

Contaminant	Sampling/Monitoring Procedures	Quantity of Required Samples	Responsible Individual
Title 22 contaminants	Per title 22 regulations	Per title 22 regulations	Treatment supervisor
Coliform Bacteria	3 samples/week rotating through system 1 Sample for possible contamination event 3 samples to clear a positive bacteriological result.	100 ml	Treatment Supervisor
Unknown Antigen	Unknown	Unknown	FBI

Scotts Valley Water District uses the following laboratory for analysis:

Outside Laboratory Name	Contact Number	Capabilities
City of Scotts Valley Wastewater Treatment Plant	(831) 438-0732	Full Potable water testing

SCOTTS VALLEY WATER DISTRICT EMERGENCY OPERATIONS PLAN

Assistance from the State's Department of Water Resources

The DWR is the Drinking Water Primary Agency in California and has regulatory jurisdiction over all public water systems in the state. SVWD contact should be to the District Engineer. Refer to **APPENDIX 4** for contact information.

If SVWD personnel are unable to contact the District Engineer (or one of their staff), they should use the California OES Warning Center Phone Number at **(916) 845-8911**, which is a 24/7 phone number.

A second phone number for the OES Warning Center is **1-(800) 421-2921**.

A duty officer will answer the California OES Warning Center phone call and refer to statewide emergency phone numbers. In order to assist the duty officer, it will expedite response if staff request the DWR duty officer. The DWR duty officer will then call management staff to respond to the emergency.

The District Engineer will be able to assist Scotts Valley Water District with:

- Inspections of water treatment plants, storage facilities, and watersheds (chemical contamination, sewage spills, erosion, and drainage diversions).
- Water quality sampling.
- Consulting with water system staff/operators.
- Providing technical assistance.
- Documenting the disaster's effect on the water system through photographs and reports.
- Keeping local officials advised of the current drinking water situation.
- Review plans and specifications for reconstruction projects, and issue amended permits as needed.
- Laboratory sampling analysis.

ANNEX F

DWR GUIDANCE and UNSAFE WATER NOTICES (Boil Water Orders)

**SCOTTS VALLEY WATER DISTRICT
EMERGENCY RESPONSE PLAN**



**California Department of Public Health
MEMORANDUM**

DATE: March 9, 2011

TO: Public Water Systems, Local Primacy Agencies and Local Health Officers

FROM: Leah Godsey Walker, P.E., Chief
Division of Drinking Water and Environmental Management
1616 Capitol Mall, MS 7400 (916) 449-5577

SUBJECT: Unsafe Water Notice Guidance

This guidance is for public water systems (PWS), Local Primacy Agencies (LPA) and Local Health Officers (LHO) when issuing an Unsafe Water Notice.

Background

The purpose of this document is to provide guidance and assistance to PWS, LPA and LHO when dealing with a situation where there is an existing or potential risk of contamination of a water supply that poses an immediate threat to public health. The document includes guidance, procedures, and formats for imposing unsafe water notices. This document will address situations where a "Boil Water Notice," a "Do Not Drink Your Water" or a "Do Not Use Your Water" notification may be necessary.

Sections 116450 (c) and 116451 of the California Health and Safety Code (CHSC) and Sections 64463, 64463.1, and 64465 of Title 22, California Code of Regulations (CCR), provide authority for requiring an unsafe water notice. The California Department of Public Health (Department) or Local Primacy Agency (LPA) has regulatory jurisdiction over all public water systems in California and must require the public water system to implement emergency notification and issuance of a Tier 1 Public Notice when there is a potential for immediate adverse effects on human health due to a violation. In addition, staff needs to be aware that there may be circumstances or occurrences not addressed specifically in the regulations that present a potential threat to public health and warrant the issuance of an unsafe water notice; for example, the intentional/unintentional contamination of the water supply with an unregulated contaminant or unknown substance. The Department's Templates for Public Notification provides guidance on the issuance and cancellation of unsafe water notices during emergency situations such as terrorist activities and natural disasters. The

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Templates for Public Notification provides examples of an unsafe water notice and a cancellation (Problem Corrected Notice) of an unsafe water notice.

Drinking Water Program internet site is at:

<http://www.cdph.ca.gov/certlic/drinkingwater/Pages/Notices.aspx>.

Guidance

Unsafe water notices can be issued by the PWS, LHO, LPA, or the Department. Under most circumstances, the Department or LPA will prescribe an unsafe water notice to the affected PWS who is responsible for providing the notification to its consumers. The LHO may take preventative measures during an emergency and issue a county wide unsafe water notice, as stated in Section 101040, CHSC. The LHO may also issue an unsafe water notice to prevent and control the spread of acute communicable diseases under Section 120175, CHSC. However, there may be critical situations where the local PWS may not be able to contact the Department, LPA or LHO and will issue an unsafe water notice quickly to protect its customers. To ensure that a consistent message is conveyed, it is important that DWP management coordinates with the LHO, especially when they take the lead.

Care should be taken, to the greatest extent possible, to assure all agencies noted above are contacted and have coordinated prior to issuing of any type of unsafe water notice, either a boil water, a do not drink, or do not use notice. If prior notification cannot be done, then notification of all agencies should be done as soon as possible. Without proper communication and coordination there is the significant potential to have two different agencies issuing different notices for the same event causing confusion to the public and undermining the credibility of all agencies. District Engineers are the main points of contact with each LHO in their district. Therefore, the District Engineer must set up the lines of communication and educate each LHO in their district to assure there is coordination when unsafe water notices are issued.

When a public water system does not or is incapable of issuing an unsafe water notice due to various circumstances, the Department or LPA can issue the unsafe water notice to the general public through the press and media. The PWS is still responsible to provide public notification directly to their customers.

The three Unsafe Water Notices that can be issued are: "Boil Water Notice", "Do Not Drink Your Water" and "Do Not Use Your Water". The bases for the use of each of these notices are:

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Boil Water Notice:

The water supply has a microbiological contaminant that can be rendered safe by boiling the water or by disinfection. This is the most commonly used notice.

Do Not Drink Notice:

The water supply has an acute contaminant that cannot be rendered safe by boiling the water or by disinfection.

Do Not Use Notice:

The water supply has a contaminant that is unknown or where an exposure to the water can impact the public health of the consumer.

Section 64463.1(a), Title 22, CCR, lists the criteria for when an unsafe water notice is to be issued. (Described below)

Section 64463.1(b), Title 22, CCR, requires that the PWS provide public notice to persons served "as soon as possible but within 24 hours after learning of" a violation that requires a Tier 1 Public Notice or after being notified by the Department that it has determined there is a potential for adverse effects on human health [pursuant to Section 64463.1(a)(1), (4) and (5), Title 22, CCR].

Section 64463.1(c), Title 22, CCR, describes the method(s) that must be used by PWS to deliver the notice to consumers. For all PWS, notification by radio and television, posting in conspicuous locations throughout the water system service area, direct hand delivery or any other method approved by the Department may all be necessary in an effort to notify all PWS users. The PWS should follow its emergency notification plan (ENP) to provide the best methods for immediate notification. Under Section 116450, CHSC, the Department will notify a PWS to implement the ENP when there is an immediate danger to health due to a significant rise in bacterial count.

Section 64465(a) Title 22, CCR, describes what the notice must contain, along with the mandatory language. Among other things, the notice must address alternative sources of water, health risks, what actions consumers should take, what corrective action is being taken, and when the notice is expected to be lifted.

The notice should include a brief description of what happened or what was suspected to have happened. If the cause of the problem is unknown, the notice should indicate that the PWS, LPA or Department is investigating and will report to the public when the information is available or set a specific time for an update on the situation.

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Section 64465(c) Title 22, CCR, describes the multilingual requirement. Each public notice must contain the following in Spanish and in the appropriate language for each non-English speaking group that exceeds 1,000 residents or 10% of the residents in the community served, whichever is less: (1) information regarding the importance of the notice and (2) a telephone number or address where non-English speaking groups may contact the water system to obtain a translated copy of the notice in the appropriate language. A list of translations of "Importance of Notice" can be found in the Department's Consumer Confidence.

Report website at:

<http://www.cdph.ca.gov/certlic/drinkingwater/Documents/CCR/CCRTranslations20100104.doc>.

The following public notification templates relevant to this memo are available at the following Department website:

<http://www.cdph.ca.gov/certlic/drinkingwater/Pages/Notices.aspx>.

Specific Tier 1 Notices

Fecal Coliform or *E. coli*
Turbidity Exceedance
Waterborne Disease Outbreak

Boil Water Notices

Boil Water - English
Boil Water- Spanish

Boil Water Notice Cancellation – English and Spanish
Do Not Drink Notices

Do Not Drink- English

Do Not Use Notices

Do Not Use - English

Problem Corrected Notice

Problem Corrected

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The water supplier should post these signs at locations in public facilities where there are drinking fountains and restrooms as applicable. Modifications to the notice must be approved by the DWP or LPA prior to distribution.

Section 64469(d), Title 22, CCR, requires that a copy of the notice, along with a certification that the public notice requirements have been met, be sent to the Department within ten days after issuance of the notice.

When an Unsafe Water Notice is issued, the following agencies should be informed (phone and fax numbers for the specific Local Health Department contacts should be included as an attachment):

Agency	Purpose	Phone Number	Fax Number
Local Health Officer	Public Inquires	Include Local Health numbers as attachment	Include Local Health numbers as attachment
Local Environmental Health Dept.	Restaurant notifications	Include Local numbers as attachment	Include Local numbers as attachment
CDPH DDWEM Drinking Water Program (applicable District office)	Communication and coordination; public inquiries; assistance and guidance	Include phone numbers for DDWEM-DWP District Offices and HQ	Include Local numbers as attachment
CDPH Food and Drug Branch	bottled water, water hauler, water vending machine inquiries	(916) 650-6500	
CDPH Licensing & Certification	hospital & nursing home notifications	Inform local L&C office, or if after hours, inform CDHS duty officer.	

The LPA and LHO should also notify their Department District Engineer when they issue an Unsafe Water Notice. A PWS that issues an Unsafe Water Notice in an emergency situation prior to notifying the Departments should notify their Department District Engineer or LPA and LHO as soon as possible to coordinate and determine what additional requirements will need to be implemented.

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TYPICAL SCENARIOS OF UNSAFE WATER NOTICES

Scenarios addressed in the regulations (Tier 1 Public Notice)

- Violation of the total coliform MCL when fecal coliform or *E. coli* are present in the distribution system or when any repeat sample result is positive for coliform and the water system fails to test for fecal coliforms or *E. coli* in the repeat sample. (Section 64463.1(a)(1) Tier 1 Public Notice, Title 22, CCR)
- Determination of a significant rise in bacterial count following a Department review of information on the current status of the physical works, operating procedures that may have caused the elevated bacteriological findings or any community illness suspected of being waterborne. (Section 64426, Title 22, CCR, Significant Rise in Bacterial Count and Section 116450 of CHSC)
 - (a) Any of the following criteria shall indicate a possible significant rise in bacterial count
 - (1) A system collecting at least 40 samples per month has a total coliform-positive routine sample followed by two total coliform-positive repeat samples in the repeat sample set;
 - (2) A system has a sample which is positive for fecal coliform or *E. coli*; or
 - (3) A system fails the total coliform Maximum Contaminant Level (MCL) as defined in Section 64426.1, Title 22, CCR.
- Single exceedance of a maximum allowable turbidity level (state regulation is currently turbidity above 5.49 NTU) if the Department determines after consultation with the water system and a review of the data that a Tier 1 public notice is required. (Section 64463.1(a)(3) Tier 1 Public Notice, Title 22, CCR)
- Factors to consider in this determination include duration of high turbidity event, source water quality, level of disinfection, cause of failure and ability to rectify.
- Occurrence of waterborne microbial disease outbreak, as defined in Section 64651.91 or other waterborne emergency. (Section 64463.1(a)(4) Tier 1 Public Notice, Title 22, CCR)
- Failure or significant interruption in water treatment processes. (Section 64463.1(a)(4) Tier 1 Public Notice, Title 22, CCR)

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- A natural disaster that disrupts the water supply or distribution system. (Section 64463.1(a)(4) Tier 1 Public Notice, Title 22, CCR)
- Unexpected loading of possible pathogens into the source water that has potential for adverse effects on human health as a result of short-term exposure. (Section 64463.1(a)(4) Tier 1 Public Notice, Title 22, CCR)
- The exceedance of the Nitrate or Perchlorate MCL.

Other Scenarios that may result in a Boil Water Notice

- System pressure loss to less than 5 psi as a result of events such as water treatment plant or pump station shut downs due to equipment failure, power outages, main breaks, emptying of storage facilities, and uncontrolled occurrences such as dewatering of the system during major fire events and natural disasters.
- Dead animals (mice, rats, birds, etc.) observed in a distribution reservoir or groundwater source.
- Repeated non-acute coliform violations.
- Inability to implement emergency chlorination when directed to assure bacteriological water quality standards are met.
- Flooding of wells.
- Reliability of treatment processes is questionable due to operator incompetence, absence, or lack of attention.
- A cross-connection incident involving a microbiological contaminant.
- Deliberate contamination involving a microbial contaminant.

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CANCELLATION OF AN UNSAFE WATER NOTICE (Problem Corrected Notice)

The Department or LPA are responsible for making the determination as to when the Unsafe Water Notice can be cancelled. An Unsafe Water Notice may be cancelled when a PWS has corrected the deficiency and satisfactory sampling results are received. The required corrective measures will be dependent on the particular reason for the unsafe water notice and will be determined on a case-by-case basis. The PWS should coordinate with the Department or LPA to determine the appropriate corrective action and monitoring. It may also be necessary for the Department or LPA to perform onsite verification that the corrections have been made.

Examples of Corrective Action

Deficiency	Corrective Action
1. Acute bacterial violation.	Establish or re-establish disinfection and maintain residuals.
2. Turbidity MCL Violation.	Turbidity drops to acceptable levels throughout system.
3. Unfiltered or unchlorinated surface water entering the system.	Re-establish filtration and/or disinfection.
4. System without water or negative pressure.	Re-establish service and maintain positive pressure.
5. No chlorination for a system required to chlorinate and submit monthly chlorine residual reports.	Re-establish chlorination.
6. Dead animals in contact with the drinking water supply.	Removal of remains and disinfection of the source and system, draining reservoir.
7. Equipment failure.	Repair or replacement of equipment.
8. Inorganic MCL exceedance/violation	Use an alternate compliant source, flush and clean distribution system of contaminate water

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Recommended Sampling

Generally, a Boil Water Notice should not be cancelled until at least two rounds of coliform samples, collected one day apart, have been analyzed by a state accredited laboratory and the results are negative. One round of samples may be sufficient for systems where a treatment deficiency is the cause for the notification and the problem has been corrected and adequate treatment has been re-established. The samples taken should be where they are representative of the contaminating event (i.e. where the Boil Water Notices were distributed), and at separate locations when possible. The number of samples taken to cancel a Boil Water Notice should parallel the population requirement of the Total Coliform Rule (TCR).

It is very important to not cancel a boil water notice until the problem has been corrected. Experience has shown that the minimum of two rounds of coliform sampling has indicated the problem has been resolved and a boil water notice can be cancelled. However, experience has also shown that if a boil water notice is lifted too soon and the problem returns requiring reissuing the boil water notice, it will negatively impact the credibility of the water system as well as the Department, LPA or local health department.

When a "Do Not Drink" or "Do Not Use" notice is issued the recommended sampling for contaminants will be based on the evaluation of the situation by the District Engineer.

When the Department or LPA has made a determination that appropriate corrective action has been taken and that the sampling results show that the water meets water quality standards, a cancellation or "Problem Corrected" notice should be issued by the water supplier. The same delivery methods and agencies notified that were used for the original notice should be used again.

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Date:

BOIL WATER NOTICE

Este informe contiene información muy importante sobre su agua potable.
Tradúzcalo o hable con alguien que lo entienda bien.

BOIL YOUR WATER BEFORE USING

Failure to follow this advisory could result in stomach or intestinal illness.

Due to the recent event [e.g., water outage, power outage, flood, fire, earthquake or other emergency situation], the California Department of Public Health in conjunction with the Santa Cruz County Health Department, and the Scotts Valley Water District's Water System are advising residents of Burlingame to use boiled tap water or bottled water for drinking and cooking purposes as a safety precaution.

DO NOT DRINK THE WATER WITHOUT BOILING IT FIRST. *Bring all water to a boil, let it boil for one (1) minute, and let it cool before using, or use bottled water. Boiled or bottled water should be used for drinking and food preparation until further notice. Boiling kills bacteria and other organisms in the water. This is the preferred method to assure that the water is safe to drink.*

- An alternative method of disinfection for residents that are not able to boil their water is to use fresh, unscented, liquid household bleach. To do so, add 8 drops (or 1/8 teaspoon) of bleach per gallon of clear water or 16 drops (or 1/4 teaspoon) per gallon of cloudy water, mix thoroughly, and allow it to stand for 30 minutes before using. A chlorine-like taste and odor will result from this disinfection procedure and is an indication that adequate disinfection has taken place.
- Water disinfection tablets may also be used by following the manufacturer's instructions.
- Optional: Potable water is available at the following locations: [List locations]
Please bring a clean water container (5 gallons maximum capacity).

We will inform you when tests show that water is safe to drink and you no longer need to boil your water. We anticipate resolving the problem within [estimated time frame].

For more information call:

Scotts Valley Water District – (831) 438-2363

Santa Cruz County Health Department – (831) 454-2022

California Department of Public Health – Drinking Water Field Operations Branch - District Office – (831) 655-6939

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

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Fecha:

ORDEN DE HERVIR EL AGUA

Hierva su Agua antes de Usarla

Falta de seguir este aviso podría tener resultados estómago o enfermedad intestinal

Debido a la [falta de agua (water outage), falta de electricidad (power outage), inundación (flood), incendio (fire), temblor (earthquake) or other emergency], durante [date, month, etc.], el Departamento de Salud Pública de California en conjunción con la Town of Discovery Bay y el Condado de Santa Cruz esta aconsejando a todos usuarios de el sistema de Discovery Bay que hiervan el agua de canilla o usen agua embotellada para beber y cocinar como medida de seguridad.

Que debo hacer?

NO BEBA EL AGUA SIN ANTES HERVIRLA. Hierva toda el agua, **déjela hervir por un minuto**, y déjela reposar antes de usarla, o utilice agua embotellada. Agua hervida o embotellada debe ser usada para beber y para preparar la comida hasta el próximo aviso. Hierviendo mata a bacteria y otros organismos en el agua. Este es el metodo preferido para asegurar que el agua esta segura para beber.

Optional alternative to include for prolonged situations where it fits.

- Otro método de purificación del agua para los residentes que no tengan gas o electricidad disponibles es utilizar blanqueador líquido de uso doméstico (Clorox®, Purex®, etc.). Para hacerlo, añada 8 gotas (o 1/4 cucharadita) de blanqueador por galón de agua clara, o 16 gotas (o media cucharadita) por galón de agua turbia, mézclelo bien y déjelo descansar 30 minutos antes de utilizarlo. Este procedimiento de purificación causa que el agua huela y tenga sabor a cloro, lo que indica que ha sido desinfectada de manera adecuada.
- También se puede utilizar tabletas de purificación del agua siguiendo las instrucciones del fabricante.
- Optativo: Hay agua potable disponible en los siguientes sitios: [List locations]
Traiga un recipiente limpio para el agua (con una capacidad máxima de 5 galones).

Le informaremos cuando las pruebas demuestren que no hay bacterias y que usted ya no necesita hervir su agua. Anticipamos que resolveremos el problema el [date of expected resolution in Spanish day-month-year].

Para mas información, por favor póngase en contacto con:

Contacto del sistema de agua: [contact name] al [phone number] o escribiendo a [mailing address].

Departamento de Salud Pública de California: (831) 655-6939.

Condado de Santa Cruz: (831) 454-2022

Por favor comparta esta información con otros que pueden tomar de esta agua, colocando este aviso en lugares visibles, o remitiéndolo por correo, o entregándolo manualmente. Es de particular interés distribuir este aviso ampliamente si usted lo recibe representando un negocio, un hospital u hogar de infantes u hogar de ancianos o comunidad residencial.

SCOTTS VALLEY WATER DISTRICT
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Scotts Valley Water District

DATE:

CANCELLATION OF BOIL WATER NOTICE

On (Date) you were notified of the need to boil/disinfect all tap water used for drinking and cooking purposes.

The Scotts Valley Water District's Water System in conjunction with the California Department of Public Health, and the Santa Cruz County Health Department, has determined that, through abatement of the health hazard and comprehensive testing of the water, your water is safe to drink.

It is no longer necessary to boil your tap water or for you to consume bottled water.

For more information call:

Scotts Valley Water District – (831) 438-2363

Santa Cruz County Health Department – (831) 454-2022

California Department of Public Health – Drinking Water Field Operations Branch

District Office - (831) 655-6939

SCOTTS VALLEY WATER DISTRICT
EMERGENCY RESPONSE PLAN

Scotts Valley Water District

FECHA:

CANCELACIÓN DEL AVISO DE HERVIR EL AGUA

El (fecha) de _____ le notificaron que tenía que hervir o desinfectar toda el agua de la llave que utilizara para beber y cocinar.

El Sistema de Agua de _____ junto con el Departamento de Salud Pública de California, o la Jurisdicción Local de Salud Ambiental han determinado tras la supresión del riesgo de salud, seguido por un análisis completo del agua, que puede beber el agua de su llave sin peligro.

Ya no es necesario que hierva el agua de su llave ni que consuma agua de botella.

Para más información llame a:

Scotts Valley Water District – (831) 438-2363

Santa Cruz County Health Department – (831) 454-2022

California Department of Public Health – Drinking Water Field Operations Branch
District Office - (831) 655-6939

SCOTTS VALLEY WATER DISTRICT
EMERGENCY RESPONSE PLAN

Date:

UNSAFE WATER ALERT

**Scotts Valley Water District water is possibly contaminated
with [(un)known substance]**

DO NOT DRINK YOUR WATER

Failure to follow this advisory could result in illness.

An unknown substance has been added to the drinking water supplied by the Scotts Valley Water District due to a recent [intrusion; break-in] at [one of the wells; our treatment plant; storage tank; specific facility]. The California Department of Public Health, the Santa Cruz County Health Department, and the Scotts Valley Water District Water System are advising residents of Burlingame to **NOT USE THE TAP WATER FOR DRINKING AND COOKING UNTIL FURTHER NOTICE.**

What should I do?

- ***DO NOT DRINK YOUR TAP WATER---USE ONLY BOTTLED WATER.*** *Bottled water should be used for all drinking (including baby formula and juice), brushing teeth, washing dishes, making ice and food preparation **until further notice.***
- ***DO NOT TRY AND TREAT THE WATER YOURSELF.*** *Boiling, freezing, filtering, adding chlorine or other disinfectants, or letting water stand will not make the water safe.*

OPTIONS

- Optional: Potable water is available at the following locations: [List locations]
Please bring a clean water container (5 gallons maximum capacity).

We will inform you when tests show that the water is safe again. We expect to resolve the problem within [estimated time frame].

For more information call:

Scotts Valley Water District Water Division – (831) 438-2363
Santa Cruz County Health Department – (831) 454-2022
California Department of Public Health – Drinking Water Field Operations Branch
District Office - (831) 655-6939
California Public Water System ID # 4410013

Date Distributed: [date].

Please share this information with all other people who receive this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand.

SCOTTS VALLEY WATER DISTRICT
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Date:

UNSAFE WATER ALERT

**Scotts Valley Water District water is possibly contaminated
with [(un)known substance]**

DO NOT USE YOUR WATER

Failure to follow this advisory could result in illness.

An unknown substance has been added to the drinking water supplied by the Scotts Valley Water District due to a recent [intrusion; break-in] at [one of the wells; our treatment plant; storage tank; specific facility]. The California Department of Public Health, the Santa Cruz County Health Department, and the Scotts Valley Water District Water System are advising residents of Burlingame to **NOT USE THE TAP WATER FOR DRINKING AND COOKING UNTIL FURTHER NOTICE.**

What should I do?

- ***DO NOT DRINK YOUR TAP WATER---USE ONLY BOTTLED WATER.*** *Bottled water should be used for all drinking (including baby formula and juice), brushing teeth, washing dishes, making ice and food preparation **until further notice.***
- ***DO NOT TRY AND TREAT THE WATER YOURSELF.*** *Boiling, freezing, filtering, adding chlorine or other disinfectants, or letting water stand will not make the water safe.*

OPTIONS

- Optional: Potable water is available at the following locations: [List locations]
Please bring a clean water container (5 gallons maximum capacity).

We will inform you when tests show that the water is safe again. We expect to resolve the problem within [estimated time frame].

For more information call:

Scotts Valley Water District Water Division – (831) 438-2363

Santa Cruz County Health Department – (831) 454-2022

California Department of Public Health – Drinking Water Field Operations Branch
District Office - (510) 620-3474

California Public Water System ID # 4410013

Date Distributed: [date].

Please share this information with all other people who receive this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand.

Scotts Valley Water District

PUBLIC NOTICE

CONSUMER ALERT DURING WATER OUTAGES OR PERIODS OF LOW PRESSURE

1. If you are experiencing water outages or low water pressure, immediately discontinue any non-essential water use. This includes all outdoor irrigation and car washing. Minimizing use will reduce the potential for the water system to lose pressure or run out of water. Please notify your water system if you experience an outage or low pressure.
2. If the water looks cloudy or dirty, you should not drink it. Upon return of normal water service, you should flush the hot and cold water lines until the water appears clear and the water quality returns to normal.
3. If you are concerned about the water quality or are uncertain of its safety, you may add eight drops of household bleach to one gallon of water and let it sit for 30 minutes or alternatively, if you are able, water can be boiled for one minute at a rolling boil to ensure it is safe for consumption.
4. Use of home treatment devices does not guarantee the water supply is safe after low pressure situations.
5. Do not be alarmed if you experience higher than normal chlorine concentrations in your water supply since the California Department of Public Health is advising public water utilities to increase chlorine residuals in areas subject to low pressure or outages.
6. The California Department of Public Health has also advised public water systems to increase the bacteriological water quality monitoring of the distribution system in areas subject to low pressure. This may include collecting samples in your area to confirm that the water remains safe for consumption. You will be promptly advised if the sampling reveals a water quality problem.
7. Your water system is committed to ensuring that an adequate quantity of clean, wholesome, and potable water is delivered to you. We recommend that you discuss the information in this notice with members of your family to assure that all family members are prepared should water outages or low water pressure occur.

ANNEX G

WATER SYSTEM RESTORATION AND RECOVERY GUIDELINES

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

The listed **Restoration Issues** should be considered while in the Response mode.

Return to Service

- Level of quality of return
- Criteria

Treatment Options

- Technologies applicable
- Change in existing treatment
- On-site treatment options
- Monitoring
- Staff safety
- Human and environmental impacts

Disposal Options

- Human and environmental impacts
- Pretreatment requirements
- Technologies
- Equipment and supplies
- Personnel
- Power requirements
- Approval and permitting requirements

Rehabilitation Options

- Simple flushing
- Cleaning
- Disinfecting
- Swabbing or pigging
- Sandblasting
- Relining
- None - replacement
- Disposal
- Monitoring and analysis

Public Information

- Information on progress to reduce panic
- May be difficult if threat still exists

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The **Recovery** process begins during the response phase. It is important to start damage inspections, reporting, and recordkeeping as soon as the plan is activated. The items below may assist the water utility in Recovery activities.

Initial Recovery Activities

- Designate a disaster recovery coordinator (may or may not be EOC director) and notify all appropriate regulatory agencies.
- Complete detailed evaluations of all affected water utility facilities and determine priorities for permanent repair, reconstruction, or replacement at existing or new locations.
- Begin repair activities design and make bids for contractor services.
- Make necessary repairs to the system and untag repaired facilities and equipment.
- Restore all telecommunications, data processing, and similar services to full operation.
- Complete assessment of losses and costs for repair and replacement, determine approximate reimbursements from insurance and other sources of financial assistance, and determine how residual costs will be financed by the water utility.
- Define needs for additional staff, initiate recruitment process, and adopt temporary emergency employment policies as necessary.
- Execute agreements with vendors to meet service and supply needs.
- Reevaluate need for maintaining the emergency management organization; consider returning to the normal organizational structure, roles, and responsibilities when feasible.
- Collect cost accounting information gathered during the emergency and prepare request for Emergency Disaster Funds (follow FEMA and State OES requirements).
- Debrief staff to enhance response and recovery efforts in the future by identifying lessons learned, developing action plans and follow-up mechanisms, and providing employee assistance programs if needed.
- Prepare After-Action Reports as required. Complete reports within six months of the event (90 days for public utilities which are part of a city or county government).
- Identify recommendations

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Long Term Recovery Activities

- Initiate permanent reconstruction of damaged water utility facilities and systems.
- Restore water utility operations and services to full pre-event levels.
- Continue to maintain liaison as needed with external agencies.

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

The Recovery Process

This section discusses actions water utilities can take to recover from disasters and mitigate hazards that present a threat during future disasters. It also summarizes the state and federal programs available to assist water utilities in these activities. The success of a recovery program is largely determined by the planning and preparedness that occurs prior to, and the response conducted during, the disaster. It is important to remember that no matter how effective the utilities' programs may be, the possibility of major damage still exists.

Preparing for a disaster includes mitigation activities to prevent or minimize the damage that will occur during a disaster. It includes the hazards assessment and vulnerability analysis discussed in section 3, followed by mitigation. The hazard mitigation program is discussed below. The second important aspect to minimizing the impact to the utility is the emergency response plan. As discussed in many parts of this document, the emergency response plan, and how the response activities are organized and conducted, will affect the time and expense of returning the water utility to normal operations.

The recovery process begins during the response phase. It is important to begin damage inspections and reporting, and recordkeeping as soon as the plan is activated. The items below may assist the water utility in recovery activities.

Initial Recovery Activities

- Designate a disaster recovery coordinator and notify all appropriate regulatory agencies.
- Complete detailed evaluations of all affected water utility facilities and determine priorities for permanent repair, reconstruction, or replacement at existing or new locations.
- Begin repair activities design and make bids for contractor services.
- Make necessary repairs to the system and untag repaired facilities and equipment.
- Restore all telecommunications, data processing, and similar services to full operation.
- Complete assessment of losses and costs for repair and replacement, determine approximate reimbursements from insurance and other sources of financial assistance, and determine how residual costs will be financed by the water utility.
- Define needs for additional staff, initiate recruitment process, and adopt temporary emergency employment policies as necessary.

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

- Execute agreements with vendors to meet service and supply needs.
- Reevaluate need for maintaining the emergency management organization; consider returning to the normal organizational structure, roles, and responsibilities when feasible.
- Collect cost accounting information gathered during the emergency and prepare request for Emergency Disaster Funds (follow FEMA and State OES requirements).
- Debrief staff to enhance response and recovery efforts in the future by identifying lessons learned, developing action plans and follow-up mechanisms, and providing employee assistance programs if needed.
- Prepare After-Action Reports as required. Complete reports within six months of the event (90 days for public utilities which are part of a city or county government.). Identify recommendations for legislation.

Long Term Recovery Activities

- Initiate permanent reconstruction of damaged water utility facilities and systems.
- Restore water utility operations and services to full pre-event levels.
- Continue to maintain liaison as needed with external agencies.

Assistance Programs

The State of California Office of Emergency Services administers several programs designed to assist victims of a disaster. They include Public Assistance, Individual Assistance, and Hazard Mitigation.

Public Assistance Public Assistance (PA) administers state disaster relief programs under the Natural Disaster Assistance Act, and federal disaster assistance programs under various federal laws and regulations, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Public Law 93-288 as amended), the Code of Federal Regulations (CFR), and the State Administrative Manual. These regulations designate the State of California as “grantee” for all federal public assistance funding available to agencies of state government, local governments, and certain private non-profit organizations that provide essential services of a governmental nature to the general public, including water utilities. As grantee, the state is responsible for the processing of sub-grants to public assistance applicants in accordance with 44 CFR, parts 13, 14, and 206, and its own policies and procedures. PA works closely with the Federal Emergency Management Agency to process Damage Survey Reports. It dispatches

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

inspection teams and conducts applicant briefings. This unit is led by OES, with support drawn from other state agencies.

Under the Public Assistance Program, public and private non-profit water utilities may be eligible for public assistance to reimburse the work and associated costs of responding to and recovering from a disaster if the costs:

- Are a direct result of the declared event and not a pre-disaster condition or result of some other event;
- Are located within the area designated by FEMA as eligible for assistance;
- Are the legal responsibility of the eligible applicant; and
- Are not eligible for assistance under another federal program (this applies to permanent restoration work only).

Individual Assistance Individual Assistance (IA) performs a wide variety of functions and involves many state agencies to ensure individual, family, business, and farm recovery from disasters. Private, for profit water utilities may be eligible for disaster assistance in the form of low interest loans or grants to restore damaged structures, or replace inventories. Individual Assistance of this type is generally made available to private businesses when the ability to continue operations is terminated or impaired by a disaster. In addition, employees of a water utility may be eligible for disaster assistance in the form of funds for temporary housing, individual and family grants to meet disaster-related expenses, and loans to individuals for repair or replacement of real and personal property.

Hazard Mitigation Following a presidential disaster declaration, the Hazard Mitigation Grant Program is activated. The program's purpose is to fund projects which are cost-effective and which substantially reduce the risk of future damage, hardship, loss, or suffering from a major natural disaster. Virtually all types of hazard mitigation projects are eligible provided they benefit the declared disaster area and meet basic project eligibility requirements. Types of eligible projects will be identified from those mitigation measures identified in the State Hazard Mitigation Plan, hazard mitigation team reports, and issues unique to the disaster event. The priorities of funding will be established and the program administered by OES.

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Expenditure Documentation

One of the critical aspects of any major emergency or disaster is collecting information on the costs related to response and recovery. The ability of the utility to recover costs or receive disaster assistance from the state and federal governments is predicated on its eligibility and ability to document its costs.

Example of Disaster-Related Expenditure Documentation for a Public Water Utility

All divisions' and departments' staff are required to maintain the documentation outlined below whenever the water utility is involved in the response to a declared (city, county, state) disaster.

Water Utility Staff Labor Expenses

Labor costs include regular and overtime wages and benefits for water utility staff assigned to disaster-caused response or recovery activities, including:

- Persons assigned to perform essential disaster-caused tasks
- Persons conducting damage inspections
- Persons making emergency inspections and/or repairs
- Persons helping to evacuate and secure structures
- Persons conducting cleanup operations
- Persons assigned to record and document disaster-caused costs
- Persons assigned to disaster-caused construction supervision/management
- Persons assigned to disaster-caused vendor contract supervision/management
- Persons required to attend any disaster-caused meetings (internal or external)
- Persons assigned to order and/or pick up disaster-caused supplies and equipment
- Persons assigned to repair equipment used for disaster-caused response and recovery.

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Required Documentation

All labor-related expenses must be documented daily on the Water Utility Emergency Labor Record signed by the employee and the work supervisor. This record must indicate the specific job site where work was performed, including any applicable job number. The Finance Section in the EOC will compile Daily Activity Reports for each person each day and separately for each job site.

Water Utility Equipment Expenses

Equipment costs include expenses for (water utility-established or rate schedules agreed upon by FEMA) all water utility-owned equipment utilized for disaster response and recovery. Only actual equipment usage is eligible for reimbursement. FEMA does not reimburse for equipment standby time.

Required Documentation

All equipment-related expenses must be documented daily on the Water Utility Emergency Job Site Record. This record must indicate the following information:

- Type and description of equipment;
- Specific site where equipment was used, including applicable job number;
- Date and number of hours used per day; and
- Name of operator(s) using equipment, where applicable.

The Finance Section in the EOC will compile Summary Equipment Activity Reports for each piece of equipment, and separately for each job site.

Water Utility Materials Expenses

Materials costs include expenses (actual purchase price) for all water utility-owned materials utilized for disaster response and recovery. Only materials used for disaster-related purposes at a specific job site may be reimbursable.

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Required Documentation

All material-related expenses must be documented daily on the appropriate Water Utility Emergency Job Site Record, including the following information:

- Type and description of material used
- Date and exact amount used
- Category of work material used for
- Specific site where material was used, including applicable job number

Outside Contractors

Materials

Invoices for contractor materials must include the following information:

- Date material furnished
- Description of material
- Quantity of material furnished
- Unit cost of each item
- Total amount of invoice

The Finance Section in the EOC will note directly on each invoice where and/or how the material was used and the specific amount applicable to specific categories and job sites.

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

Equipment Rental

Invoices for equipment rental must include the following information for each piece of equipment:

- Type and description of equipment
- Date(s) used
- Hours used each day
- Rate per hour (indicate with or without operator)
- Total rental cost

Water utility staff must note directly on each invoice where and how the equipment was used, including specific categories and job sites. If equipment is rented from a private owner, responsibility for repair of the equipment should be specified in the rental agreement.

Other Political Subdivisions (Mutual Aid)

Invoices for labor and rental of publicly owned equipment must provide the same details as required by the water utility. The rates used to compute the amount claimed for equipment must be the lesser of either the FEMA-established rates or the water utility rates. Invoices for materials must give the same details as required for vendors. The unit costs used to compute the amount claimed must be the unit cost paid to the supplier, with nothing added for handling, overhead, etc.

ANNEX H

HOME DISASTER PREPAREDNESS GUIDE

**SCOTTS VALLEY WATER DISTRICT
EMERGENCY RESPONSE PLAN**

INTRODUCTION

Local and Federal government emergency services generally concede that they CANNOT fully respond to a major catastrophe in our area in less than 72 hours. This document has been prepared to help you and your neighbors to SURVIVE until government assistance becomes available.

This document is designed to lead you through quick, easy, individual steps to SURVIVE 72 hours. The WHY has been avoided where generally obvious, while presenting the most current information to support the WHAT and HOW.

First, read the document through, and then read it a second time; you'll be surprised what you missed. Second, decide what your family needs to SURVIVE, recognizing that advance preparation greatly improves your family's chances of survival. Using this document without any advance preparation only marginally improves your family's chances of survival in a major catastrophe.

Finally, proceed through the preparation process by overcoming the rationalization that nothing will happen or, if it does, it will "not be that bad." Fires, earthquakes, tornadoes, riots, etc., are reported daily in the news. IT CAN BE THAT BAD! Be diligent in your preparations for an event we hope will never occur. Work with your neighbors to help them prepare too.

To begin using this document following an emergency, turn to **Page 5** and begin with the Day 1 Checklist. The checklist is a table of contents directing you to the appropriate subject.

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

SCOPE

This document is designed to guide you through the basic steps of preparing for a local or area-wide disaster, as well as executing the necessary actions to stay alive during and after a major catastrophe.

ASSUMPTIONS

The assumptions used to prepare this document are as follows:

1. Fire, police, medical and ambulance services may be unable to respond to residential and industrial areas for at least 72 hours following a major catastrophe, because roadways generally may be impassable.
2. Following a major earthquake, most local disaster plans require the CLOSING of all bridges in the area until they can be inspected for safety. This probably will catch many family members away from home and emphasizes the need for advance planning.
3. Hospitals may be full to overflowing with victims from the immediate vicinity who can reach these medical facilities by walking or by driving extremely short distances.
4. Material needs, such as water, food, blankets, etc., will not be available from local or federal government sources for at least 72 hours after the disaster occurs.
5. Electrical power, natural gas, water, sewer and telephone services may be virtually or completely unavailable.
6. If the family home is unable to provide structurally safe shelter, move in with friends, set up shelter outside the home, or possibly, if conditions allow you to get there, move into a motel.

REMEMBER

To Fail to Plan is to Plan to Fail

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EMERGENCY RESPONSE PLAN**

DAY 1 CHECKLIST

IMMEDIATE (1-2 hours) AT HOME:

1. _____ Check for personal injury, be calm
2. _____ Check for fire
3. _____ Account for family members who are home
4. _____ Check for family member injuries
5. _____ Check utilities (no electrical switch movement if gas)
6. _____ Assess home for structural damage
7. _____ Put phone(s) back on hook, make only essential calls
8. _____ Check for damage to car
9. _____ Check water, food, first aid supply
10. _____ Monitor TV/Radio
11. _____ Account for family members away from home

IMMEDIATE (1-2 hours) AT WORK:

1. _____ Check for personal injury, be calm
2. _____ Observe safety of structure/fire - evacuate if necessary
3. _____ Provide emergency aid to co-workers
4. _____ Get 72-hour kit from car. Put on heavy shoes, jacket.
5. _____ Turn on car radio. Listen for emergency information:
6. _____ Check in with out-of-area/state emergency phone contact
7. _____ Be sure your car is safe to drive.
8. _____ If car is left, leave name on a note and what route taking.
9. _____ Beware of dehydration, drink at least a pint of water.
10. _____ Eat if you feel like it and have water available.
11. _____ Take medications on time. Set your watch.
12. _____ Keep checking in with out-of-area/state.
13. _____ Observe weather conditions.

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EMERGENCY RESPONSE PLAN**

AFTER INITIAL DISASTER (2-12 hours):

1. _____ Recheck yourself and your family member's needs.
2. _____ Perform structural inspection
3. _____ Evacuate home (if required)
4. _____ Evacuate area (if required)
5. _____ Set up sanitation facility
6. _____ Check on neighbors
7. _____ Eat/drink/rest
8. _____ Monitor TV/Radio

REMAINDER OF DAY (12-24 hours):

1. _____ Recheck first aid needs
2. _____ Improve shelter as required
3. _____ Monitor TV/Radio
4. _____ Set up alternative heat sources
5. _____ Salvage debris for potential use
6. _____ Collect garbage
7. _____ Check on neighbors
8. _____ Set up job assignments
9. _____ Eat/drink/rest

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EMERGENCY RESPONSE PLAN**

DAY 2 CHECKLIST

1. _____ Check for personal injury
2. _____ Check for radio, TV messages
3. _____ Check food, water
4. _____ Assure phone is on hook
5. _____ Evacuate home (if required)
6. _____ Evacuate area (if required)
7. _____ Check sanitation facility
8. _____ Check on neighbors
9. _____ Collect garbage
10. _____ Take pictures, notes for recovery assistance

DAY 3 CHECKLIST

1. _____ Check personal injuries
2. _____ Listen for radio, TV messages
3. _____ Check sanitation facility
4. _____ Check on neighbors
5. _____ Report status
6. _____ Collect garbage
7. _____ Take pictures, notes for recovery assistance

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EVACUATE HOUSE

1. _____ Locate family members
2. _____ Turn off gas only if you smell gas
3. _____ Load 72-hour kit in car
4. _____ Load important papers
5. _____ Turn off water
6. _____ Turn off unnecessary electrical appliances, except
refrigerator / freezer
7. _____ Place telephones on hook
8. _____ Lock all doors, including garage
9. _____ Lock all windows
10. _____ Load family and pet(s) into car
11. _____ Lock front door as you leave
12. _____ Review evacuation route map
13. _____ Leave note telling where you can be contacted
14. _____ Leave

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

Note: Do not enter buildings that are unsafe. Further collapse may occur due to aftershocks.

TURN OFF UTILITIES

GAS:

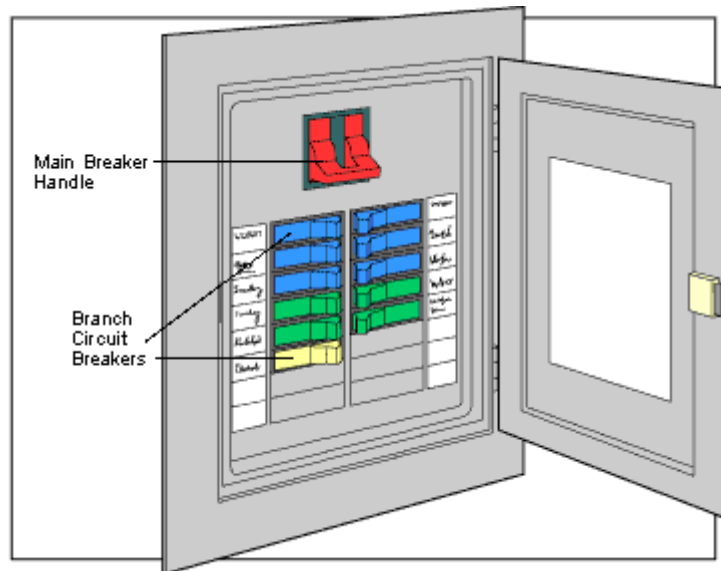
1. Turn gas off **ONLY** if you smell gas.
2. If you do smell gas, open the windows and leave the house. **DO NOT** use the phone. **DO NOT** turn **OFF** any electrical switches, or anything that will cause a spark.
3. Turn OFF the main gas shut-off valve. This valve is located next to your gas meter outside the house. Use a crescent wrench to turn the valve one quarter-turn, in either direction, to the "OFF" position (vertical is "ON" (!); horizontal is "OFF" (--)).
4. For safety purposes, only the gas company should turn the meter back on. Only turn the gas off when absolutely necessary. **DO NOT** experiment with the valve to see if it is "working." To have it checked, call the utility company for assistance.



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ELECTRICITY:

1. Turn “OFF” **ONLY** if you see sparks or a fallen wire, or have reason to believe there is an electrical system malfunction.
2. Locate the main circuit box. It may be outside the house (often near gas meter), in the garage toward the outside wall, or in the hall in one of the rooms (primarily apartments).
3. Locate the “Main” circuit breaker or fuse. Turn the circuit breaker to the “OFF” position/or pull the fuse out.
4. To restore electrical service call your power company.



WATER:

1. Turn off water service of the house. It is usually located in the front of the house near the hose bib. If there is damage to the piping in this area, or you are unable to locate the shut off, turn off at the water meter.
2. Locate the main shut-off valve outside the house. It is usually in a concrete box at ground level next to the sidewalk with cover that says “Water Meter”. You will need a screw driver/knife/stick to open the metal cover.
3. Turn the valve clockwise to turn “OFF”. Replace the cover.
4. Turn each valve counterclockwise (to the left) to restore water flow.
5. For any concerns regarding your water, contact your local water company.

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EMERGENCY RESPONSE PLAN**

DETERMINE EVACUATION ROUTES

EVACUATION FROM YOUR HOME:

1. Keep detailed maps of the local area in your car. Have each potential evacuation route noted with a marking pen.
2. Drive those routes that you do not normally travel so you are aware of any changes. It is vital that you completely understand each of these routes now as your mind could go blank in a crisis.
3. It is also important to keep your car in good condition so you can leave on a moment's notice. Have extra oil, oil filter, and water available. Storing large amounts of gasoline (5-10 gallons) around your home, even in approved containers, is **NOT** advised due to the explosion hazard. Always keep your car gas tank at least half full. Snow chains and jumper cables should be kept in your car at all times. Extra wiper blades, fan belts, tow rope, signal whistle, and mirrors are also useful.
4. Be sure to include a 72-hour kit for each family member.
5. If appropriate, turn off utilities (Page 9) before evacuating your home. Leave a note in a prominent position on the outside of your home to let others know you are okay and where you may be contacted.

EVACUATION FROM YOUR BUSINESS TO YOUR HOME:

This will depend very much on the type of disaster.

Fire

Take your normal route home as this is assumed to be a local disaster.

Earthquake

ALL bridges will likely be closed to traffic. If you must use a bridge to cross a river, a lake or another highway, decide if you can get home by another route that has no bridges or overpasses. If this alternate route can be made on foot only or part way by auto and part by foot, decide if you are physically capable of walking the distance. Leave a note on your car stating where you are and what route you are taking home, e.g., "Plan B: (be sure your family fully understands that route). Be sure to have your 72-hour kit in your car.

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In An Earthquake

DROP, COVER, and HOLD

Earthquake procedures in the home or office

At the first indication of ground movement, you should **DROP** to the ground. It will soon be impossible to stand upright during the earthquake. Getting to the ground will prevent being thrown to the ground.

You should seek protective **COVER** under or near desks, tables, or chairs in a kneeling or sitting position. If in a hallway, drop next to an inside wall in a kneeling position and cover the back of the neck with your hands.

You should **HOLD** onto the table or chair legs. Holding onto the legs will prevent it from moving away from you during the quake. Protect your eyes from flying glass and debris with your arm covering your eyes.

You should remain in the DROP position until ground movement ends. Be prepared to DROP, COVER and HOLD during aftershocks.

After ground movement ends, check for injuries and safely evacuate the building. Move to a safe, open area, away from power lines and other overhead hazards.

Earthquake procedures while outside or in a vehicle

At the first indication of ground movement, move away from overhead hazards such as power lines, trees, and buildings. **DROP** to the ground and **COVER** the back of the neck with your hands. Be aware of aftershocks. Do not re-enter buildings until it is determined safe to do so.

While in a vehicle, you should pull over to the side of the road and stop. If you are on a bridge, overpass, or under power lines, continue on until you are away from the overhead dangers. Wait until the ground movement stops and check for injuries. Be aware of aftershocks, downed wires, or roads blocked by debris.

**SCOTTS VALLEY WATER DISTRICT
EMERGENCY RESPONSE PLAN**

LOCATE CHILDREN

Know how to get to them at school and at play

AT SCHOOL:

- They should remain at school until you come for them. Make sure your child understands it may take a while to get to them (see Children's 72-hour kit (page 27)).
- Plan ahead to have someone pick them up if you are unable to get to them. Know the policies of your school or daycare center. Most schools require a letter be kept on file giving specific permission for someone else to pick up your child, e.g., your mother, daycare provider, etc.
- Contact your child's school to determine if and where they will be moved if school evacuation is necessary.

AT PLAY:

- Agree on a place to meet--neighbor, relative, home. Sometimes it will be safer for the children to stay right where they are. Train your children to know when it is safe to go somewhere else and when it is safe to stay where they are.
- Reassure children. They probably will still be afraid after the disaster, even when you are united. Let them talk -- listen to them.
- Rehearse these situations after Sunday dinners, first day of school, first day of summer vacation, etc., so they really know what to do.

**SCOTTS VALLEY WATER DISTRICT
EMERGENCY RESPONSE PLAN**

DETERMINE FAMILY ASSEMBLY POINT

HAVE FAMILY PLANNING MEETINGS:

Make decisions where to meet. The following suggestions are provided:

1. Where to meet after a disaster:

- Home, if possible
- Neighbor's
- Relative or friend

2. In case of fire:

- Next door
- Nearby corner
- Neighbors

Go over the plan often; keep it up-to-date. Playact different situations and practice the plan to see if you need to make changes.

Review on each family member's birthday.

Each family member should carry the phone number of a relative or family friend who lives far from your home. If family members are separated at the time of the major catastrophe, they should try to call the relative/friend and tell them they are OK and where they are going, or where they are staying. (Often times you can call out of a disaster area, but no one can call in.) This simple action can bring much comfort to many people, including yourself.

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

RECREATIONAL ACTIVITIES

After we do all we can it is important to be able to take children's minds and ours off the disaster. Have games of all kinds, books, toys, portable radios, coloring books and crayons, etc.

If you must evacuate, take the following:

- Portable radios
- Favorite snacks
- Card games (Skip Bo, Old Maid, etc.)
- Game books (crossword puzzles, word search, etc.)
- Favorite books
- Favorite toy, stuffed animal
- Small pocket games
- Pencils and paper
- Coloring books and crayons

Be sure to include some of these items in you 72-hour kit.

**SCOTTS VALLEY WATER DISTRICT
EMERGENCY RESPONSE PLAN**

EMERGENCY PREPARATIONS

FOOD STORAGE GUIDE

The following pages provide basic food storage information. In general, you should try to have foods that are:

- Non-perishable (canned or dried)
- Nourishing (from each of the basic food groups)
- Easily prepared and served
- Able to be eaten as-is (to conserve water and cooking heat)
- Completely edible, in small servings, with little or no waste or leftovers.

Store only food that you normally eat. Avoid commercial storage foods that contain items that are not part of your normal diet, or that you are unfamiliar with. It is important to maintain a sense of normalcy in any emergency to keep everyone calm. “Normal” food will help to achieve this good feeling. It is very common that people are not hungry for the first 24 hours after a catastrophe. Their bodies will tell them when to eat. Remember to include baby foods, special dietary foods, favorite snacks, and food for your pets.

STORAGE

Keep food stored in the driest, coolest and darkest areas. Monitor storage area temperatures.

Critical Storage Temperatures

- 32 degrees F - Freezing
- 48 degrees F - Insects become active
- 95 degrees F - Fats melt

Storage Containers

Metal storage cans or heavy plastic containers with airtight lids are recommended.

- Use unbreakable containers, if possible.
- Do not stack breakable storage containers.
- Only plastic containers that are approved by the FDA should be used to store food or water. If you don't know, ask at the place of purchase or the manufacturer. Determined rodents are known to gnaw through heavy plastic containers.
- Date all containers when placed in storage and rotate on a regular basis to insure freshness.

SCOTTS VALLEY WATER DISTRICT EMERGENCY RESPONSE PLAN

Food Storage Tips

1. Store NOTHING on cement floors. Place slats of lumber between cement and the storage area to prevent sweating and rusting.
2. Store supplies in various locations in the house; if one part is damaged, you still have something left.
3. ALWAYS obtain top grade food products for storage.
4. Approximately 2 percent of food value is lost each year in canned foods stored under ideal conditions.
5. Buy nitrogen-packed food when possible. It has longer storage life, better quality and no insect infestation.
6. Heavy wire or a small piece of lumber should be attached to the front of storage shelves to keep contents from falling in the event of an earthquake.
7. Use clear plastic bags for food storage; colored plastic bags have been chemically treated and SHOULD NOT be used to store food.
8. Food, unlike water, may be rationed safely, except for children and pregnant women.

WATER STORAGE GUIDE

Stocking water reserves and learning how to purify contaminated water should be among your top priorities in preparing for an emergency. You should store at least one gallon of water per person per day for *at least* three days, preferably, two weeks. Children, nursing mothers, and ill people will need more. You will need additional water for food preparation and hygiene.

If your supplies begin to run low, remember: **Never ration water.** Drink the amount you need today, and try to find more for tomorrow. You can minimize the amount of water your body needs by reducing activity and staying cool.

Water Storage Tips:

You can store your water in thoroughly washed plastic, glass, fiberglass, or enamel-lined metal containers. Never use a container that held toxic substances, because tiny amounts may remain in the container's pores. Plastic soda bottles will degrade and have to be replaced at least every six months. Containers that are FDA approved for water storage are best. Replenish your water supplies annually (when you inventory all your emergency preparations).

Before storing your tap water, treat it with a preservative, such as chlorine bleach, to prevent the growth of microorganisms. Use liquid bleach that contains 5.25 percent sodium hypochlorite and no soap, dyes, or scenting. See the Purification table below for proper amounts.

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HIDDEN WATER SOURCES IN YOUR HOME:

If a disaster catches you without a stored supply of clean water, you can use water in your hot-water tank, in your plumbing, and in ice cubes. As a last resort, you can use the water in the reservoir tank of your toilet (not the bowl), but only if has never held any bowl cleansers, and you purify it.

To use water in your pipes, let air into the plumbing by turning on the highest faucet in your house and draining the water from the lowest one.

To use water in your hot-water tank (water heater), be sure the electricity or gas is off, and open the drain at the bottom of the tank. Start the water flowing by turning off the water intake valve and turning on a hot water faucet. Do not turn on the gas or electricity when the tank is empty (post a note next to the thermostat not to use it, just in case.)

Do you know the location of your incoming water valve? You'll need to shut it off to stop contaminated water from entering your home if you hear reports of broken water or sewage lines.

WATER PURIFICATION:

In addition to having a bad odor and taste, contaminated water can contain microorganisms that cause diseases such as dysentery, cholera, typhoid, and hepatitis. You should therefore purify all water of uncertain purity before using it for drinking, food preparation, or hygiene.

There are many ways to purify water. None are perfect. Often, the best solution is a combination of methods. Before purifying, let any suspended particles settle to the bottom, or strain them through layers of paper towel or clean cloth. Three purification methods are outlined below. These measures will kill microbes but will not remove other contaminants such as heavy metals, salts, most other chemicals and radioactive fallout.

Boiling

This is safest method of purifying water. Bring water to a rolling boil for 10 minutes, keeping in mind that some water will evaporate. Let the water cool before drinking. Boiled water will taste better if you put oxygen back into it by pouring it back and forth between two containers. This will also improve the taste of stored water.

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Chlorination

Uses liquid chlorine bleach to kill microorganisms.

Chlorination Table

For this amount of clear water	Use this amount of bleach*	Let stand this amount of time
1 quart	2 drops	30 minutes
1 gallon	8 drops	30 minutes
5 gallons	1 teaspoon	30 minutes

** 5.25 percent sodium hypo chlorite without soap, dyes, or scents*

If the water is cloudy, double the amount of bleach above, stir, and let stand 30 minutes. If the water does not taste and smell of chlorine at that point, add another dose and let stand another 15 minutes.

If you do not have a dropper, use a spoon and square-ended strip of paper or thin cloth about ¼ inch by 2 inches. Put the strip in the spoon with an end hanging down about ½ inch below the scoop of the spoon. Place bleach in the spoon and carefully tip it. Drops the size of those from a medicine dropper will drip off the end of the strip.

Purification Tablets

Releases chlorine or iodine. They are inexpensive and available at most sporting goods stores and some drugstores. Follow the package directions. Usually one tablet is enough for one quart of water; double the dose for cloudy water.

**SCOTTS VALLEY WATER DISTRICT
EMERGENCY RESPONSE PLAN**

FAMILY EMERGENCY FIRST- AID KIT

- Box to hold supplies
- First aid Manual
- 1 Ace Bandage, 3" wide
- Rescue Blanket
- 2 Rolls Adhesive Tape, 10 Yds.
- 12 Assorted Safety Pins
- Alcohol Swabs
- Trauma Scissors
- Ammonia Inhalant
- Cotton Balls
- Antacid Tablets
- Feminine Hygiene Supplies
- Antibacterial Soap
- Eye Drops
- 20 Aspirin Tablets/Children's Tylenol
- Heat Tablets
- 12 Band-Aids, Medium Size
- Thermometer
- Compresses (strips 2" wide)
- Ice Bag or Cold Pack
- 5 Triangular bandages (40" square)
- Extra Pair of Eyeglasses
- Table Salt
- 2 Face Cloths
- Ipecac (Induce Vomiting)
- Matches In Waterproof Container
- Diarrhea Medicine
- First-aid Ointment, Antibacterial
- Cotton-Tipped Swabs
- 8 Gauze Pads, 2" x 8"
- Butterfly Bandages
- 8 Gauze Pads, 3" x 3"
- Splints (finger, arm, leg)
- 8 Gauze Pads, 4" x 4"
- Hydrogen Peroxide
- 3 Rolls of Gauze, 2" x 10 Yds.
- Calamine Lotion
- Methiolate or Iodine
- Tweezers
- Razor and Blades
- Snake Bite Kit
- Prescription Drugs
- 2 Pair Latex Gloves
- Duct Tape

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FIREFIGHTING TECHNIQUES AND EQUIPMENT

The firefighting techniques listed below are only for small fires. Leave the big fires for the pros. If the pros are unavailable, do your best to keep the fire from spreading. For all the firefighting techniques described below, apply at the base of the fire, not at the flames themselves.

SYMBOLS & COLORS FOR EXTINGUISHER CLASSES BASED ON TYPE OF FIRE FUELS	INTENDED FIRE EXTINGUISHER PURPOSE	TYPE OF FIRE EXTINGUISHING AGENT(s) REQUIRED
  Ordinary Combustibles	Class A Extinguishers – For ordinary combustibles like wood, cloth, plastic, paper, rubber etc.	Water, Foam Dry Chemical
  Flamable Liquids	Class B Extinguishers – For fires due to flammable liquids like oil, gasoline, oil-based paints, petrol etc.	Foam Dry Chemical Carbon Dioxide
  Electrical Equipment	Class C Extinguishers – For fires generating from equipment or appliances connected to electricity.	Dry Chemical Carbon Dioxide
  Combustible Metals	Class D Extinguishers – For flammable metal. Needs special extinguishing agents. Found typically in factories.	
  Combustible Cooking	Class K Extinguishers – For combustible cooking oils like vegetable oils, fats, animal oils & more. In general meant for commercial kitchens.	Foam Carbon Dioxide

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TECHNIQUES

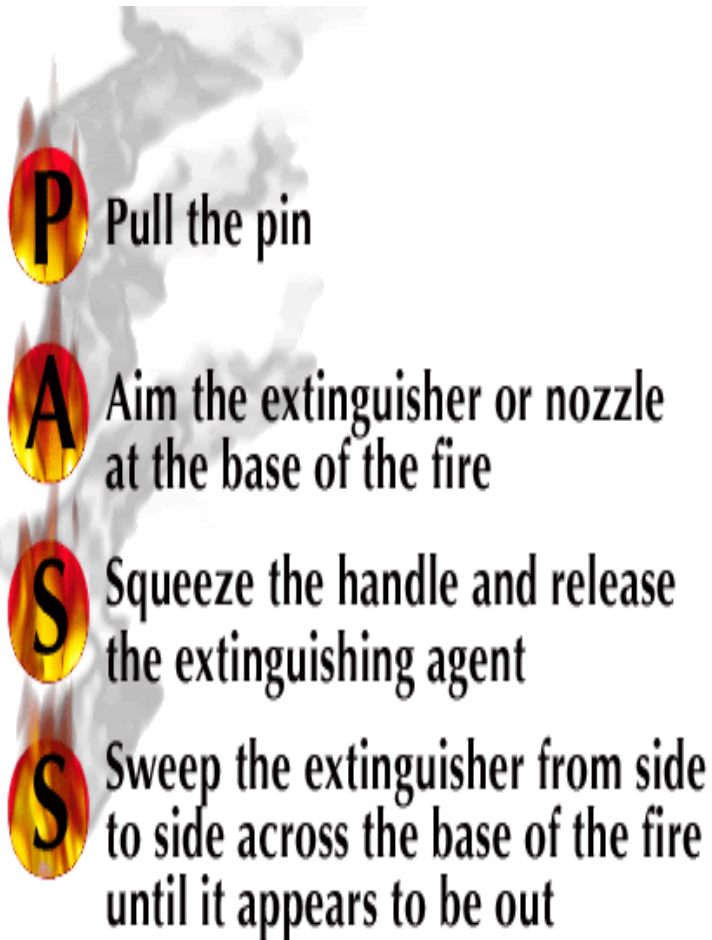
WATER:

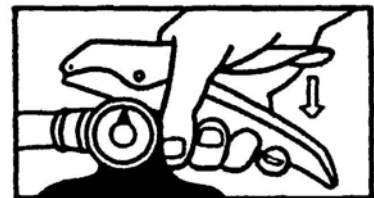
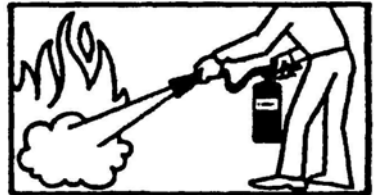
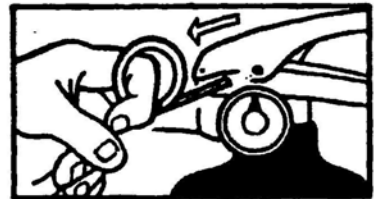
Water is the most common and generally most effective extinguishing agent. Good for wood and paper-type fires. Apply at base of fire. **DO NOT** use water on burning oil, gasoline, kerosene, diesel or electrical wiring. Water will only cause the fire to spread, or cause you to receive an electrical shock.

EXTINGUISHER:

Fire Extinguisher Operation

P.A.S.S.

- 
- P** Pull the pin
 - A** Aim the extinguisher or nozzle at the base of the fire
 - S** Squeeze the handle and release the extinguishing agent
 - S** Sweep the extinguisher from side to side across the base of the fire until it appears to be out



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PREFERRED FIRE EQUIPMENT

Water Hose

50 - 100 feet long with adjustable spray nozzle.

Hand-held Extinguisher

At least 2-A:B:C fire extinguishers will be suitable for all types of small home fires.

EMERGENCY SHELTERS

GEODESIC DOME TENT:

Considered by some to be the best tent on the market today. They are space efficient, repel water, very sturdy and are easy to set up. Be sure to fit the tent to your family plus some margin. For example, an 8-person rated tent would be more comfortable for six people. Putting a plastic tarp over the tent, with an airspace, will provide better protection in heavy rain.

CAMPING TENTS:

A good waterproof material is required. A tent with a tent liner is more expensive but will keep the inside very cozy when the outside temperature is very cold. Size the tent as in the geodesic dome. You may be able to get military surplus tents that require repairs. However, while they are rugged and warm, they are bulky and very heavy.

POLYETHYLENE PLASTIC SHEETS:

10 x 15 foot sheet can provide adequate warm weather shelter for the average family.

RECREATIONAL VEHICLES:

MOTOR HOMES, TRAILERS, AND TENT TRAILERS MAKE IDEAL SHELTERS.

IMPROMPTU SHELTERS:

Consult Boy Scout, mountaineering and survival handbooks on how to build shelters for the emergency environment using available materials. Utilize materials from damaged buildings such as 2x4's, plywood, etc.

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ALTERNATIVE SOURCES OF HEATING, COOKING AND LIGHTING

The following are ideas for alternate sources of heat; cooking and lighting that could be used in an area-wide catastrophic or emergency event.

HEATING:

Use blankets and clothing to stay warm. Heat packs are an inexpensive way to warm hands and feet. These chemical source heat packs come in a variety of sizes and prices. The longevity and temperature of these heat packs vary from 130 degrees F. for two (2) hours to 160 degrees for 12 hours. Some of them are also reusable.

COOKING:

Camp stove, or Barbecue may be used outdoors **ONLY.**

LIGHTING:

Lighting is very important; it provides a lot of reassurance in the dark. New products are developed constantly to provide ways to “light the way”. (1) battery-operated lanterns, (2) hand-held flashlights, and (3) light stick (light producing chemicals). Convenience and feasibility should be kept in mind. If you need both hands free, a battery-operated lantern with a head strap is best. Make sure you have spare batteries in the appropriate size needed for your lighting source.

SANITATION FACILITIES

PERSONAL HYGIENE SUPPLIES:

- “Tall Kitchen” white plastic bags (1-2 packages) with ties
- Toilet paper or diaper-wipes

Bail out toilet: use the water in the reservoir for drinking (only if there has NEVER been any disinfectant used in the tank). Place the bag over the edges of the seat, and then use the bag. After use remove from toilet, and dispose of it in a slit trench or bury it thoroughly. You can use diaper-wipes (containing alcohol) in place of toilet paper. The added disinfectant will help reduce the spread of disease when soap and water are hard to come by. If a toilet is not available, a large can or 5-gallon bucket can be used, following the same procedure as above.

HOUSEHOLD TRASH SUPPLIES:

- Keep trash away from the house and out of reach of dogs and other animals.
- Use 32-40 gallon heavy-duty plastic bags (2-3 packages) with ties.
- Collect household trash per normal living standards. When full, tie off very securely. Set off in yard

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QUICK FIX 72-HOUR PERSONAL AND CAR / HOME KIT:

CONTAINERS

Kit containers can be pillowcases, small daypacks, old duffel bags, or whatever your ingenuity comes up with. Just remember that you may end up carrying it some distance, so plan accordingly.

WATER

1 gallon per day for each person in your vehicle. (More water will be needed for small children/babies if dehydrated baby food and formula is used, plus nursing mothers).

FOOD

12 (2-bar) packs of granola bars, times the number of people your car will carry, protected by sealing in boilable, seal able bags. (Granola bars should be replaced yearly.) Dehydrated baby food in plastic zipper bags resealed in boilable, seal able bags is an alternative.

WARMTH

Heavy-duty space blanket or wool blanket for each occupant of the vehicle. Any blanket is better than nothing, but warmth is important. Heat packs are an inexpensive way to warm hands and feet.

LIGHT

Small, sturdy flashlight (2 sets extra batteries / 2 extra light bulbs). Three (3) Cyalume plastic light sticks that last 12 hours each without producing heat or acting as a fire hazard.

RADIO

Small, inexpensive AM radio and two spare batteries. Replace batteries at Christmas. Solar/battery powered radios are available.

TOILET

Four "tall kitchen" white plastic bags, and ties.

PERSONAL HYGIENE

Bar soap, shampoo, toothbrush / toothpaste, deodorant, feminine hygiene supplies, baby wipes, baby diapers and baby powder.

FIRST AID

Rubber gloves - 4 pairs; six Band-Aids; six alcohol wipes; Neosporin ointment - 1 small tube; Aspirin/Tylenol - 1 small bottle; roll of clinging gauze, insect repellent - 1 small can; six - 4" x 4" dressings; and prescription medications, spare set of eyeglasses.

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CLOTHING

One change of clothing should be sufficient except where very small children are concerned. Although an adult may be uncomfortable, the same clothing can be worn for 72 hours, depending upon circumstances. Also, a good pair of leather, work gloves should be added to the adult kit.

CAR KITS

For your basic car kit, simply multiply the personal kit times the number of people your vehicle will hold. Because your car will hold more, consider an additional 50 feet of parachute cord and a pair of boots/heavy walking shoes for each member of the family. Remember, do not use new boots or shoes; you do not want to break them in during an emergency. Add other items as you find necessary, but remember you may end up carrying them if you have to abandon your vehicle. In addition to these personal articles, you should include the following for your car:

- Tow Rope
- Booster Cables
- Flares
- 3A-40BC Fire Extinguisher

OTHER

- Boy Scout handbook, survival book, Map of your area
- Food, water, and leash or carrier for pets
- Money-at least \$20 (small bills, some change). Credit Cards may be useless if there is no power in the area.
- Signal whistle and mirror
- Extra house/car keys
- Watch or clock (battery or wind-up)
- Paper plates, cups and plastic utensils
- Paper, pens, stamps
- Game books, crayons, pocket games

NOTE:

Understand the difference between NEEDS and WANTS.

NEEDS = What will help you survive

WANTS = Useless weight, space

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CHILDREN'S 72-HOUR SCHOOL KIT:

CONTAINERS

Kit containers can be green plastic bags, small day pack, pillowcase, etc.

WATER

1 Gallon of water per day.

FOOD

Nine (2-bar) packs of granola bars, and a few of their favorite snacks. Protect unopened individual packages in plastic zipper bags.

WARMTH

Heavy-duty space blanket.

LIGHT

Three (3) Cyalume plastic light sticks that last 12 hours each.

RADIO

Small, inexpensive AM radio and two spare batteries. Replace batteries at Christmas. Solar/battery powered radios are available.

INFORMATION

5 x 7 cards with names, phone numbers, addresses of next of kin in and out of state. Picture of family. Small stuffed cuddly animal for smaller children. Letter from parents to child, saying that you love him/her, be good, and you will be there when you can.

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IMPORTANT DOCUMENTS

Copies of the following documents should be kept readily available in a waterproof container, or even in a 72-Hour Home Kit.

(Originals should be stored in a safety deposit box).

- Social Security Cards
- Birth Certificates
- Stocks and Bonds
- Driver's License
- Money and Credit Cards
- Savings/Checking Account Book
- Wills
- Insurance Policies
- Deeds
- Genealogy
- Address & Telephone Numbers

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REHEARSALS

THE BEST PLANS ARE USELESS UNLESS THEY ARE EXERCISED

When a catastrophe strikes, everyone in your home needs to understand what they are supposed to do. Rehearsing your emergency response plan best instills that knowledge. The following activities are suggested:

1. Contact your local emergency management or civil defense office and American Red Cross chapter to find out the following.
 - What types of disasters are likely to happen in your area?
 - What are your community's warning signals: What they sound like and what you should do when you hear them?
 - Ask about animal care during and after a disaster. Animals may not be allowed inside emergency shelters due to health regulations.
2. Read this "Emergency Preparedness section completely through at least twice.
3. Take a course in basic First Aid and CPR.
4. Show your spouse and older children where the gas, water and electrical utilities are located. Show how to turn these utilities off. **DO NOT MOVE THE GAS SHUT OFF VALVE.** You may inadvertently turn off the gas, which should only be turned back on by the gas utility company. Assign each individual a responsibility, with another assigned as a backup.
5. Practice your emergency evacuation route from your home/place of employment at least twice a year. Also drive the alternate route along the way at least twice a year. (Find out about disaster plans at your work place, your children's school or daycare center and other places where your family spends time.)
6. Be sure everyone knows where the water, food and medical supplies are located.
7. Use family gatherings to practice various parts of your emergency response plan, e.g., how to turn off utilities, practice first-aid techniques, etc.
8. After everyone is trained, use a family gathering, or some other convenient time, to run through the Day 1 Checklist, 0-2 hours. If your individual practices were done correctly, this "dress rehearsal" should work well. If it does not, simply review what was not done well and decide how to improve it for your circumstances.
9. Give special consideration for care of small children and handicapped persons.

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PET CARE

Here are some steps you can take now to protect your animal companions in case disaster strikes.

1. Make sure that your pet has a current license or ID tags and proof of vaccinations. Animals should always wear identification. During an emergency, frightened animals can quickly slip through open doors or windows. The disorienting effects of an earthquake or fire may cause them to lose their way.
2. Include the following pet supplies in your family emergency kit:
 - Pet Food
 - Potable water in a non-breakable container
 - Food Dishes
 - Newspaper and/or paper towels
 - Blankets
 - Special medication, regularly checked for expiration
3. Pet carriers and leashes should be stored near your emergency supplies, preferably by an outside door. Carrying a frantic cat or dog in your arms is nearly impossible, especially when you are frantic too!
4. Keep all property fences in good repair. Even a small hole can become an avenue of escape during an emergency.

AFTER THE EMERGENCY:

Like their human counterparts, animals deal with disaster in different ways. Be patient, and watch for potential problems.

1. If possible, try to keep your animals inside. Dogs and cats will look for any avenue of escape to avoid a frightening situation.
2. Check birds immediately. Birds can break blood feathers while frantically flying around in their cage. If not treated at once, they can easily bleed to death. If you notice the bird bleeding from a broken blood feather, immediately pull out the feather.
3. As a comfort to your animals, keep the household calm and quiet. It also helps to their favorite toy and bedding available. Familiar objects and smells are always calming.
4. Allow animals to cope in ways that work for them. Don't worry if they want to hide out for a while or refuse food for a day or two.
5. Don't coddle! Give your pet extra rations of love and understanding during the emergency, but try not to overreact.

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IF YOUR ANIMAL ESCAPES:

Despite your best efforts, your animal may manage to escape during the commotion of the emergency. Don't give up! Get to work quickly:

1. Call your local Animal Control Officer and report the loss.

Call the Humane Society and report the lost animal.

2. Distribute "Lost" posters around the neighborhood. Be sure to include a current photograph of your animal, a description, the animal's name, your name, address and phone number, and any other pertinent information about your pet.
3. Go door-to-door. Talk with your neighbors about your lost pet. Describe the animal to them, give them a copy of your poster and ask them to help spread the word.
4. Leave a scent trail. Dragging a personal article of clothing along the ground leading to your home may enable your dog or cat to follow this familiar scent home, even if they are disoriented.
5. Like children, animals are sensitive to your reactions. If you act as if everything is fine, they will feel better.

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ADDITIONAL EMERGENCY INFORMATION:

To obtain additional emergency and earthquake preparedness information contact the following agencies:

American Red Cross (ARC)

National Headquarters Web Site: www.RedCross.org

Federal Emergency Management Agency (FEMA)

Web Site: www.fema.gov