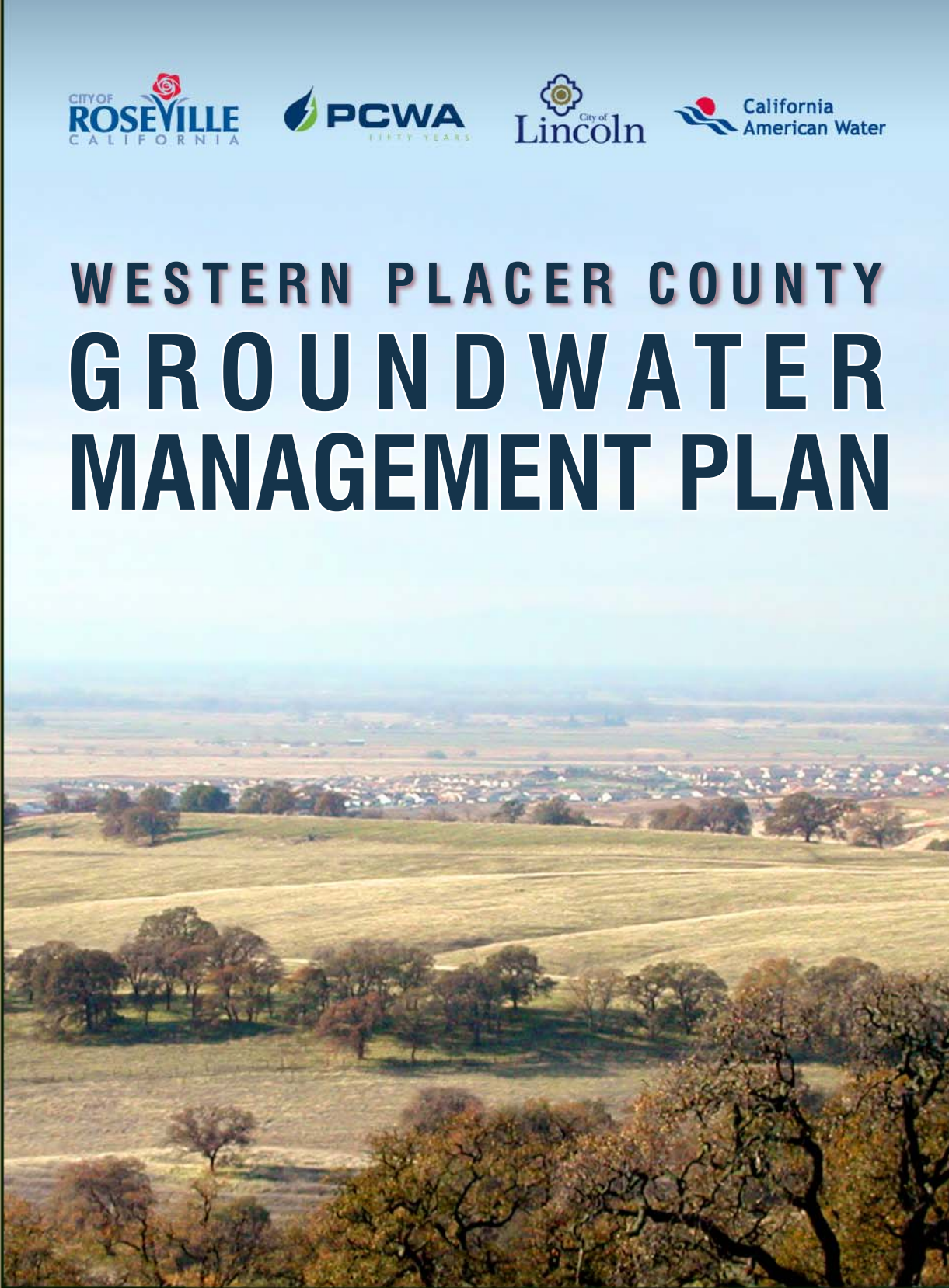


WESTERN PLACER COUNTY GROUNDWATER MANAGEMENT PLAN



NOVEMBER 2007

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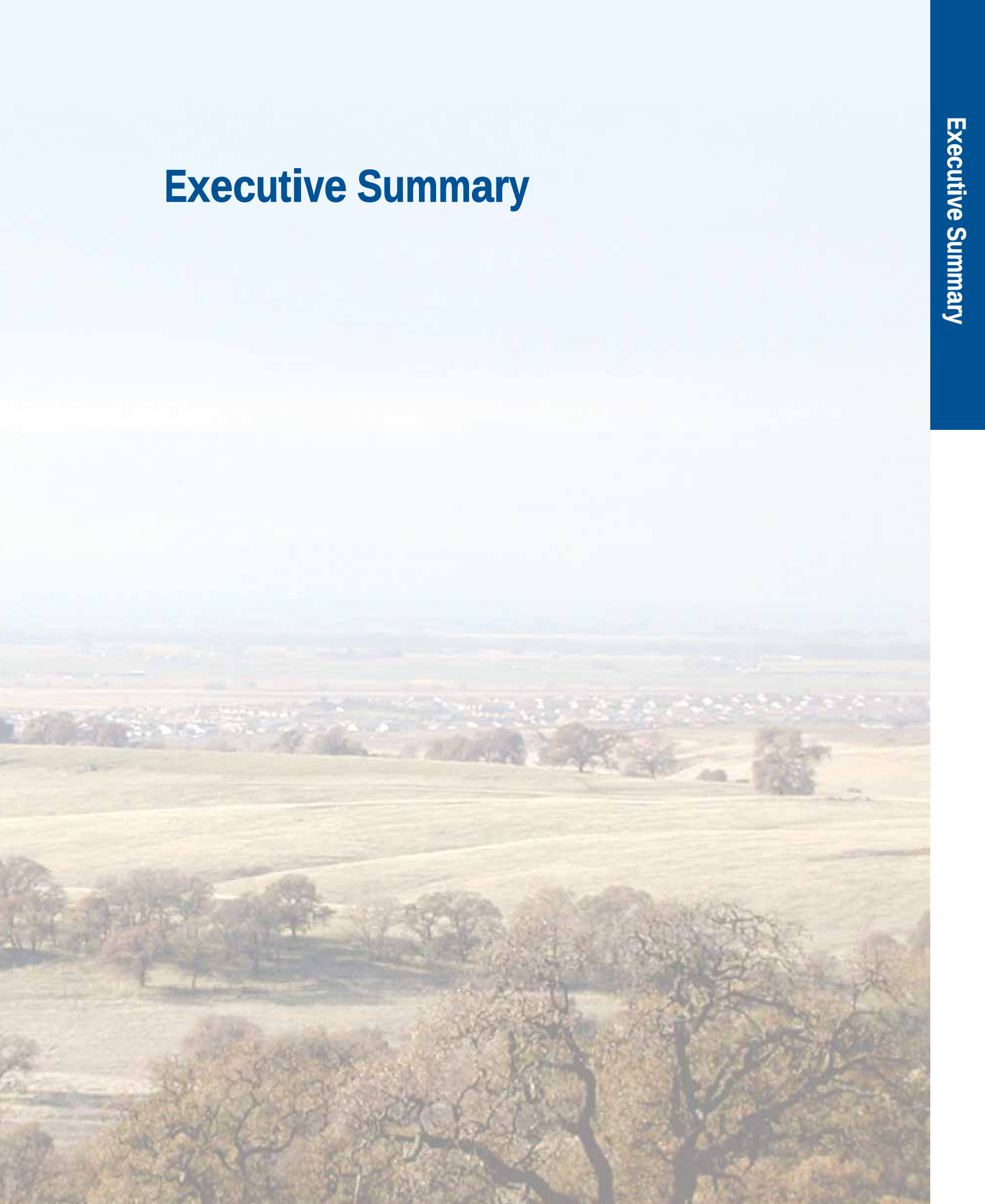
Abbreviations and Acronyms

AB	Assembly Bill
AEG	Applied Engineering and Geology
AF	acre-feet
AFB	Air Force Base
ARB	American River Basin
ARPS	American River Pump Station
ARWRI	American River Water Resources Investigation
ASR	Aquifer Storage and Recovery
BMO	Basin Management Objective
CAW	California American Water Company
cfs	cubic-feet per second
CGS	California Geological Survey
COC	constituents of concern
CPS	Comprehensive Planning Study
CVP	Central Valley Project
CVRWQCB	Central Valley Regional Water Quality Control Board
DCW	Diamond Creek Well
DHS	Department of Health Services
DMS	Data Management System
DTSC	Department of Toxic Substances Control
DU	dwelling units
DWR	California Department of Water Resources
DWSAP	Drinking Water Source Assessment and Protection
EMD	Environmental Management Department
EPA	Environmental Protection Agency
FRWA	Freeport Regional Water Authority
GAMA	National Groundwater Ambient Monitoring Assessment
GMP	Groundwater Management Plan
gpd/ft	gallons per day per foot
gpm	gallons per minute
GPS	Global Positioning System
IRWMP	Integrated Regional Water Management Plan
IWRP	Integrated Water Resources Plan
JPA	joint powers authority
Lincoln	City of Lincoln

LSCE	Luhdorff & Scalmanini Consulting Engineers
LUSTs	leaking underground storage tanks
M&I	Municipal and industrial
MCL	Maximum Contaminant Level
MFP	Middle Fork Project
MOU	memorandum of understanding
NARIGSM	North American River Integrated Groundwater Surface Water Model
NCMWC	Natomas Central Mutual Water Company
NGS	National Geodetic Survey
NID	Nevada Irrigation District
PBE	Physical Barrier Effectiveness
PCAs	Potential Contaminating Activities
PCE	tetrachloroethene
PCWA	Placer County Water Agency
PG&E	Pacific Gas and Electric
PNWA	Placer Nevada Wastewater Authority
RAP	Remedial Action Plan
Roseville	City of Roseville
ROWD	Report of Waste Discharge
RWA	Regional Water Authority
SB	Senate Bill
SCEP	Strategic Capital Expenditure Plan
SCWA	Sacramento County Water Agency
SGA	Sacramento Groundwater Authority
SJWD	San Juan Water District
SKS	Saracino, Kirby, and Snow
SMWA	Sacramento Metropolitan Water Authority
SOI	sphere of influence
SOP	Standard Operating Procedure
SSWD	South Sutter Water District
Sub-Basin	North American River Groundwater Sub-Basin
Successor Effort	Water Forum Successor Effort
SVOCs	semi-volatile organic compounds
SWRCB	State Water Resources Control Board
TCE	trichloroethylene
TDS	total dissolved solids
THM	trihalomethane

TPH	total petroleum hydrocarbons
TRC	Technical Review Committee
USGS	United States Geological Survey
UWMP	Urban Water Management Plan
VOCs	volatile organic compounds
WF	Water Forum
WFA	Water Forum Agreement
WPCGMP	Western Placer County Groundwater Management Plan
WPWMALS	Western Placer Waste Management Authority Landfill Site
WSIP	Water Systems Infrastructure Plan
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant
WWTRF	Wastewater Treatment and Recycling Facility

Executive Summary



Executive Summary

OVERVIEW

The Western Placer County Groundwater Management Plan (WPCGMP) is a planning tool to assist the City of Roseville, the City of Lincoln, Placer County Water Agency (PCWA), and the California American Water Company (CAW) in an effort to maintain a safe, sustainable and high-quality groundwater resource within a zone of the North American River Groundwater Sub-basin (Sub-basin). These plan participants have identified a range of specific goals, objectives, and actions that collectively provide a “road map” for future implementation of the WPCGMP by a governing body. As a “living document,” the WPCGMP is intended to be periodically updated and refined to reflect progress made in achieving the WPCGMP’s objectives and as conditions change in the region. The document outlines a series of required, recommended, and voluntary actions that will promote on-going modification of the WPCGMP’s depth and content.

Lastly, a Groundwater Management Plan (GMP) is a required “baseline” document for agencies seeking grant funds from the State of California. Moreover, state agencies that award grants on a competitive basis often give preference to GMPs that have been adopted and implemented by multiple agencies.



WPCGMP GOAL AND PURPOSE

The goal of the WPCGMP is to maintain the quality and ensure the long-term availability of groundwater to meet backup, emergency, and peak demands without adversely affecting other groundwater uses within the WPCGMP area. To meet that goal, the purpose of this WPCGMP is to serve as the initial framework for coordinating the many independent management activities into a cohesive set of management objectives and related actions necessary to meet those objectives.

GMP REQUIREMENTS

The California Groundwater Management Act and Assembly Bill 3030 and Senate Bill 1938 guide the preparation of GMPs and contain numerous technical requirements and provisions which are briefly summarized as follows:

- A GMP contains an inventory of water supplies and describes water uses with a given region.
- A GMP establishes groundwater Basin Management Objectives (BMOs) that are designed to protect and enhance the groundwater basin.
- A GMP identifies monitoring and management programs that ensure the BMOs are being met.
- The GMP outlines a stakeholder involvement and public information plan for the groundwater basin.

WHY PREPARE THE WPCGMP?

The WPCGMP is being prepared primarily to position basin partners for future groundwater planning activities. These activities are summarized as follows:

- A GMP develops a framework or baseline on which to build future planning efforts.
- Preparing a GMP is a good planning procedure for managing a groundwater basin.
- A GMP is a prerequisite in applying for State grant funding opportunities.

WPCGMP PARTNERS

The preparation of the WPCGMP is a joint effort by the Cities of Roseville and Lincoln, PCWA, and CAW. Placer County has been an active participant in the GMP's development; however, the County has not formally joined the WPCGMP as a full partner. In addition, the California Department of Water Resources (DWR) has been an active participant in development of the WPCGMP. Through adoption of the WPCGMP, these plan participants are building upon previous groundwater management efforts in the basin.

STAKEHOLDER INVOLVEMENT

Plan participants have conducted a series of briefings and public meetings to inform and involve stakeholders in the WPCGMP. Stakeholder groups briefed on the WPCGMP were: Roseville Public Utility Commission; Lincoln City Council; Placer County Water Agency Board of Directors; Sacramento Groundwater Authority and its member agencies; and the Water and Environment Caucuses of the Water Forum.



Plan participants have provided presentations and/or informational materials to adjacent agencies and organizations including the South Sutter Water District, Natomas Central Mutual Water Company, Nevada Irrigation District, San Juan Water District, City of Rocklin, City of Citrus Heights, Rio Linda/Elverta Community Water District, Yuba County Water Agency, Sacramento Suburban Water District, and Camp Far West Water District.

A public open house to present elements and objectives of the WPCGMP was held June 14, 2007, at the City of Lincoln's McBean Pavilion. A database of approximately 1,200 individuals and organizations was utilized to promote the open house via a direct mail invitation. Invitees included regional water purveyors, businesses, developers, environmentalists, local government agencies, growers, ranchers, and all private well operators within the unincorporated portion of the WPCGMP study area. In support of these outreach activities, plan partners have maintained a project website at www.wpcgmp.org.

FUTURE GOVERNANCE STRUCTURE

Following adoption of the WPCGMP by all plan partners, an implementation agreement will be established. As part of this implementation agreement, a designated governance body will be appointed by the plan participants and tasked to oversee and facilitate the implementation of management actions intended to meet the established BMOs. The governance body's work and costs will be divided among the four plan participants.

Groundwater Management Plan

SECTION 1

Introduction

Introduction

The City of Roseville (Roseville), the City of Lincoln (Lincoln), Placer County Water Agency (PCWA), and California American Water Company (CAW) have cooperatively developed this Western Placer County Groundwater Management Plan (WPCGMP) as detailed in this and subsequent sections. These entities, collectively referred to as the WPCGMP plan participants, joined to develop this groundwater management plan (GMP) because they all share some level of interest in the North American River Groundwater Sub-basin (Sub-basin). A component of the Sacramento Valley Groundwater Basin, the Sub-basin is roughly bounded by the American River to the south, the Sierra Nevada foothills to the east, the Bear River to the north, and the Sacramento River to the west. The WPCGMP area includes the Sub-Basin's eastern edge, Sacramento County to the south, the western edge of PCWA's service area, and Bear River to the north. Although the participants are not the only users of the Sub-basin, their political boundaries do cover the majority of the area where Placer County overlies the Sub-basin, as illustrated in Figure 1-1.

1.1 REPORT ORGANIZATION

This document was prepared in accordance with the California Groundwater Management Act and Assembly Bill 3030 (AB3030) and Senate Bill 1938 (SB 1938), and includes the following sections;

Section 1. Introduction. This section provides the geographic setting, city and agency background, and summarizes other water resource management efforts implemented by entities located within and immediately adjacent to the WPCGMP area.

Section 2. Water Resources Setting. Prior to managing a basin, available water supplies must be identified and quantified. This section presents information on the availability of different water supplies and how they could be used within the WPCGMP area. This section also provides a description of the groundwater basin highlighting the unique hydrogeologic setting, an understanding of water quality issues, and a description of groundwater and surface water infrastructure currently in-place within the WPCGMP area.

Section 3. Management Plan Elements. This section identifies the five plan components (Stakeholder Involvement, Monitoring Program, Groundwater Resource Protection, Groundwater Sustainability, and Planning Integration) that constitute a GMP. An important aspect of this section is the identification of Basin Management Objectives (BMOs) and the actions necessary for BMO implementation.

Section 4. Plan Implementation. This section provides a schedule for implementing the BMOs, plan components, and actions; presents reporting criteria; and provides a description of the governance body and financing necessary to implement the WPCGMP.



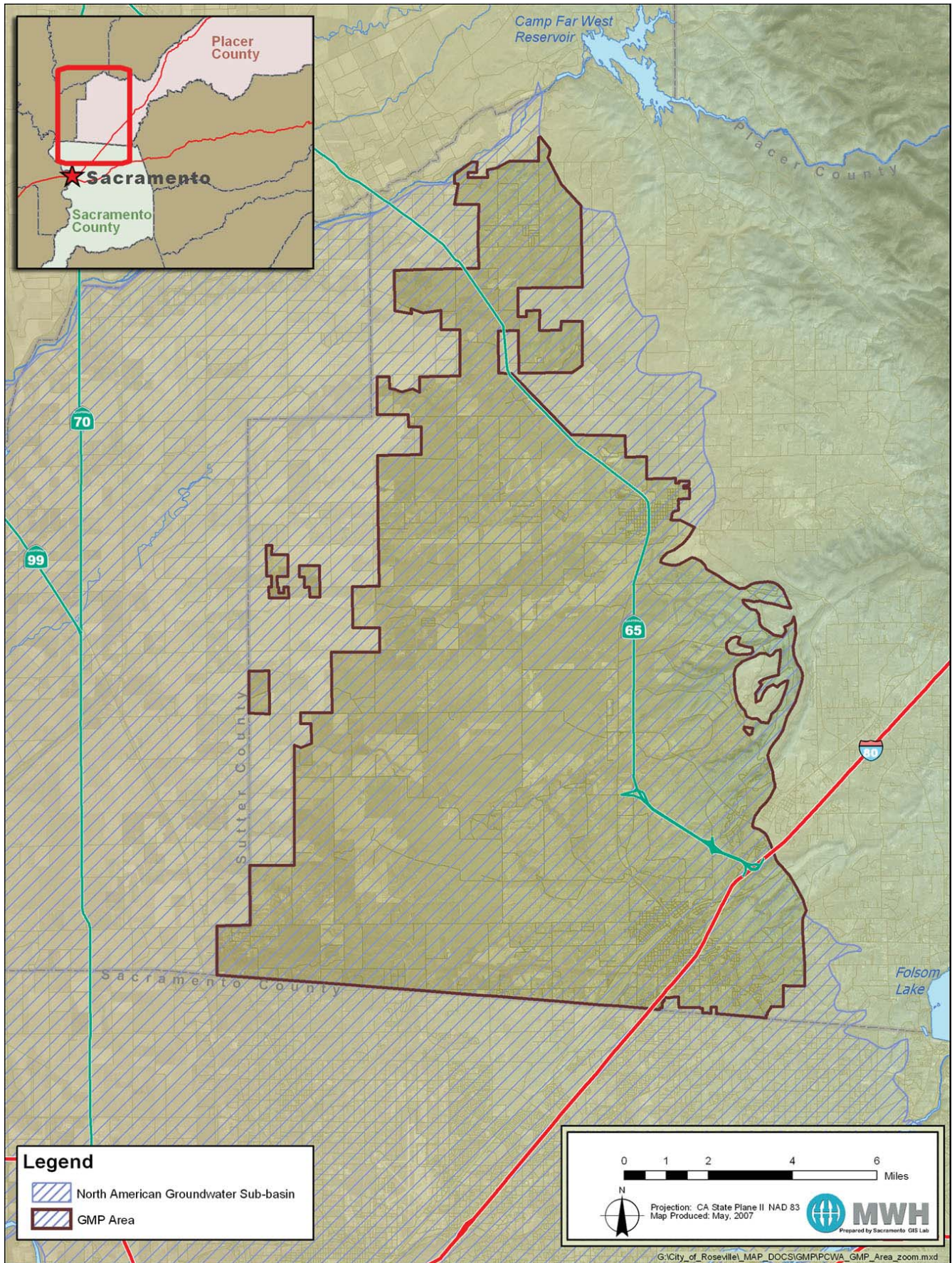


Figure 1-1 – WPCGMP Area

1.2 PURPOSE AND GOALS OF THE WPCGMP

The goal of the WPCGMP is to maintain the quality and ensure the long-term availability of groundwater to meet backup, emergency, and peak demands without adversely affecting other groundwater uses within the WPCGMP area. To meet that goal, the purpose of this WPCGMP is to serve as the initial framework for coordinating the many separate management activities into a cohesive set of BMOs and related implementation actions.

1.3 BACKGROUND

The following subsection presents background information on each plan participant. For reference, Figure 1-2 illustrates the extents of each participant's service area and/or city limits.

1.3.1 Roseville

Established in 1909, Roseville is an incorporated city located approximately 16 miles northeast of Sacramento, California in Placer County. It encompasses approximately 36 square miles with a population of approximately 104,000 people (Figure 1-1).



Roseville is responsible for providing all water (potable water service including treatment, water distribution and water conservation), wastewater (wastewater collection and treatment), recycled water (irrigation), and stormwater (protecting the water quality of Roseville's creeks), and other utility services to Roseville's residents, businesses and schools in its service area.

Currently, Roseville is experiencing a significantly higher rate of population growth than the national average. This growth has caused new urbanization in the north and northwest portions of the city. Historically, Roseville's water supply has come solely from Folsom Lake, which is treated at Roseville's Water Treatment Plant (WTP). In order to provide water for backup demands, Roseville currently maintains four municipal supply wells to augment surface water supplies during daily and peak demand periods. To further maintain water reliability, Roseville is currently evaluating the feasibility of conjunctive use programs including direct groundwater recharge through Aquifer Storage and Recovery (ASR) and the use of spreading



City of Roseville ASR well

basins and passive groundwater recharge through in-lieu surface water delivery.

1.3.2 Lincoln

Lincoln is an incorporated city located in western Placer County and has a population of approximately 35,000 people as of December 2005. Lincoln's city limits for the proposed 2006 General Plan Update are shown on Figure 1-2. Similar to Roseville, Lincoln is experiencing a high rate of population growth causing urbanization within Lincoln's boundaries. Lincoln primarily relies on PCWA to meet its treated water supply need. To accommodate dry-year, emergency, and daily peak demands, Lincoln owns and operates several municipal water supply wells. Lincoln also has a conjunctive use program, which includes the use of recycled water from its Wastewater Treatment and Recycling Facility (WWTRF), groundwater and raw surface water supplies, in addition to the treated potable supplies from PCWA.



1.3.3 PCWA

Placer County Water Agency was created in 1957 through approval of "The Placer County Water Agency Act" by the California State Legislature for the purpose of developing and operating major water facilities in Placer County. PCWA is self-governed by an independently elected five-member Board of Directors and is under administrative direction of a general manager. The boundaries of PCWA generally coincide with the boundaries of Placer County.



PCWA carries out a broad range of responsibilities including water resource planning and management, retail and wholesale supply of irrigation water and drinking water, and production of hydroelectric energy.

PCWA is working toward obtaining a better understanding of groundwater in western Placer County through the implementation of different groundwater planning projects. At present, self-supplied and agricultural use of groundwater in the region is extensive. PCWA wishes to understand the magnitude of groundwater use and replenishment as it considers future water supply planning opportunities that exist in its primary surface water system.

The PCWA water system was established in 1968. PCWA supplies wholesale and retail water to a variety of customers including residential, commercial, industrial, and agriculture. A significant amount of raw water irrigates pastures, orchards, rice fields, farms, ranches, golf courses, and other uses. PCWA retails treated water to customers residing in the Placer County communities of Colfax, Auburn, Loomis, Rocklin, small portions of Roseville, and in the vast unincorporated areas of western Placer County. PCWA also wholesales treated water to Lincoln and several smaller special districts who then retail water to their customers. PCWA provides raw

water to Roseville, San Juan Water District, and Sacramento Suburban Water District on a contract basis. These agencies provide their own treatment and then retail the water to their customers.

As described below, and summarized in **Table 1-1**, PCWA has established five retail service zones within Placer County (four of which are illustrated on **Figure 1-2**):

- Zone 1 was created in 1968 for the purpose of financing the purchase of Pacific Gas and Electric's (PG&E) Lower Drum Division Water System. This system provided water service to the communities of Auburn, Bowman, Ophir, Newcastle, Penryn, Loomis, Rocklin, and Lincoln. It has four WTPs and one groundwater well and associated storage and distribution systems. Zone 1 encompasses approximately 125 square miles. Today, Zone 1 includes territory under the land use authorities of Auburn, Rocklin, Lincoln, a portion of Roseville, Loomis, and Placer County. Zone 1 is separated into Upper Zone 1 and Lower Zone 1 to delineate the higher elevation service areas of Auburn, Bowman, and Ophir from the remaining lower elevation areas.
- Zone 2 was created in 1979 and provides retail water service to a small residential development of 47 units located in an unincorporated area southwest of Roseville. Formerly supplied by groundwater, the system was converted to surface water in 2004. Zone 2 is under the land use authority of Placer County.
- Zone 3 is a water system acquired from PG&E in 1984 that serves Colfax and portions of Placer County along the Interstate 80 corridor extending from Bowman to Alta. This zone utilizes surface water and has four water treatment plants.



- Zone 4 was created in 1996 and is located in the unincorporated Martis Valley portion of eastern Placer County. Zone 4 is served entirely by groundwater.
- Zone 5 was created in 1999 and assumed the boundaries of Placer County Zone 29. It was created to reduce reliance on groundwater supplies by providing surface water for commercial agriculture in the western-most section of Placer County. Zone 5 is served entirely by raw surface water supplies.

1.3.4 CAW

California American Water Company



California American Water

is a wholly-owned subsidiary of American Water, a provider of water services throughout North America. Within the WPCGMP area, CAW operates its West Placer Water System (WPWS) – an area with approximately 1,100 customer connections in 2005 (see **Figure 1-2**) – under a franchise agreement with the County of Placer. The WPWS is one of 10 service areas of CAW's Sacramento District.

Table 1-1. PCWA Retail Service Zones

PCWA Retail Service Zones	Locations	Water Service Provided
Zone 1 ^[1]	Auburn to Newcastle, Lincoln, Loomis, Rocklin, Granite Bay and Roseville, plus unincorporated areas	Treated and raw water
Zone 2	A small residential area of 46 customers (Bianchi Estates), southwest of Roseville	Treated water
Zone 3	Applegate, Colfax, Alta, and Monte Vista	Treated and raw water
Zone 4	Water from three wells is used to serve the Lahontan, Timilick, Hopkins Ranch, and Martis Camp developments in the Martis Valley	Treated water
Zone 5 ^[2]	Irrigation water for commercial agriculture in far western Placer County	Raw water

^[1] Zone 1 is separated into Upper Zone 1 and Lower Zone 1 based on the system configuration. Upper Zone 1 is solely met by PG&E water while Lower Zone 1 also receives Middle Fork Project (MFP) water.

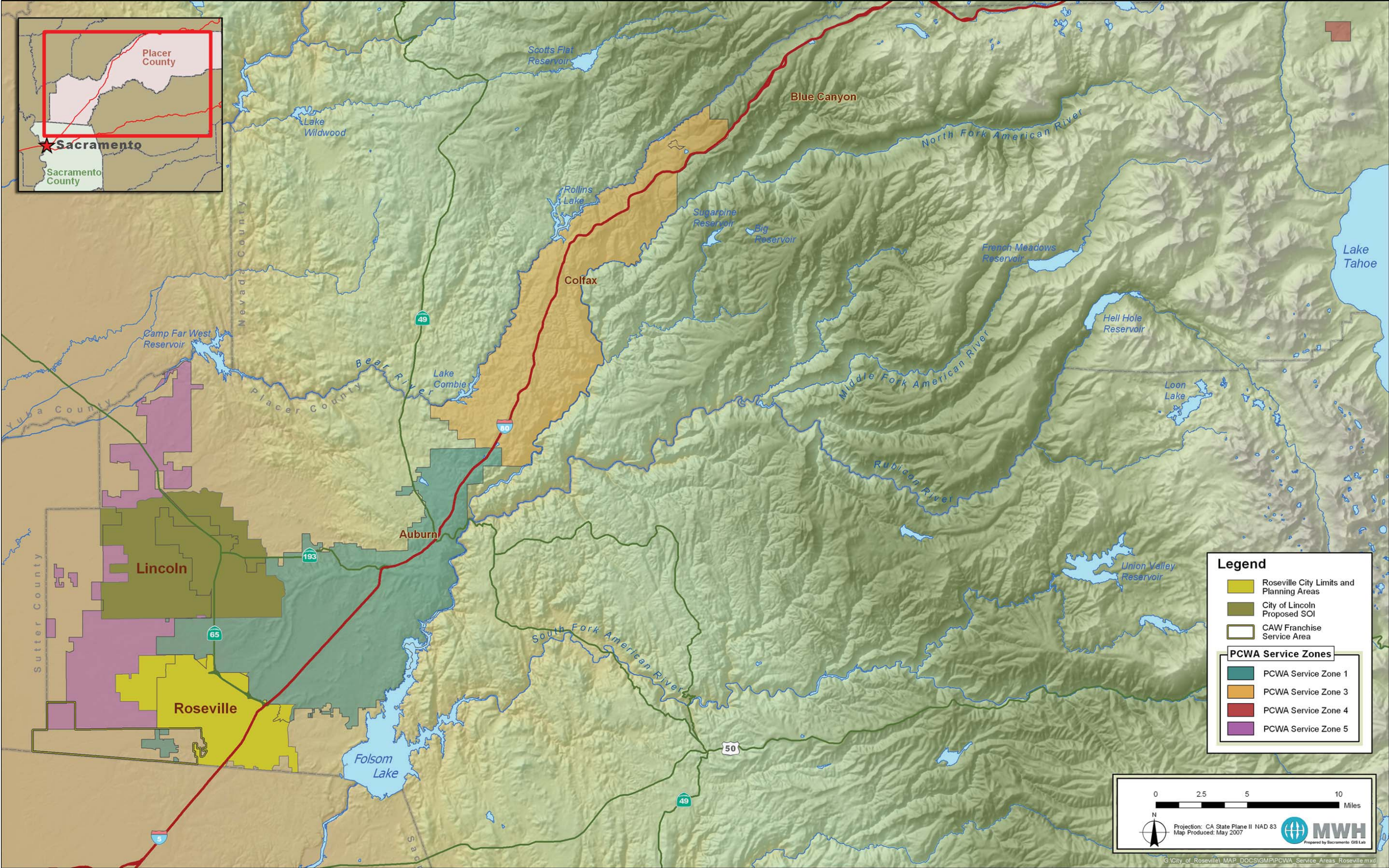
^[2] Zone 5 was created in 1999 to reduce reliance on groundwater supplies by providing surface water for commercial agriculture in the western-most section of Placer County.

11 x 17 service area map goes here



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Figure 1-2 – Service Area/City Limits of WPCGMP Participants

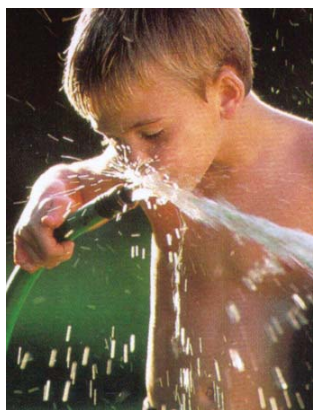


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Recent residential developments in WPWS are required to use surface water exclusively. The water is provided under a wholesale agreement with PCWA and delivered via a wheeling agreement with the City of Roseville.

CAW intends to continue serving WPWS area customers predominantly with PCWA-supplied surface water. However, PCWA and CAW intend to incorporate the conjunctive use of groundwater as needed to achieve the highest levels of water supply reliability.

1.3.5 Other Adjacent Entities



The following subsection provides background information on other local and regional entities immediately adjacent or within the WPCGMP area including Placer County, South Sutter Water District, Natomas Central Mutual Water Company, the Sacramento Groundwater Authority (SGA), and the Regional Water Authority (RWA), (Figure 1-3). These agencies, like the WPCGMP participants,

each have some level of interest in the North American groundwater basin, and therefore are likely to have some interest in its management.

1.3.5.1 Placer County

Placer County serves a population of over 300,000 from its border with Sacramento County to the Nevada state line. County communities include Roseville, Lincoln, Rocklin, Loomis, Auburn, Foresthill, Colfax, Tahoe City, and Kings Beach. Placer County, as an entity, does not provide water service to customers, but provides services including Agricultural and Environmental permitting. In addition, Placer County government serves as the land use authority for unincorporated areas.



1.3.5.2 Natomas Central Mutual Water Company (NCMWC)

NCMWC is located in northwestern Sacramento County and southern Sutter County, adjacent to the Sacramento River (Figure 1-3). It provides irrigation water to approximately 280 members/shareholders for agricultural use. NCMWC has water rights and contracts to Sacramento River water. Surface water is supplemented with groundwater from privately owned wells.

1.3.5.3 South Sutter Water District (SSWD)

SSWD is located in southern Sutter and western Placer counties, with the Bear River as the northern boundary and stretching southwest between Highway 65 and Highway 70 to Pleasant Grove and Curry Creeks (Figure 1-3). SSWD was formed in 1954 to develop, store, and distribute surface water supplies to supplement groundwater supplies as needed. SSWD is considered a “supplemental” water district because it does not provide full service to landowners. Instead, it allocates supplemental surface supplies according to acreage of land owned. SSWD covers 57,012 acres with approximately 82 percent in rice production. Most of the SSWD’s customers are agriculture-based and utilize private wells to obtain the majority of their water supplies.



1.3.5.4 Nevada Irrigation District (NID)

NID is an independent public agency governed by an elected board that supplies nearly 25,000 homes, farms and businesses in Nevada and Placer counties in the foothills of Northern California’s Sierra Nevada Mountains. NID collects water from the mountain snowpack and stores it in a system of 10 reservoirs. As water flows to customers in the foothills, it is used to generate clean hydroelectric energy and to provide public recreational opportunities. NID supplies both treated drinking water and irrigation water.

1.3.5.5 San Juan Water District (SJWD)

SJWD is a community services district created by a vote of the citizens in 1954. It wholesales water to Citrus Heights and Fair Oaks Water Districts, Orange Vale Water Company, the City of Folsom (north of the American River), and periodically to Sacramento Suburban Water District. Additionally, SJWD retails water to customers in Granite Bay and the northeast portion of Sacramento County.

SJWD does not have access to groundwater in its retail service area which includes a very small portion of the southeast corner of the WPCGMP area. SJWD is a participating agency of the Sacramento Groundwater Authority (SGA), and is actively involved in implementing SGA’s GMP completed in 2003.

1.3.5.6 Sacramento Groundwater Authority (SGA)

SGA is a joint powers authority (JPA) created to manage the portion of the North American River Groundwater Sub-basin directly south of the WPCGMP area. The SGA boundary includes only the portion of Sacramento County north of the American River (Figure 1-3), referred to as the North Area Basin. SGA’s formation¹

¹ The SGA was originally formed in 1998 as the Sacramento North Area Groundwater Management Authority. In 2002, it was renamed the Sacramento Groundwater Authority.

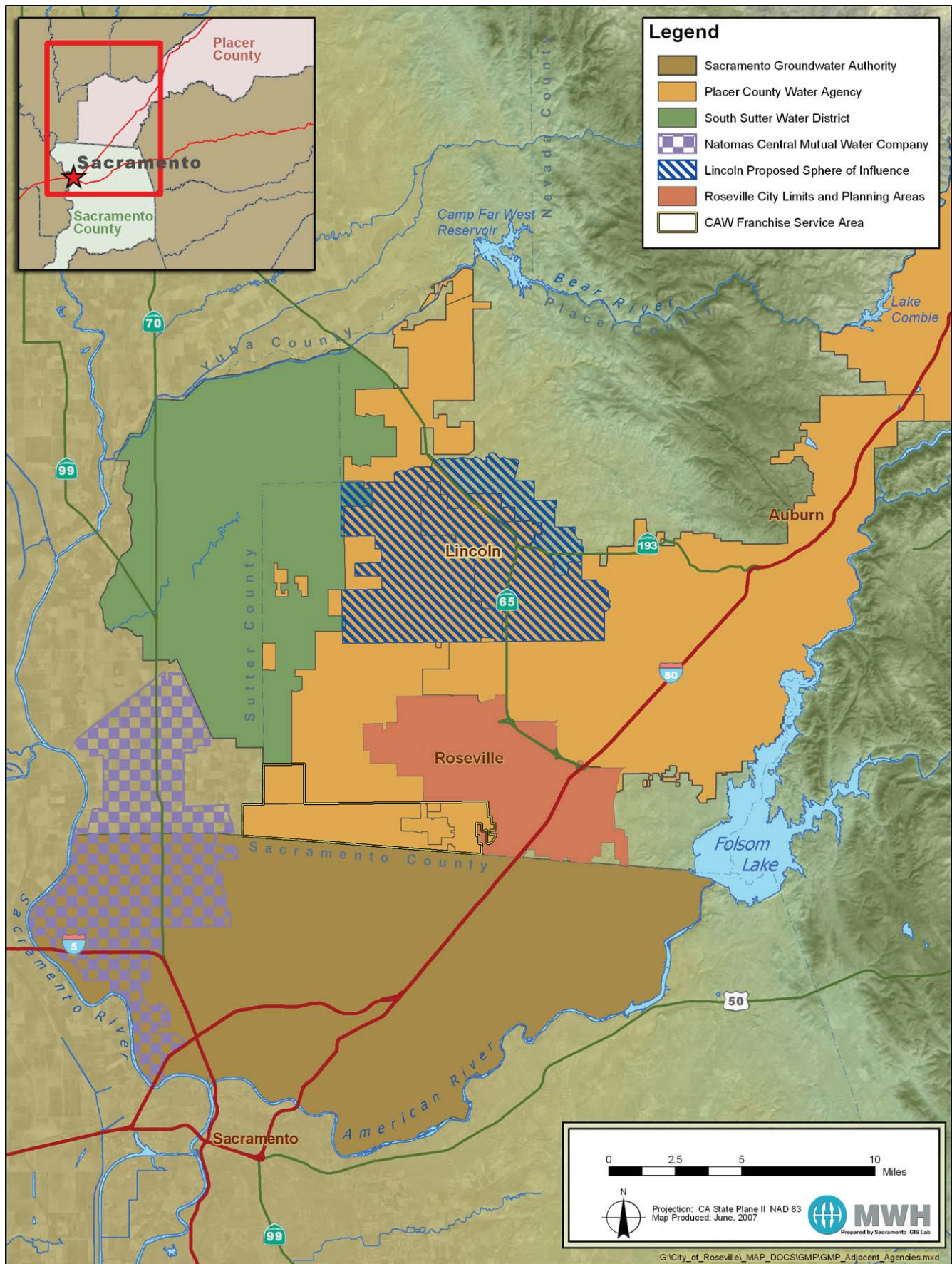


Figure 1-3 – Adjacent Entity Service Areas

in 1998 was a result of a coordinated effort by the Sacramento Metropolitan Water Authority (SMWA) and the Water Forum¹ (WF) to establish an appropriate groundwater management structure for the North Area Basin. The cities of Citrus Heights, Folsom, Sacramento, and the County of Sacramento, signatories to the JPA, hold police powers to manage the underlying groundwater basin. These entities delegate authority to SGA, which in turn manages the basin through representatives of 14 local water purveyors and one representative from agricultural and self-supplied groundwater pumpers. These representatives serve as the SGA Board of Directors².

SGA's management responsibility is a commitment to not exceed the average annual sustainable yield of the North Area Basin, which was estimated to be 131,000 acre-feet³ in the Water Forum Agreement (WFA).

1.3.5.7 Regional Water Authority (RWA)

RWA represents a number of regional water supply interests and assists members in protecting and enhancing the reliability, availability, affordability, and quality of water resources. One of the principal missions of RWA is facilitating implementation of the conjunctive use program prescribed by the WFA. RWA currently has 19 water purveyor members and three associate members⁴, spanning Placer, Sacramento, Yolo, and El Dorado counties. Roseville, Lincoln, PCWA, and CAW are members of RWA.

1.4 EXISTING GMPS

The following subsection provides a summary of the GMPS completed by WPCGMP participants and the adjacent entities including SGA, SSWD, and NCMWC.

1.4.1 WESTERN PLACER GROUNDWATER MANAGEMENT PLAN

In November 1996, PCWA adopted a Resolution of Intent to draft an AB3030 compliant GMP for the western Placer County region of their service area. The plan area included the cities of Roseville and Rocklin and the unincorporated portion of western Placer

County, west of Highway 65 and outside of Lincoln. PCWA and Roseville adopted this joint Western Placer GMP in 1998. In 2003, PCWA updated the plan to achieve Senate Bill 1938 (SB1938) compliance. The goal of the plan was to manage groundwater resources to the benefit of western Placer County and to support the Placer County General Plan. This goal was pursued through a coordinated effort with all stakeholders in the plan area and implementation of activities consistent with other groundwater management planning efforts in the region. The plan identified certain implementation activities:

- Monitoring groundwater levels and groundwater quality.
- Identifying groundwater recharge opportunities, with particular emphasis on the area adjacent to the Placer/Sacramento County line.
- Identifying conjunctive use opportunities for non-residential uses in the area north of Pleasant Grove Creek.
- Evaluating the safe yield of the groundwater basin underlying the study area.
- Maximizing groundwater management coordination with all jurisdictions, landowners, and the general public within western Placer County, with those jurisdictions in north Sacramento County portion of the basin, and with the appropriate State and federal agencies.

1.4.2 LINCOLN GROUNDWATER MASTER PLAN (2003)

Lincoln completed and adopted a SB1938 compliant GMP in 2003. Its GMP provides a framework to effectively manage and protect its groundwater resources and includes BMOs as well as a series of management actions to be implemented. The GMP mission statement and primary groundwater management goal is to "ensure a viable resource for use by the City (Lincoln) to meet backup, emergency and peak demands without adversely affecting adjacent areas."

The 2003 GMP boundaries includes the City of Lincoln's sphere of influence (SOI), an area that extends slightly beyond the current

¹ The Water Forum is a diverse group of business and agricultural leaders, citizens groups, environmentalists, water managers, and local governments in the Sacramento Region that joined together to equally fulfill the objectives of water supply reliability and environmental values of the Lower American River. In 1999, the WF approved the comprehensive Water Forum Agreement (WFA) to fulfill those objectives. The WFA is available online at <http://www.waterforum.org> or contact the Water Forum office at (916) 808-1999.

² SGA Board members include representatives of California American Water Company, Carmichael Water District, Citrus Heights Water District, City of Folsom, City of Sacramento, County of Sacramento, Del Paso Manor Water District, Fair Oaks Water District, Natomas Central Mutual Water Company, Orangevale Water Company, Rio Linda/Elverta Community Water District, Sacramento Suburban Water District, San Juan Water District, Golden State Water Company, and individual representatives from agriculture and self-supplied groundwater users (principally parks and recreation districts).

³ This value was estimated based on water use and facilities in the basin at the time of the WFA. This value was based on a number of assumptions, and was not intended to be a fixed value that could not be modified as conditions and assumptions changed in the basin. Examples of changed conditions include new or improved water conveyance, treatment, and storage facilities or changes in water supply contracts.

⁴ The membership of the RWA encompasses water users in both Sacramento County and Placer County including: California American Water Company, Carmichael Water District, Citrus Heights Water District, City of Folsom, City of Lincoln, City of Roseville, City of Sacramento, City of West Sacramento, Del Paso Manor Water District, El Dorado Irrigation District, Fair Oaks Water District, Fruitridge Vista Water Company, Orangevale Water Company, Placer County Water Agency, Rancho Murieta Community Services District, Rio Linda/Elverta Community Water District, Sacramento Suburban Water District, San Juan Water District, and the Golden State Water Company. Associate members do not directly retail drinking water and do not vote in RWA matters. Associate members include: El Dorado County Water Agency, Sacramento Municipal Utility District, and Sacramento Regional County Sanitation District.

city limits (see Figure 1-3). Lincoln anticipates it will expand its current SOI as part of its 2006 General Plan Update. A draft version of the General Plan Update was published on October 3, 2006.

In addition to its planning benefit, the Lincoln GMP contains a sophisticated array of geophysical information regarding the basin underlying its SOI. Technical information collected to date, which have been included in the 2003 GMP and in subsequent investigations, has generated an extensive data set that Lincoln intends to use to further understand and manage its underlying groundwater resources. With assistance from an AB303 grant from the California Department of Water Resources (DWR), Lincoln installed five new multi-completion monitoring wells in 2005 to aid in basin management activities.

The GMP provides a framework process that describes the series of steps necessary to manage the basin, beginning with collecting the necessary data and developing a stakeholder participation program.

The Lincoln GMP contains the following BMOs:

- Maintain groundwater elevations at a level that will ensure an adequate groundwater supply for backup, emergency and peak demands, without causing significant adverse impacts to adjacent areas.
- Preserve overall groundwater quality by stabilizing existing groundwater contaminant migration, avoiding known contaminated areas, and protecting recharge areas.
- Ensure that the direction of groundwater flow continues its southwesterly flow pattern despite additional groundwater extraction or other potential influences.

To achieve these BMOs, Lincoln recognized that a substantial number of management actions must be continued or implemented. In many instances these actions apply to more than one BMO and relate to multiple AB 3030 management plan objectives. Table 1-2 summarizes the management actions that as of 2003 (1) have already been undertaken, (2) are slated for implementation and have a budget, or (3) are still in the planning stages.



1.4.3 SGA GROUNDWATER MANAGEMENT PLAN

SGA adopted its GMP in December 2003 to establish goals, management objectives, and components needed to manage the groundwater basin. SGA's GMP provides a starting point from which SGA will continually assess the status of the groundwater basin and make appropriate management decisions to ensure a sustainable resource. SGA's GMP contains the following management objectives:



American River

- Maintain or improve groundwater quality in the SGA area for the benefit of basin groundwater users.
- Maintain or improve groundwater elevations that result in a net benefit to basin groundwater users.
- Protect against any potential inelastic land surface subsidence.
- Protect against adverse impacts to surface water flows in the American River and Sacramento River.
- Protect against adverse impacts to water quality resulting from interaction between groundwater in the basin and surface water flows in the American River and Sacramento River.

1.4.4 SSWD GROUNDWATER MANAGEMENT PLAN

On February 23, 1993, SSWD adopted a Resolution of Intention to draft a GMP (SSWD, 1997). Subsequent to adopting this resolution, SSWD had directed the preparation of a report on groundwater conditions within SSWD. The report covers the period 1970 through 1993 and updated a prior report for the period 1963 to 1968. The plan area included all SSWD land located within Sutter and Placer counties.

SSWD's primary goal in developing the GMP was "to work cooperatively with landowners within the district to most efficiently manage the groundwater resources and to continue with an efficient and effective conjunctive use program." The plan included components identified in California Water Code section 10753.7, which are:

- Monitoring (groundwater levels and quality)
- Conjunctive use program and mitigation of overdraft
- Relations with State and Federal regulatory agencies
- Well construction policies and administration of well abandonment and destruction program

1.4.5 NCMWC Groundwater Management Plan

In 2000, NCMWC adopted a GMP for its service area in both Sacramento and Sutter counties (Luhdorff & Scalmanini Consulting Engineers (LSCE), 2000). This GMP applies to NCMWC's Sutter County service area while, SGA's GMP covers the Sacramento County portion of NCMWC's service area. No additional information is available from this GMP.

1.5 OTHER MANAGEMENT EFFORTS

Over the past several decades, water supplies of the region have been affected by:

- Extended drought and wet periods
- Increased push to dedicate surface water for environmental purposes
- Declining groundwater levels
- On-going and potential impacts to surface water quality and groundwater quality

At the same time, demand for water in the region has continued to grow. To address these challenges, water purveyors in the region have invested substantial time and resources in a progression of regional planning efforts. This section summarizes the planning efforts that were led by WPCGMP participants.

1.5.1 Roseville

The following subsection provides a summary of relevant Roseville planning efforts.



1.5.1.1 Urban Water Management Plan (2005)

Roseville's Urban Water Management Plan (UWMP) was originally adopted in 1986, and has been updated in 1991, 2002, 2003 and 2005. The Roseville UWMP provides a framework for public participation for the planning of water resource supply and water use provisions for all residential, commercial, industrial, institutional/government, landscape/recreational, and agricultural sectors. The UWMP includes a supply and demand comparison, outlines future

projects to meet projected water use including water supply, treatment, storage, distribution and groundwater well facilities, and contains water demand management measures and water short-age contingency plans. The plan also identifies Roseville's current water recycling program and future opportunities.

1.5.1.2 General Plans (1992, 1993 and 2004)

Although Roseville's first General Plan was adopted in 1963, and consisted basically of a land use map, the first comprehensive General Plan for Roseville was adopted in 1977. While various elements were updated since 1977, the 1992 General Plan represented the first comprehensive update since that time. The 1992 General Plan did not include land use allocations beyond those previously identified, but it did include substantial policy revisions. Since the 1992 update, land use allocations have been modified by the Roseville City Council several times with the adoption of the Del Webb, North, Highland Reserve North, and Stoneridge Specific Plans, and with the annexation of the Pleasant Grove Waste Water Treatment Plant (WWTP) and Foothill Business Park properties. However, the core policies of the 1992 update were retained. A technical update to the General Plan was accomplished in January 2003, and it focused on updating information that had changed as a result of previous City Council actions (adoption of specific plans and update of the Capital Improvement Program, etc).

Also, in 2003 the General Plan was updated with the adoption of the West Roseville Specific Plan, annexation, and sphere of influence amendment. With the adoption of the Specific Plan and annexation, several revisions to the General Plan occurred including inclusion of the Roseville's previously adopted Guiding Principles for development west of Roseville, a change in land use allocation, and map revisions. The General Plan integrates Roseville's nine adopted specific plans. These plans are incorporated as a part of the General Plan and should be referred to for specific requirements.

The Roseville General Plan is designed to be:

- Long-range: However imperfect the vision of the future is, almost any development decision has effects lasting more than 20 years. In order to create a useful context for development decisions, the General Plan looks towards the year 2010 and beyond.
- Comprehensive: The General Plan provides direction to coordinate all major components of the community's physical development.
- General: Because it is long-range and comprehensive the General Plan, in most cases, is general. The plan's purpose is to serve as a framework for detailed public and private development proposals. It establishes requirements for additional planning studies, which must be completed prior to any future specific plan to modify the General Plan land use allocation.

The Roseville General Plan serves to:

- Enable Roseville's Council and planning commission to establish long-range development policies.

Table 1-2. City of Lincoln GMP Management Action Plans

Action	Elevation	BMO Quality	Gradient	AB3030 Component
1. Develop and implement a groundwater monitoring program				
a. Expand the network	X	X	X	7
b. Collect relevant well and aquifer data	X	X	X	7
c. Establish data collection methods and frequency	X	X	X	7
d. Develop a groundwater database	X	X	X	7
e. Identify water quality constituents of concern	X	X	X	1, 7
f. Monitor fresh water/saline water interface	X	X	X	1, 7
g. Monitor status of known contaminant sites	X	X	X	3, 7
h. Annually prepare and present data	X	X	X	7
i. Research and apply for relevant grant funding	X	X	X	7
2. Improve understanding of groundwater basin				
a. Develop and utilize a groundwater model	X			1, 2, 3, 5, 6, 8
b. Characterize and evaluate local conditions	X			1, 2, 3, 5, 6, 8
c. Develop a water budget, estimate the perennial yield	X			5, 6, 8
d. Research and apply for relevant grant funding	X			1, 2, 3, 5, 6, 8
3. Continue long-term planning and evaluation of potential projects				
a. Explore conjunctive use opportunities	X		X	5, 6, 8, 10
b. Develop a recharge program	X		X	5, 6, 10
c. Review proposed development plans	X	X	X	2, 12
d. Research and apply for relevant grant funding	X	X	X	5, 6, 10
4. Establish operational requirements for City production wells				
a. Develop spacing and well operation guidelines	X	X	X	1, 3, 9
b. Establish policies and protocols for BMOs	X	X	X	7, 8
5. Develop and implement a Groundwater Protection Program				
a. Conduct a search for abandoned wells		X		1, 4
b. Review permits for the destruction of wells		X		1, 4
c. Establish standard well construction policies		X		3, 9
d. Determine well requirements to minimize saline upconing		X		1, 9
e. Map known contaminated sites		X		3
f. Research and apply for relevant grant funding		X		1, 3, 4, 9
6. Continue Public Participation				
a. Make results of monitoring program available	X	X	X	7
b. Continue Advisory Committee	X	X	X	11, 12
c. Engage state and federal regulatory agencies				11
d. Continue to engage local agencies and interests				11

- Provide a basis for judging whether private development proposals and public projects are in harmony with the policies.
- Guide public agencies and private developers in designing projects that are consistent with Roseville's policies.

Regarding groundwater recharge and water quality, Roseville's goals outlined in the General Plan are to:

- Continue to improve surface water quality and accommodate water flow increases.
- Enhance the quality and quantity of groundwater resources.

Plans to protect the Roseville's water resources and water quality include the development of standards for urban run-off, monitoring groundwater, and protection of waterways and groundwater recharge areas.

1.5.1.3 Aquifer Storage and Recovery (ASR) Phase I and II Testing at the Diamond Creek Well

Roseville's ASR program is being developed with the intention of using the aquifer to store surplus water in "wet" years for extraction during times of peak demand as part of a conjunctive use program. Roseville's ASR program is currently being evaluated using a two phase test approach. Phase I testing was completed in 2005 and consisted of a relative short duration pilot scale cycle test (cycle test). This is followed by a scheduled 30-month Phase II demonstration test. Both phases of testing are being conducted at the Diamond Creek Well (DCW) in the northwest portion of Roseville.

Constructed in 2002, the DCW is used for backup water supply and was specifically designed for ASR use. Three monitoring wells were constructed adjacent to the DCW for the purpose of data collection during testing. Potable water from the Roseville WTP is conveyed to the DCW for the purpose of ASR testing.

1.5.1.3.1 Phase I Pilot Scale Testing (Cycle Test)

Roseville submitted a Report of Waste Discharge (ROWD) on January 7, 2003, as a requirement of the Central Valley Regional Water Quality Control Board (CVRWQCB) to permit an ASR Phase I cycle

test. The CVRWQCB granted a waiver to allow testing on May 6, 2003. The Phase I cycle test was performed from May 5, 2004, to September 20, 2004, and consisted of three general stages of data collection: baseline, injection, and extraction.

The baseline stage consisted of a series of monitoring and sampling events. The injection stage of the cycle test consisted of 26 days of continuous surface water injection at an average flow rate of approximately 1,375 gallons per minute (gpm). The total volume of water injected was 158 acre-feet (AF). During the extraction stage, flow rates averaged approximately 3,434 gpm. The total volume of water extracted during three phases was 439 AF, representing 278 percent of injected water volume. During the three stages of cycle testing groundwater elevation and quality data were frequently collected at the DCW and at the nearby monitoring wells.

Data from this Phase I cycle test were used to provide an understanding of local changes in groundwater elevations and quality, and to explore additional ASR testing (Phase II). Cycle testing showed very favorable conditions with no apparent adverse impacts to groundwater levels and overall improvements to groundwater quality.

1.5.1.3.2 Phase II Demonstration Testing

Roseville submitted a second ROWD to the CVRWQCB on May 16, 2005, for Phase II demonstration testing. This ROWD was granted by the CVRWQCB on August 5, 2005. Phase II activities began in November 2005 and are scheduled to conclude in 2008. The primary objectives of Phase II are to further evaluate system operation and to determine the fate and transport of trace levels of disinfection byproducts stored underground. Phase II ASR demonstration testing includes five stages of data collection as follows:

- One month baseline
- Six months of injection totaling 1,094 AF of water at a rate of 1,375 gallon per minute (gpm)
- Eleven months of injected water storage in the aquifer



Diamond Creek ASR Well

- d) Ten months of extraction at 2,500 gpm recovering 3,314 acre-feet of water
- e) Two months of post testing

Although final results of Phase II extraction tests are pending, and therefore not yet analyzed, prior results and recent correspondence with the CRVWQCB indicate that Roseville will be able to work towards designing and permitting a full-scale ASR system within its jurisdiction.

1.5.1.4 Dry Creek Recycled Water Groundwater Recharge Study (2004)

The Dry Creek Recycled Water Groundwater Recharge Feasibility Study identifies and evaluates potential opportunities to recharge groundwater in Placer and Sacramento counties through application of recycled water. The study identifies and screens possible direct and in-lieu recharge opportunities and then evaluates these opportunities based on economics, legal considerations, public perception, and potential for groundwater benefit. The four principal goals of the study are to:

1. Identify the potential market in the region for recycled water for irrigation purposes.
2. Evaluate participation in the SGA's regional groundwater banking and exchange program.
3. Investigate the institutional and regulatory issues that exist in implementing a recycled water/groundwater recharge program.
4. Identify mechanisms for protecting Roseville's existing water rights.

The potential benefits provided by the recharge programs are estimated assuming the water is used for two general purposes:

1. A component of a regional water transfer program such as that undertaken by the SGA in 2002.
2. A source of dry-year water supply for Roseville.

The study also quantifies the potential benefit that a recycled water recharge program may have on the underlying groundwater aquifer. When a system is established by the SGA to give credit to agencies that contribute to groundwater recharge, the study will serve as the foundation for Roseville to integrate their program with SGA's efforts.

The study recommends that water purveyors in the Sacramento region will need to look for more sophisticated alternatives for supplying water. Recycled water is an underutilized resource that can help to augment existing water supplies. The Dry Creek Recycled Water Groundwater Recharge Feasibility Study can help Roseville to continue to meet water users' needs, while ensuring the long-term sustainability of the region's groundwater basin and protecting the Lower American River through cooperation with the SGA.

1.5.2 LINCOLN

The following subsection provides a summary of relevant Lincoln planning efforts.

1.5.2.1 Reclamation Master Plan (2004)

Recognizing the value of water and in conjunction with State Water Resources Control Board's policy encouraging the reclaimed water, Lincoln developed a Reclamation Master Plan to distribute reclaimed water to

industry, landscaping and park facilities within Lincoln. The Reclamation Master Plan lays out steps for development of a reclaimed water distribution system incorporating the Reclamation Booster



Pump Station constructed with the WWTRF and converted sewer force mains. It also defines the phases for project implementation based on available reclaimed water, varying reclamation demands of different users at different times, and costs.

1.5.2.2 UWMP (2005)

In compliance with DWR requirements, Lincoln updated its UWMP in 2005. The Lincoln UWMP outlines a public outreach strategy, water supplies, water quality, water demands, and supply and demand comparisons. The UWMP also describes Lincoln's recycled water usage and plans for expansion, water conservation measures, its progress toward conservation implementation, and a water shortage contingency plan.

1.5.2.3 General Plan Update (2006)

Lincoln's General Plan Update was published on October 3, 2006. The update serves several purposes, including:

- To provide a description of current conditions in the city that can be used to assess the current state of development in the city and highlight the trends impacting the city.
- To provide the public with information on Lincoln and to provide opportunities for meaningful participation in the planning and decision-making process.
- To identify planning issues, opportunities, and challenges that should be addressed in the General Plan update.
- To ensure that the General Plan is current, internally consistent, and consolidated for ease of use.
- To improve coordination between the city and local, State, and Federal agencies regarding land use and resource issues.
- To provide guidance for city departments in the planning and evaluation of future land and resource decisions.

1.5.3 PCWA

The following subsection provides a summary of relevant PCWA planning efforts.

1.5.3.1 Integrated Water Resources Plan (IWRP)

This document presents an assessment of the water supply and demand situation in western Placer County. The objectives of this IWRP are as follows:

- Provide a baseline for organized water resources planning within Placer County.
- Coordinates water resources planning for all of the communities in western Placer County.
- Develop water demand versus supply scenarios to create strategy for normal and dry year conditions.
- Provide water demand planning guidance to help PCWA plan for water treatment and conveyance facilities.

The IWRP considers several growth scenarios beyond those in Placer County's current General Plan. Groundwater and reclaimed water were considered as future water supplies, along with updated water demand factors and increased water conservation. The main conclusion of the IWRP is that there is adequate water supply within western Placer County to meet all the demands for each of the growth scenarios.

1.5.3.2 Western Placer County Groundwater Storage Study (2005)

The objective of PCWA's Western Placer County Groundwater Storage Study is to develop alternatives for increasing groundwater storage and conjunctive use in western Placer County. Increased conjunctive use could lead to greater reliability of water supply for agricultural water users and greater water management flexibility for PCWA. North American River Integrated Groundwater Surface Water Modeling data were used to evaluate sustainable yield in the study area. The study was conducted with grant support from DWR through Proposition 13 bond funds (the Safe Drinking Water, Clean Water, Watershed Protection, and Flood Protection Act).



1.5.3.3 Water Systems Infrastructure Plan (2003)

PCWA prepared the Water Systems Infrastructure Plan (WSIP) which outlined a plan to ensure a reliable, long-term water supply for its customers, based on anticipated growth in PCWA's service area. The objectives of the WSIP are:

1. To provide a comprehensive, detailed evaluation of PCWA's water supplies.
2. To identify the possible alternatives of water diversion, treatment, and conveyance facilities to maximize the use of PCWA's water entitlement.

The WSIP includes:

- A review of water demands
- A description available water supplies and an outline of the related constraints and condition
- A framework for reviewing the development of three logical increments of new surface water supplies and an evaluation of the reliability of PCWA's surface water distribution
- A description of PCWA's water distribution system and operations
- Identification of a timeline for constructing new capital facilities based on projected growth scenarios for each water supply alternative
- Development of a set of reliability criteria, test of the alternative infrastructure
- Development of a Capital Improvement Project List and comparison of the needed water connection charge for each alternative Infrastructure Program Alternative
- An Environmental Sensitivity Study and a general sensitivity analysis for several identified near-term projects.

1.5.3.4 UWMP (2005)

In compliance with DWR requirements, PCWA updated its UWMP in 2005. According to the UWMP, PCWA provides retail water service to approximately 220,000 people in Placer County. Water service is provided for approximately 36,000 agricultural, municipal, and industrial connections, with both raw and treated water, in the cities of Auburn, Colfax, Loomis, and Rocklin, and to most of the small communities in unincorporated western Placer County along the I-80 corridor below Alta. PCWA also provides treated water to several mutual water companies within its Zone 1 service area that operate their own distribution systems. UWMP also describes the wholesale water deliveries of treated water to Lincoln and CAW and untreated water off of its canal system to several smaller water utilities that provide their own treatment and distribution service. PCWA also provides surface water out of the American River that is diverted and used by SJWD, Roseville, and Sacramento Suburban Water District. These wholesale customers are required to prepare their own UWMPs.

1.5.4 CAW

The following subsection provides a summary of relevant CAW planning efforts.

1.5.4.1 West Placer Water System Comprehensive Planning Study (2006)



The West Placer Water System is a new system and is expected to grow. CAW developed the Comprehensive Planning Study (CPS) to provide a review and analysis of the supply, production, and distribution facilities for the West Placer Water System. The primary goal of the CPS is to identify and prioritize capital improvements that are necessary to ensure that the West Placer Water System can safely and reliably meet current and projected water demands, while continuing to provide safe, adequate, and reliable service through the planning period. The CPS addresses the following elements:

- Customer demand projections through the year 2020.
- Evaluation of the adequacy for existing and future source of supply.
- Production facility assessment including existing and proposed water quality, treatment, and safety standards.
- Analysis of the water system transmission, distribution, and storage needs through modeling.

As described in the CPS, the current population of CAW's West Placer Service Area is 3,041 (SACOG, 2006). Demographic estimates for the project growth scenario are based on land use. According to the Enhanced General Plan growth scenario, anticipated by 2020 build-out of the West Placer Services Area will have approximately 24,500 residential dwelling units (DU) (16,721 residential customer connections.) . According to the CPS, this will equate to a 2020 demand of 15,748 acre-feet per year.

Current sources of supply for the West Placer Service Area rely on treated surface water supplies from PCWA. This supply is conveyed through Roseville's distribution system to CAW's connection point in West Placer. Groundwater is available for emergency use only through an interconnection with the CAW Antelope system

via the Cook-Riolo inter-tie. The current Placer County franchise agreement with CAW restricts the use of groundwater.

The CPS provides an analysis of the production facilities and distribution system in the West Placer Service Area and outlines specific project recommendations. These recommendations include improvements to production, storage, and distribution facilities. Projects identified in the CPS have been divided into two groups: Priority A and Priority B. Priority A projects are expected to be incorporated into CAW's Strategic Capital Expenditure Plan (SCEP) as the budget allows. Priority A projects are needed to comply with current or anticipated future regulations, address significant safety concerns, or ensure that adequate water supplies are available to meet projected demands. Priority A projects include:

- Walerga Road Tank and Booster Station
- Additional PCWA Supply Connection at PFE Road
- Crowder Lane Control System Upgrades
- Disinfection Byproducts Study

Priority B projects address longer-term needs, that relate to future growth or improvements that enhance system reliability. This may include developer-funded transmission and distribution facilities.

1.5.4.2 UWMP (2005)

The Northern Division of CAW completed its UWMP in 2005 under the terms of AB 797 (1983). The Northern Division of CAW is the largest private water operation in Sacramento County and consists of ten districts serving 171,000 people in the operating service area including Antelope, Arden, Lincoln Oaks, Parkway, Suburban/Rosemont, Security Park (Sunrise), West Placer, Isleton, Walnut Grove, and Lakefield.

The West Placer Service Area within the Northern Division of the CAW is located within the WPCGMP region (see Figure 1-2). CAW has a franchise agreement to supply water to the West Placer Service Area as it develops in future years. The West Placer Service Area is the only portion of the Northern Division of CAW that relies exclusively on surface water, which is supplied from PCWA. Currently, CAW serves

less than 1,000 customers in the West Placer service area, but is expected to grow to as many as 18,000-22,000 connections as the area approaches build-out. Some newly developing areas in the West Placer Service Area are provided with recycled water from



Roseville's Dry Creek Wastewater Treatment Plant. This recycled water is used for irrigation of landscaping in parks, street medians, the Morgan Creek Golf Country Club, and open space areas. As part of UWMP implementation, CAW will continue to support the use of reclaimed water for irrigation and potentially other uses in the West Placer Service Area.

1.5.5 REGIONAL

The following subsection provides a summary of regional planning efforts.

1.5.5.1 Placer County General Plan (1992 and 1994)

The Placer County General Plan consists of two types of documents: the Countywide General Plan, and a set of more detailed community plans covering specific areas of the unincorporated County.

The Countywide General Plan provides an overall framework for development of the County and protection of its natural and cultural resources. The goals and policies contained in the Countywide General Plan are applicable throughout the County, except to the extent that County authority is preempted by cities within their corporate limits.

Adopted in the same manner as the Countywide General Plan, a community plan provides a more detailed focus on a specific geographic area within the unincorporated county. The goals and policies contained in a community plan supplement and elaborate upon, but do not supersede, the goals and policies of the Countywide General Plan.

The Countywide General Plan consists of two documents: the General Plan Background Report and the General Plan Policy Document. The Background Report inventories and analyzes existing conditions and trends in Placer County. It provides the formal supporting documentation for general plan policy, addressing 11 subject areas: land use, housing, population, economic conditions and fiscal considerations, transportation and circulation, public facilities, public services, recreational and cultural resources, natural resources, safety, and noise.

The General Plan Policy Document includes the goals, policies, standards, implementation programs, quantified objectives, the Land Use Diagram, and the Circulation Plan Diagram that constitute Placer County's formal policies for land use, development, and environmental quality.

The General Plan Policy Document is divided into three main parts. Part I describes the Countywide Land Use Diagram and allowable uses and standards for each of the designations appearing on the diagram. Part I then describes standards for land use buffer zones. Finally, Part I describes the Countywide Land Use Diagram, standards for the roadway classification system on the diagram, and standards for transit corridors.

Part II contains explicit statements of goals, policies, standards, implementation programs, and quantified objectives. Part II is divided into the following ten sections, which roughly correspond to the organization of issues addressed in the General Plan Background Report. These are as follows: Land Use, Housing (adopted separately June 22, 1992), Transportation and Circulation, Public Facilities and Services, Recreational and Cultural Resources, Natu-



ral Resources, Agricultural and Forestry Resources, Health and Safety, Noise, and Administration and Implementation.

Part III of the Policy Document consists of general standards for the consideration of future amendments to the General Plan.

Ultimately, the intent of the Placer County General Plan is to protect the County during future urban growth and to partially provide an understanding of the approval process necessary to protect/promote groundwater interests.

1.5.5.2 Water Forum Agreement and Successor Effort

Beginning in 1993, the Water Forum process brought together a diverse group of stakeholders comprised of business and agricultural leaders, citizens' groups, environmentalists, water managers, and local governments to evaluate available water resources and the future water needs of the Sacramento region, including communities from Sacramento, Placer and El Dorado counties. These stakeholders identified two coequal objectives to guide in the development of the Water Forum Agreement (WFA):

- Provide a reliable and safe water supply for the region's economic health and planned development through the year 2030.
- Preserve the fishery, wildlife, recreational, and aesthetic values of the Lower American River.

The WFA also established a Water Forum Successor Effort (Successor Effort) to administer the implementation of the agreement. The Successor Effort:

- Ensures continuity between the Water Forum and the Successor Effort.
- Preserves existing technical expertise.
- Avoids the costs, confusion and delays inherent in transferring the Successor Effort to a different organization.
- Avoids creating another redundant government entity.

All parties which signed the Water Forum Agreement; including Roseville, PCWA, and CAW are Water Forum signatories and

are full participants in the Successor Effort. In addition, there is a supplementary funding agreement which includes the City of Sacramento, the County of Sacramento and the other agencies (including agencies outside of Sacramento County) which, consistent with the funding principles, are paying to support the work of the Successor Effort. It is important to note that:

- All WFA signatories have equal standing in the Successor Effort whether they are a public agency, investor-owned utility, or citizen interest/advocacy organization.
- Though Water Forum Successor Effort staff will be employees or contractors of the City of Sacramento, the Successor Effort representatives will provide over-all policy direction for work by staff.

1.5.5.3 American River Basin Integrated Regional Water Management Plan (IRWMP)

Regional Water Authority (RWA), Freeport Regional Water Authority (FRWA), and Sacramento County Water Agency (SCWA), along with the various members and stakeholders, have developed the American River Basin (ARB) Integrated Regional Water Management Plan (IRWMP). The ARB region encompasses all of Sacramento County and most of Placer and El Dorado counties, except the areas in the Tahoe Basin, which are part of a separate planning area. An IRWMP is a comprehensive planning document prepared on a regional scale that identifies priority water resources projects and programs with multiple benefits. An IRWMP relies upon specific and focused local and sub-regional planning efforts for its foundation, and investigates a broad spectrum of water resource issues including water supply, flood management, water quality, environmental restoration, environmental justice, stakeholder involvement, and far-reaching community and statewide interests. A key difference in IRWMPs (as compared to other planning documents) is that IRWMPs integrate multiple water management strategies to solve multiple priority challenges.

The ARB IRWMP was adopted in May 2006. As projects/programs outlined in the IRWMP are implemented, the plan itself will be reviewed periodically to address changes, identify issues of

concern, and provide for additional study and analysis. New projects/programs will continue to be identified and incorporated. The participants designed the IRWMP as a living document that can be readily updated as the needs of the region change over time.

PCWA, Roseville, Lincoln, and CAW are involved in the ARB IRWMP through their participation in RWA.

1.5.5.4 Other Ongoing Groundwater Management Related Activities within the WPCGMP Area

In addition to the on-going programs by plan participants, there are several other on-going groundwater-related activities within the WPCGMP area. Coordination between these efforts and plan participants will be discussed in more detail later in this WPCGMP. The activities closely related to the plan participant's groundwater management efforts include, but are not limited to, the following:

- Monitoring of groundwater levels and quality by the California Department of Water Resources (DWR).
- Monitoring of groundwater quality by the U.S. Geological Survey (USGS) as part of its National Groundwater Ambient Monitoring Assessment (GAMA) Program.
- Monitoring of site investigations and remediation efforts at known leaking underground storage tanks (LUSTs) coordinated by the CVRWQCB.
- Soil contamination investigation and remediation activities at miscellaneous sites in the WPCGMP area, including the Union Pacific Railroad Yard in Roseville, California and the Alpha Explosives Facility just north of Lincoln.

1.6 AUTHORITY TO PREPARE AND IMPLEMENT A WPCGMP

The authority of plan participants to manage this portion of the Sub-basin is provided through a memorandum of understanding (MOU). Council members and/or board of directors for Roseville, Lincoln, PCWA, and CAW elected to prepare this WPCGMP as one of the tools necessary to effectively manage the basin. These plan participants are preparing this WPCGMP consistent with the provisions of CWC § 10750 et seq. as amended January 1, 2003. This document does not supersede the specific objectives and actions included in Lincoln's 2003 WPCGMP, or otherwise infringe on the autonomy or authority of Roseville, Lincoln, PCWA or CAW, unless otherwise agreed upon as described in Section 4 of this document.

1.7 WPCGMP COMPONENTS

The WPCGMP includes both required and voluntary components.

Table 1-3 lists these components and indicates the section(s) in which each component is addressed.



Table 1-3. Location of WPCGMP Components

Description	Section(s)
A. CWC § 10750 et seq., Required Components ⁽¹⁾	
1. Documentation of public involvement statement.	3.5 & App. A
2. Basin Management Objectives (BMOs).	3.3
3. Monitoring and management of groundwater elevations, groundwater quality, inelastic land surface subsidence, and changes in surface water flows and quality that directly affect groundwater levels or quality or are caused by pumping.	3.6
4. Plan to involve other agencies located within groundwater basin.	3.5
5. Adoption of monitoring protocols by basin stakeholders.	3.6
6. Map of groundwater basin showing area of agency subject to GMP, other local agency boundaries, and groundwater basin boundary as defined in DWR Bulletin 118.	Fig. 1-3
7. For agencies not overlying groundwater basins, prepare GMP using appropriate geologic and hydrogeologic principles.	N/A
B. DWR's Recommended Components ⁽²⁾	
1. Manage with guidance of advisory committee.	3.5.3
2. Describe area to be managed under GMP.	1 & 2
3. Create link between BMOs and goals and actions of GMP.	Table 3-1
4. Describe GMP monitoring program.	3.6
5. Describe integrated water management planning efforts.	1.5 & 3.9
6. Report on implementation of GMP.	4.1
7. Evaluate GMP periodically.	4.2
C. CWC § 10750 et seq., Voluntary Components ⁽³⁾	
1. Control of saline water intrusion.	3.7.6
2. Identification and management of wellhead protection areas and recharge areas.	3.7.3 & 3.7.4
3. Regulation of the migration of contaminated groundwater.	3.7.5
4. Administration of well abandonment and well destruction program.	3.7.2
5. Mitigation of conditions of overdraft.	3.8
6. Replenishment of groundwater extracted by water producers.	3.3
7. Monitoring of groundwater levels and storage.	3.6
8. Facilitating conjunctive use operations.	3.8.1
9. Identification of well construction policies.	3.7.1
10. Construction and operation by local agency of groundwater contamination cleanup, recharge, storage, conservation, water recycling, and extraction projects.	2.3
11. Development of relationships with state and federal regulatory agencies.	3.5.4
12. Review of land use plans and coordination with land use planning agencies to assess activities that create reasonable risk of groundwater contamination.	3.9

^(A) CWC § 10750 et seq. (seven required components). Recent amendments to the CWC § 10750 et seq. require GMPs to include several components to be eligible for the award of funds administered by DWR for the construction of groundwater projects or groundwater quality projects. These amendments to the CWC were included in Senate Bill 1938, effective January 1, 2003.

^(B) DWR Bulletin 118 (2003) components (seven recommended components).

^(C) CWC § 10750 et seq. (12 voluntary components). CWC § 10750 et seq. includes 12 specific technical issues that could be addressed in GMPs to manage the basin optimally and protect against adverse conditions.

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SECTION 2

Water Resources Settings

Water Resources Setting

This section describes the current understanding of surface and subsurface features of the WPCGMP area, which is located in the North American River Groundwater Sub-Basin (Sub-Basin) underlying western Placer County. Locations and classification of the different types of groundwater users within the Sub-Basin are shown in **Figure 2-1**. Within the WPCGMP boundaries, public retail water purveyors currently rely on a combination of groundwater and surface water. Groundwater and surface water supplies available for use within the Sub-Basin are briefly summarized below.

Roseville currently utilizes surface and recycled water. Surface water is treated at Roseville's Water Treatment Plan (WTP). However, Roseville plans to use groundwater in the future as a backup water supply source to meet daily and peak seasonal demands.

Lincoln primarily uses treated surface water delivered by PCWA, and relies on groundwater for emergency outages and as a backup water supply source during daily and peak demand periods. Lincoln also provides recycled water from its wastewater treatment recycling facility (WWTRF) for nearby agricultural uses, and is working on expanding the use of recycled water to include non-potable commercial, industrial, and public landscaping needs.

PCWA provides treated surface water for urban users and raw water for agricultural and irrigation and rural users to its five service zones. PCWA also provides limited groundwater supplies to areas isolated from its surface water delivery system and as a backup supply to the Sunset Industrial Park.

CAW provides treated surface water, purchased from PCWA, for CAW's West Placer Service Area which includes the Dry Creek/West (Placer Vineyards) region, Dry Creek/East region, and a portion of the Curry Creek region. CAW currently does not use groundwater within the West Placer Service Area.

2.1 GROUNDWATER CONDITIONS

This subsection provides a description of general groundwater conditions including the groundwater basin, the geology/hydrogeology, groundwater elevation, and groundwater quality within the WPCGMP area.

2.1.1 Groundwater Basin

This subsection provides a description of the underlying groundwater Sub-basin. The Sub-Basin is defined by DWR as the area bounded on the west by the Feather and Sacramento Rivers, on the north by the Bear River, on the south by the American River, and on the east by the Sierra Nevada Range (DWR, 2003). The Sub-basin is located within the Sacramento Valley Groundwater Basin. DWR Bulletin 118 (2003) provides additional information about the Sub-Basin on the agency's Web site¹ including:

- Surface Area: 548 square miles.
- The eastern Sub-basin boundary is a north-south line extending from the Bear River south to Folsom Reservoir. This represents the approximate edge of the alluvial basin where little or no groundwater flows into or out of the groundwater basin from the Sierra Nevada.



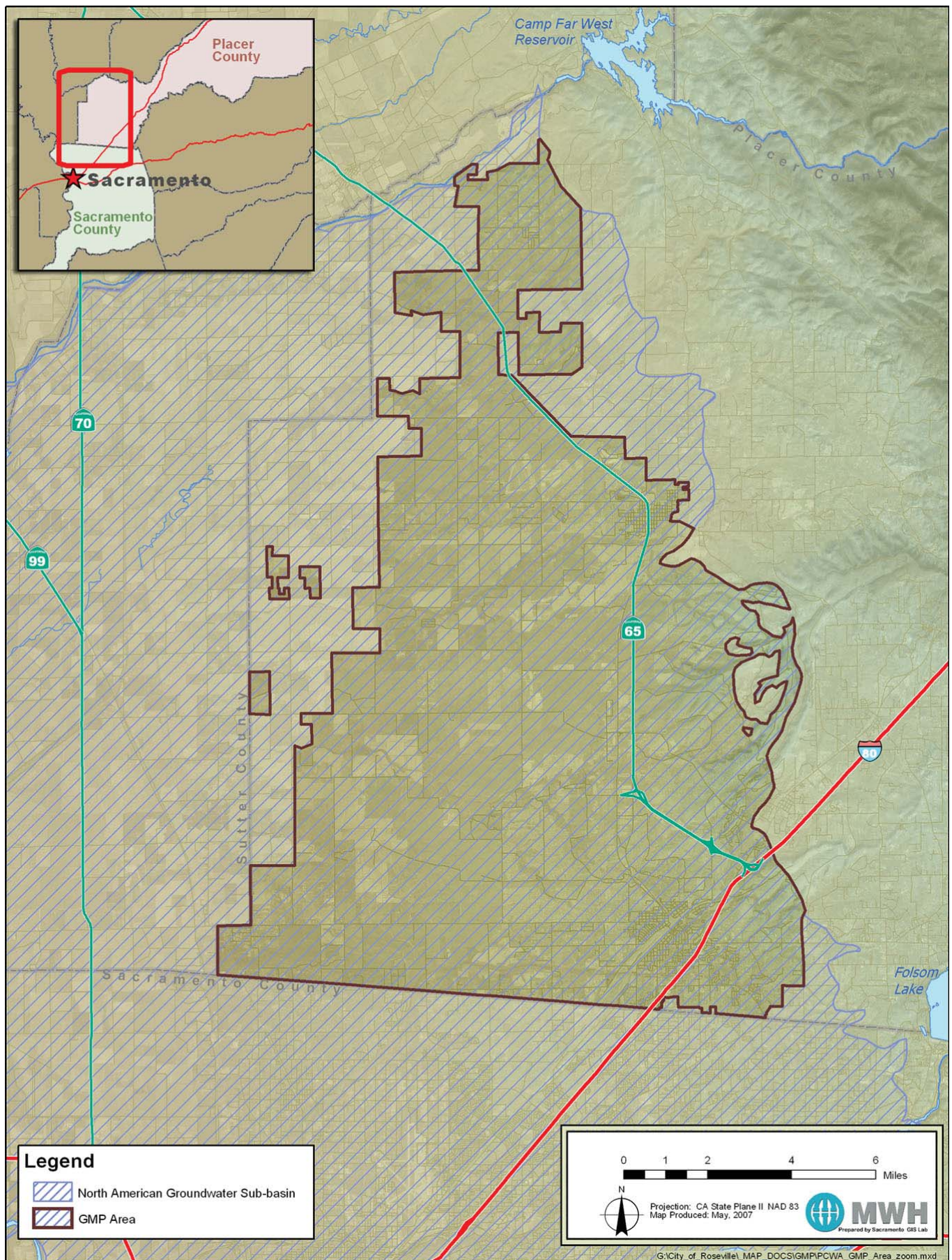


Figure 2-1 – North American Groundwater Subbasin and WPCGMP Area

- The western portion of the Sub-basin consists of nearly flat flood basin deposits from the Bear, Feather, Sacramento and American Rivers, and several small east side tributaries

2.1.2 Geology/Hydrogeology

This subsection provides a regional description of the geologic and hydrogeologic conditions of the underlying groundwater Sub-basin. The California Geological Survey (CGS) and DWR identifies and describes the surface geology and various hydrogeologic formations that constitute the water-bearing deposits underlying the Sub-Basin, respectively.

2.1.3 Hydrostratigraphy

The CGS mapped the surface geology of western Placer County as shown on **Figure 2-2**. Recent alluvial deposits comprise most of the western study area; chiefly clay and silt materials occur adjacent to the Sacramento and Feather Rivers (CGS, 1987 and 1992). These deposits are relatively impermeable. Typically, basin deposits are more coarse grained near to the foothills and therefore are more permeable. Modified from DWR Bulletin 118-3, the stratigraphic profile shown in **Figure 2-3** provides a conceptual representation of the basin's geologic formations and illustrates that the water bearing formations form a wedge that generally thickens from east to west to a maximum thickness of about 2,000 feet under the Sacramento and Feather Rivers (DWR, 1980 and 2003).

Per DWR Bulletin 118-3, the upper unconfined aquifer system consists of the Riverbank (formerly known as Victor) and Turlock Lake/Laguna (formerly known as Fair Oaks-Laguna) formations; the lower semi-confined aquifer system consists primarily of the Mehrten formation. These two systems constitute the major water producing aquifers in the region. They are composed of lenses of sand, silt, and clay, inter-bedded with coarse-grained stream channel deposits that store water.

The degree of confinement typically increases with depth below the ground surface. However, due to the heterogeneous nature



of the alluvial depositional system, semi-confined conditions can be encountered at shallow depths in the aquifer. At approximately 1,000 to 1,500 feet depth, lies the base of fresh water. Below this boundary lies water originating from marine sediments where total dissolved solids levels (salinity) are too high to be used as a reliable municipal water source. There is no regionally confined

Lincoln Hydrogeology - Seismic and Downhole Geophysical Survey Understanding

Lincoln, as a result of several extensive investigations initiated in 1997, using seismic surveys and downhole geophysical tools, has gained a substantial understanding of the portion of the basin underlying Lincoln's SOI (Saracino, Kirby, and Snow, 2003). As an example of information gained, the following is a summary of survey results for five monitoring wells drilled in the winter of 2004.

1. Most of the flow capacity (predicted production) is estimated to occur in relatively few discrete aquifer zones that make up a small percentage of the total depth section intersected by each well.
2. The relative flow profile indicates the existence of thin zones that are significantly more productive than the remainder of the depth section. These thin zones have a disproportionately large contribution to the overall well flow capacity – representing depth-specific, highly transmissive “freeways” for groundwater to flow. The large variability of the estimated discrete depth flow capacity attests to the heterogeneous nature of the geologic material in this area – mostly alluvial sediments.
3. An example of a monitoring well in the most productive aquifer zone is across the interval 278 to 353 ft below ground surface (bgs), which is not in Mehrten Formation – instead it is in a “clean,” quartz-rich sand/gravel aquifer section that appears to be alluvial sediments pre-dating the deposition of the Mehrten Formation. The log derived estimated transmissivity for this zone is on the order of 100,000 gallons per day per foot (gpd/ft).
4. The primary aquifer zones intersected in the four wells appear to be fairly well confined, based on the presence of low permeability zones that directly overlie and underlie the aquifer zones.
5. The estimate of formation ground water salinity indicates no aquifer zones have salinity greater than 500 ppm, mostly less than 300 ppm, although some low permeability, non-aquifer zones appear to have higher ground water salinity.

aquifer system such as that created in the San Joaquin Valley by the Corcoran Clay layer due to the lack of extensive fine grained layers in the subsurface of the Study Area.

2.1.4 Recharge and Extraction of Groundwater

Evaluating changes in aquifer conditions requires an understanding of the dynamic processes and interactions that are taking place as extractions and recharge of the aquifer occur. Conceptual models of the aquifer that describe induced recharge, aquifer storage, and

¹ At: http://www.dpla2.water.ca.gov/publications/groundwater/bulletin118/basins/5-21.64_North_American.pdf.

differences between localized and regional effects on the aquifer are discussed below. These conceptual models are meant to clarify concepts; not all aspects of groundwater hydraulics are described. These models only apply to the Sub-Basin and adjoining sub-basins within Sacramento and western Placer Counties.

Recharge. Groundwater in the Sub-Basin moves from sources of recharge to areas of discharge. Recharge to the Sub-basin system occurs along active river and stream channels where extensive sand and gravel deposits exist, particularly along the Feather, Bear, American, and Sacramento River channels. Additional recharge occurs along the eastern boundary of the Sub-Basin within western Placer County at the transition point from the consolidated rocks of the Sierra Nevada to the alluvial deposited basin sediments (where the semi-confined Mehrten formation is exposed at the ground surface). This typically occurs through fractured granitic and metavolcanic rock that makes up the Sierra Nevada foothills. Other sources of recharge within the area include deep percolation

associated with applied irrigation water and precipitation, as well as from smaller streams that bi-sect the region (i.e. Auburn Ravine and Coon Creek).

Changes in the groundwater surface elevation (or potentiometric surface) result from changes in groundwater recharge, discharge, or extraction. In some instances, this change in groundwater elevation can induce natural recharge at locations where rivers or streams and the aquifer are hydraulically connected. To the extent that a hydraulic connection exists, as groundwater conditions change, the slope or gradient of the groundwater surface may change as well. A steeper gradient away from the stream would induce higher recharge from surface water into the aquifer.

The rate of recharge from streams that are hydraulically disconnected from the groundwater surface is indifferent to changes in groundwater elevations or gradient. This is typically true with smaller streams where the groundwater surface is located far below the streambed. In such cases, surface water percolates

Roseville Hydrogeology - Aquifer Storage and Recovery (ASR) Program Exploratory Borehole, Monitoring Well, and Production Well Finding

From 2002-2006, Roseville installed 4 production wells and 4 monitoring wells in the northwest portion of the city limits as part of its Aquifer Storage and Recovery (ASR) program. To support the ASR program, Roseville initiated the collection of a comprehensive set of hydrogeologic data at these wells; including lithologic, geophysics, well pump tests, and groundwater elevation and quality. This data was collected and/or analyzed by multiple ASR program partners including; the City of Roseville, the U.S. Geological Survey, Lawrence Livermore National Laboratory, Department of Water Resources, Schlumberger Water Services, and MWH. Much of this data has been fully documented in well construction and/or ASR testing reports. A general summary of some of these findings is provided in the following paragraphs.

Borehole drilling, lithologic characterization and geophysical logging was conducted to depths of approximately 500-700 feet below ground surface (bgs), depending on the well location. Based on this data, the top of the targeted aquifer zone (Mehrten Formation) was found at depths ranging from approximately 300 to 525 feet bgs with a thickness ranging from approximately 100-200 feet. At each location, the Mehrten Formation was identified by the presence of dark colored, volcanic deposits commonly referred to as "black sands" (DWR, 1974). However, soil cuttings collected from the Mehrten Formation at each well show that grain size varies significantly

from one location to another. At two locations, the largest grain sizes were coarse sands, while at two other locations large gravels and cobbles were encountered. In all cases, however, layers of sands and gravels within the Mehrten Formation were interbedded with layers of silts and clays with varying thicknesses. Lastly, the presence of thick clay layers above and below the Mehrten Formation in nearly all wells suggests that the Mehrten Formation is fairly well-confined.

The results of production well pumping tests revealed very high production rates of 1,800 to 3,500 gallons per minute (gpm), with specific capacities ranging from 20-75 gallons per foot (gal/ft). Groundwater flow profiling tests performed at several of the wells suggests that the majority of groundwater pumped at each well is produced from a few relatively thin (5-10 feet thick), highly productive zones within the Mehrten Formation.

Overall, water quality within the Mehrten Formation was found to be excellent, with all constituents meeting maximum contaminant levels (MCLs) for drinking water. The one exception was at a monitoring well located towards the western boundary of Roseville where iron, manganese and TDS were found at levels exceeding the MCL. Here, the Mehrten Formation is located approximately 550-700 ft bgs. At this location, the production well was screened to draw groundwater above the Mehrten Formation (at the bottom of the Laguna Formation) where better water quality was observed.

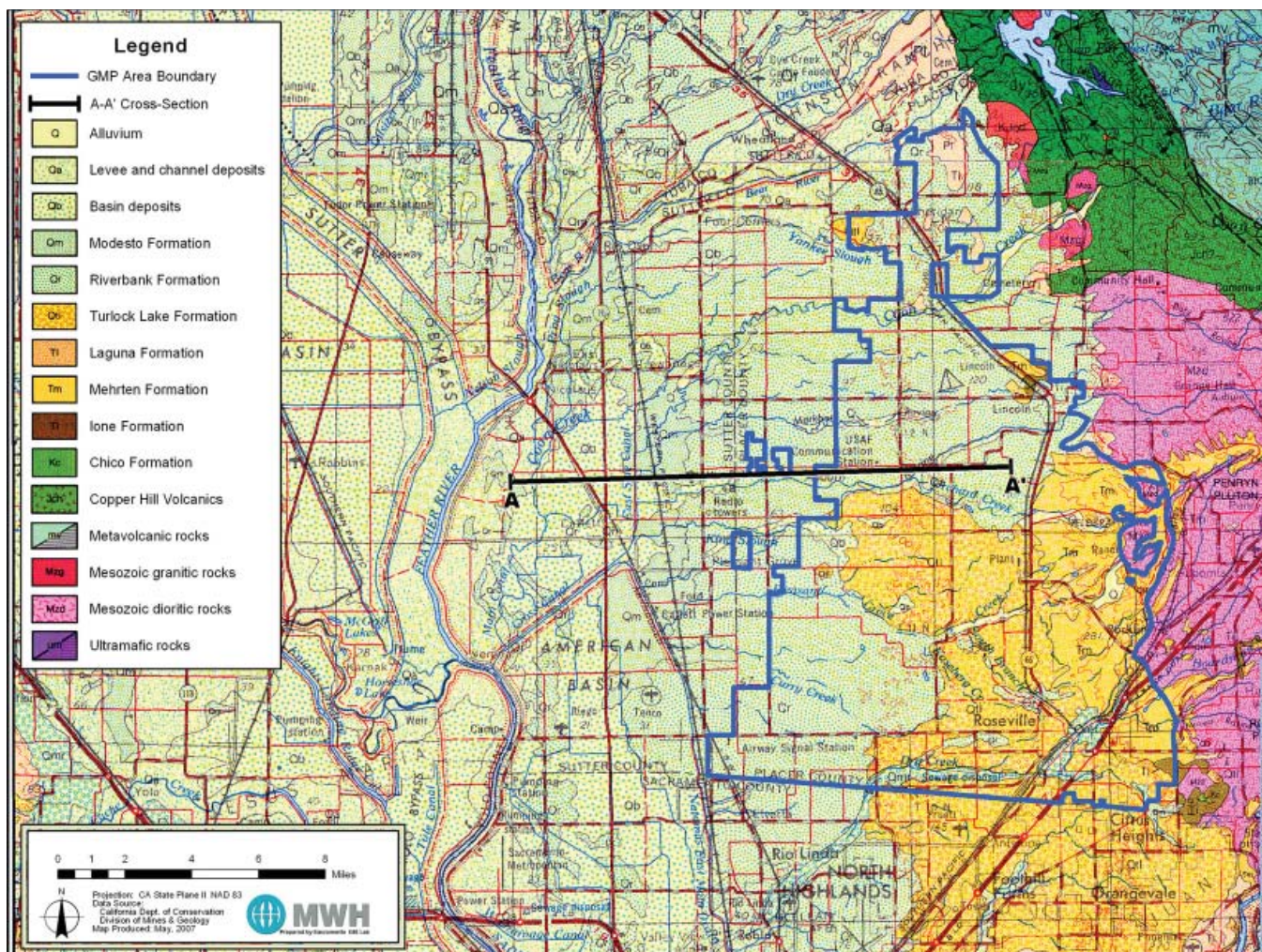


Figure 2-2 – Geology of Region

through the un-saturated zone to the groundwater and its rate is a function of the aquifer materials underlying the streambed and the water level in the surface stream. The rate of infiltration under these conditions is not controlled by the change in elevation of the underlying groundwater. In the case of larger rivers, the American and Sacramento Rivers are considered to be hydraulically connected. This WPCGMP recognizes the importance of maintaining hydraulic connections with the larger river sources for sustainability of the groundwater supply and the environmental benefits of keeping water flowing in the riverbed.

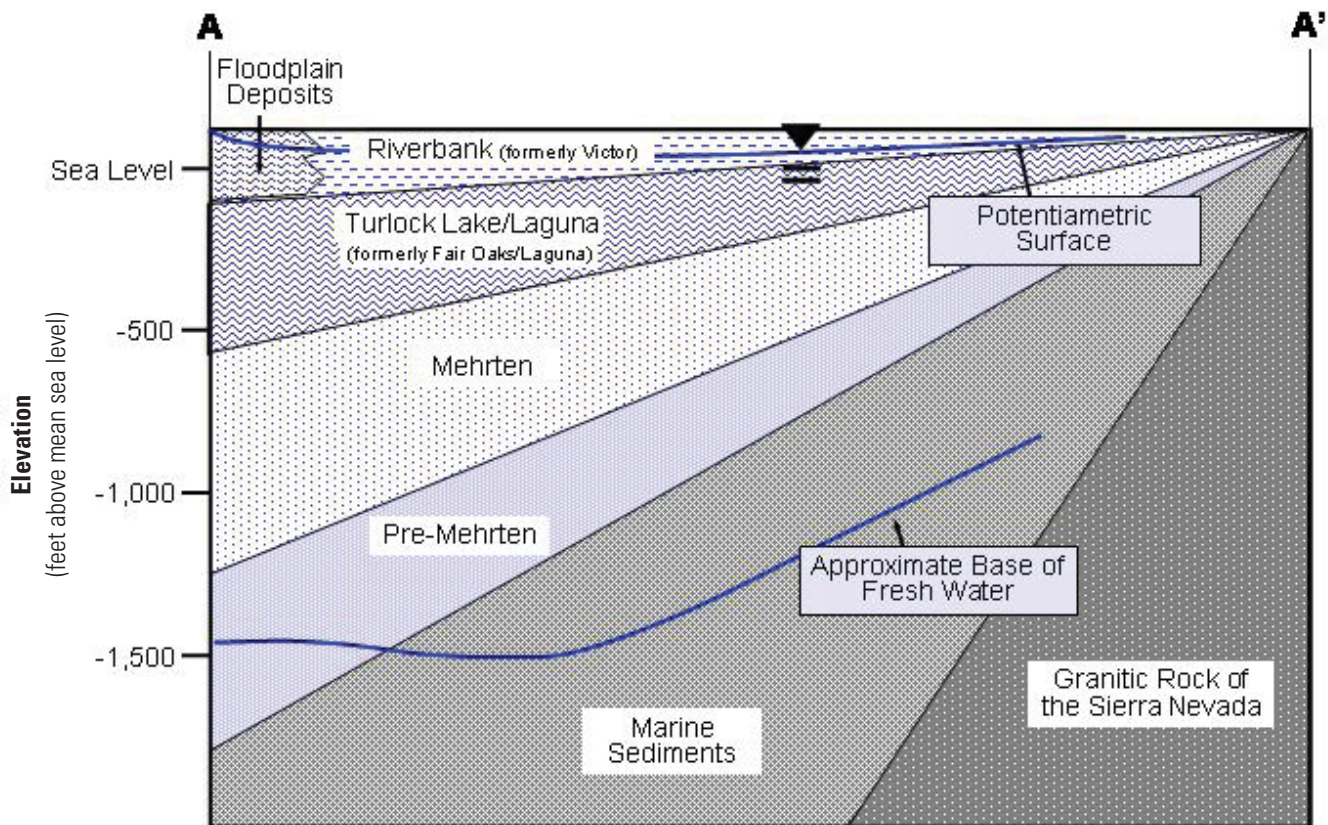


Localized Impacts of Groundwater Extraction. When extractions occur from a single well, a localized cone of depression is formed around the well. The shape and depth of the cone of depression depends on several factors including, but not limited

to: (1) the rate of extraction; (2) the presence of nearby sources of recharge and/or extraction; (3) aquifer transmissivity; (4) natural impervious barriers or earthquake faults; and (5) the “confined” or “unconfined” state of the aquifer, (i.e., storage coefficient). Over time, extraction from an unconfined aquifer can de-water the aquifer around the well. However, when extraction ceases, the water level within the aquifer typically rebounds to its pre-extraction condition.

A confined or semi-confined aquifer behaves differently since the water is under pressure from a recharge source. Instead of de-watering the aquifer, a change in confining pressure occurs as a result of extractions; the aquifer remains saturated. In a confined aquifer, the pressure or piezometric surface elevation decline is more dramatic than in an unconfined aquifer; however, the recovery to pre-extraction conditions is typically much faster.

Regional Impacts of Groundwater Extraction. Large regional cones of depression can form in areas where multiple groundwater extraction wells are in operation. The location and shape of a regional cone of depression is influenced by the same factors as a single well. A regional cone of depression within western Placer County and a larger cone of depression within Sacramento County



(See cross-section A-A' location on Figure 2-2)

Figure 2-3 – Stratigraphic Profile

is shown on **Figure 2-4**. This map was prepared using water elevation data from DWR's water data library available on-line at: <http://wdl.water.ca.gov>. The map contours were determined using the Inverse Distance to a Power method.

The Inverse Distance to a Power gridding method was used to contour the water elevation data posted on **Figure 2-4**. This contouring method is a weighted average interpolator and is best used when there is a uniform distribution of data. With Inverse Distance to a Power, data are weighted during interpolation such that the influence of one point relative to another declines with distance from the grid node. Normally, Inverse Distance to a Power behaves as an exact interpolator. When calculating a grid node, the weights assigned to the data points are fractions, and the sum of all the weights is equal to 1.0.

Fluctuations in regional cones of depression are measured over years and result from: changes in recharge, and changes in extractions from increasing and decreasing water demands. For example, a sequence of successive dry years can decrease the amount of natural recharge to the aquifer. If this is coupled with a coinciding increase in groundwater extraction, an imbalance is created between natural recharge and extractions. Consequently, groundwater elevations would decrease in response to this imbalance. Over time, the shape and location of the aquifer's regional cone of depression fluctuates.

Intensive use of the groundwater basin has resulted in a general lowering of groundwater elevations near the center of the Sub-basin away from the sources of recharge as shown in **Figure 2-4**.

Spring 2006 Groundwater Elevation Contours. Provided within this subsection is an evaluation of a groundwater elevation contour map for the entire Sub-Basin during spring² of 2006 based on DWR information. Spring groundwater elevations are generally about 10 to 20 feet higher than during the fall season. This is because during the spring, the basin has been replenished by winter rainfall and less intensive agricultural activities in winter while prolonged dry season and extensive pumping reduces groundwater storage and lowers groundwater elevations leading to a seasonal cone of depression in the fall months, which is later recovered to some extent in the following spring. For example, during spring 2006 groundwater elevations ranged from 80 feet mean sea level (msl) along the foothills to -30 feet msl in the central portion of Sacramento County and -20 feet msl in the southern portion of Placer-Sutter County.

A regional cone of depression persists in the northern Sacramento and southern Placer-Sutter County area, respectively. Generally groundwater elevations are significantly higher on the eastern edge of the Sub-basin near the Sierra Nevada foothills, and lower on the western edge of the groundwater Sub-basin mimicking surface elevations.

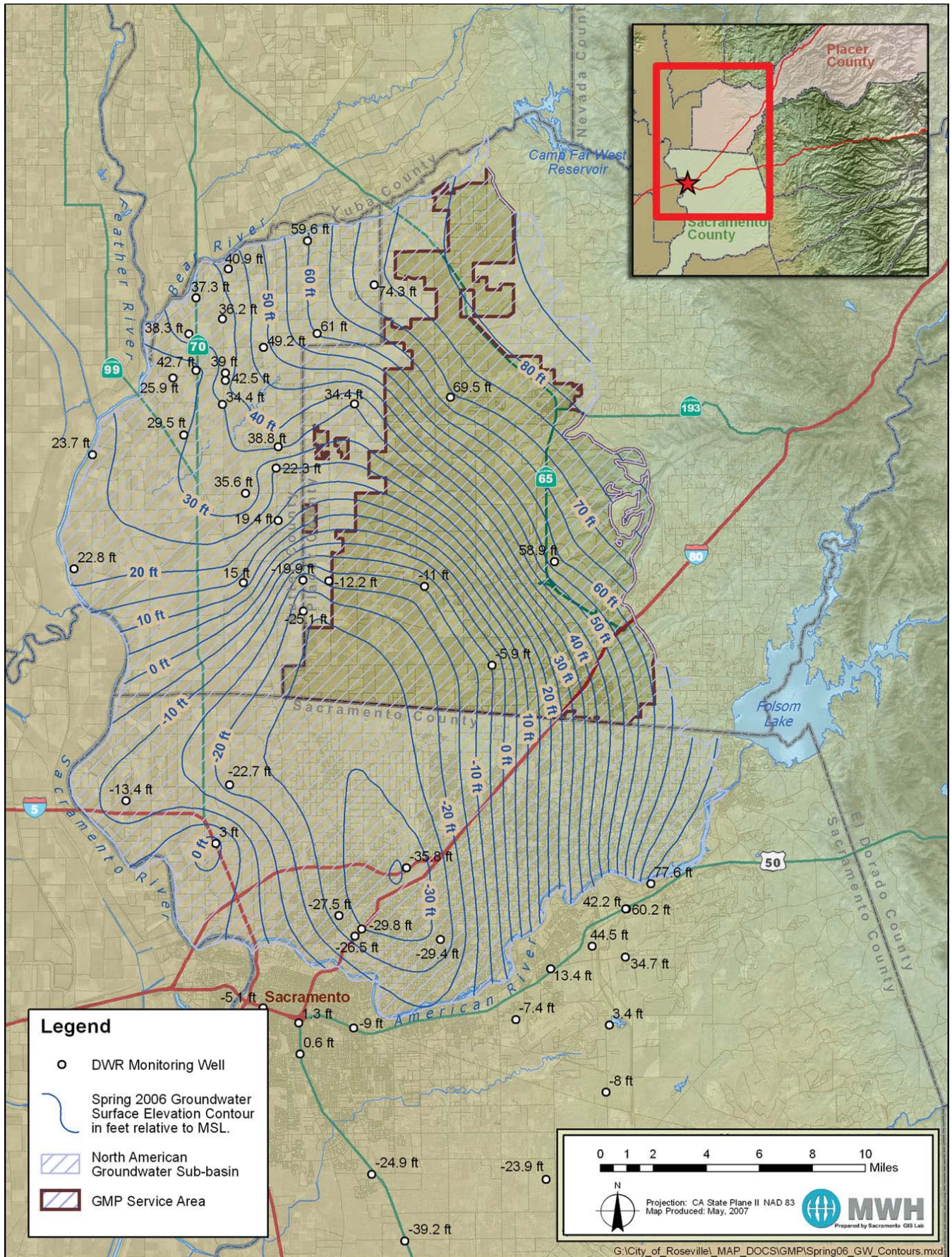


Figure 2-4 – Groundwater Elevation Map

2.1.5 Groundwater Elevation Trends

Groundwater elevation hydrographs for 13 representative wells in the Sub-basin are shown on **Figure 2-5**. Wells closest to Sacramento County experienced declines in groundwater elevations from the late 1940s (earliest measurements) to approximately 1980. Such declines can be primarily attributed to meeting urban and agricultural water demands from groundwater pumping. After 1980, wells 10N05E08L002 and 10N05E12D001 appear to have stabilized. Well 10N06E10C001, located at the edge of Roseville, continued to experience declining groundwater elevation until 1997 when the elevation drop was approximately 65 feet from its 1947 level. All three of these wells now exhibit stabilized groundwater elevations implying that the basin is in a state of equilibrium.

Specifically for Lincoln, DWR documentation was reviewed during preparation of their 2003 GMP to determine if DWR has identified the portion of the groundwater basin underlying the City to be in a state of overdraft, or if any DWR documentation has projected overdraft within the Lincoln Sphere of Influence (SOI). The following DWR documents were reviewed for this analysis: Bulletin 118-80 (DWR, 1980), Bulletin 118-3 (DWR, 1974), Bulletin 118-6 (DWR, 1978), and the draft basin description for the Bulletin 118 Update (DWR, 2002a). Additional historical groundwater elevation data collected by DWR was reviewed for wells in Lincoln's designated SOI.

Generally, the documents reviewed describe conditions of overdraft in southwestern Placer County and northern Sacramento County, as shown in **Figure 2-4**, located to the southwest of Lincoln. Groundwater elevations directly underlying Lincoln, however, were not described to be in a long-term state of decline. Therefore, the groundwater elevation data contained in those reports, as well as nearly 20 years of data at various sites around Lincoln, further support the conclusion of this WPCGMP that indicate groundwater elevations are not significantly declining within the vicinity of Lincoln.

For wells along the Placer-Sutter County border, the further the distance from Sacramento County line to the north, the higher the groundwater elevations, ranging from about -20 msl at well 11N05E18R001 to about 50 feet msl at well 13N04E23A002. These groundwater elevations varied with the year-to-year hydrologic conditions, but no obvious long-term trend over the most recent 10 years appears to be present.

For wells about one mile from the Bear River, or along the northern boundary of the WPCGMP area, groundwater elevations are relatively stable. The groundwater elevations increase in wells located further upstream toward the Sierra Nevada foothills, from



about 30 feet msl for well 13N04E29A002 to nearly 75 feet msl for well 13N05E03J001.

For the remaining wells in **Figure 2-5**, for example in the north-eastern quadrant of the WPCGMP area, groundwater elevations are relatively stable or have small persistent increases in groundwater elevations over the last 15 years of record. Their elevations range from 30 to 60 feet msl (wells 12N05E14R001, 13N05E24J001, and 13N05E22C003).

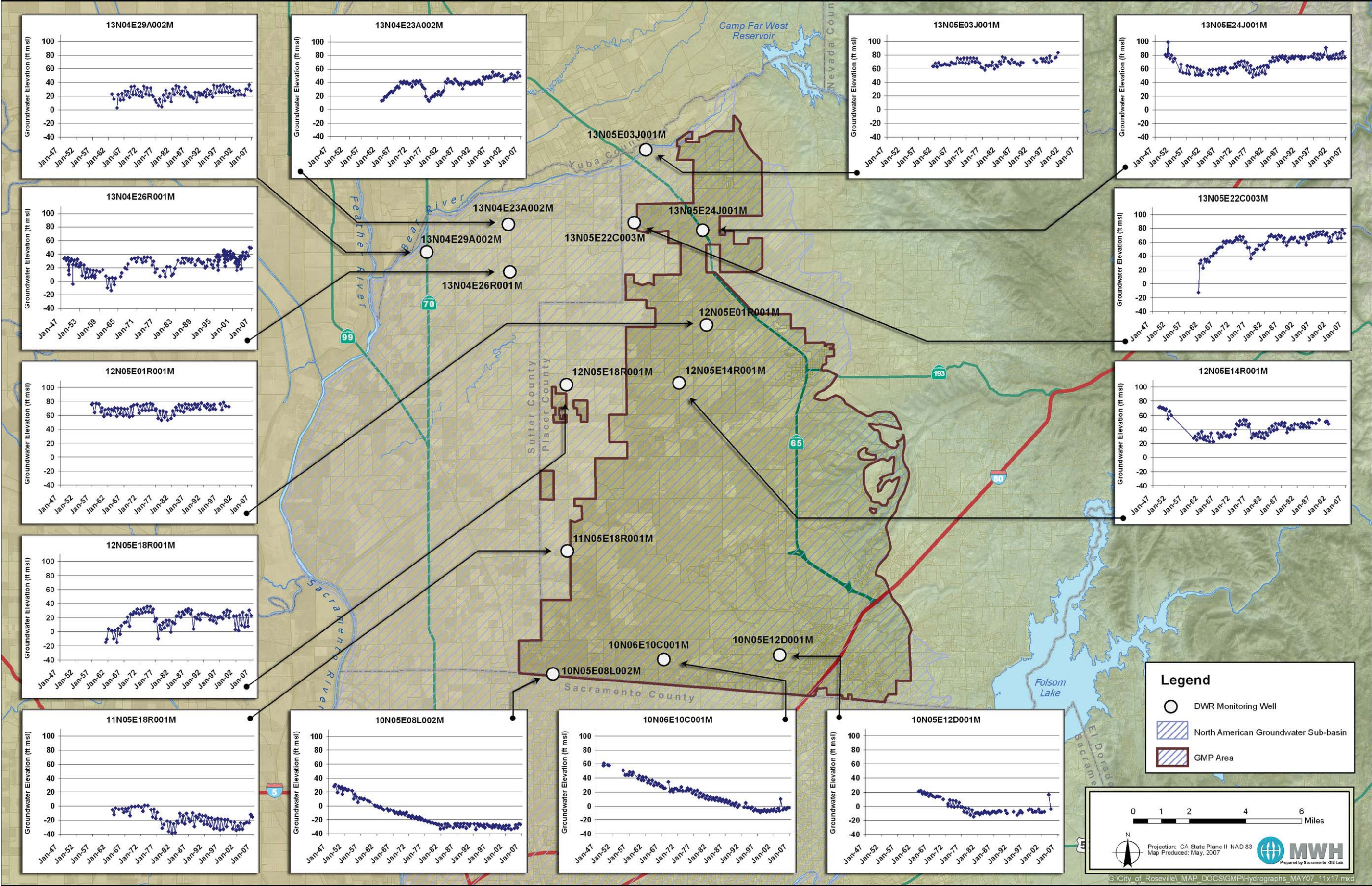
From 1995 to 2005, groundwater elevations were maintained and the declining elevation trend was dampened. Such stabilization was in part due to groundwater management activities stemming from the WFA restraining further increases in groundwater pumping and implementation by Sacramento Suburban Water District of an in-lieu recharge program by reducing groundwater pumping when excess surface water through the San Juan Water District treatment and conveyance system existed. The supply of surface water stems from the regional cooperation between PCWA and a group of northern Sacramento County water purveyors to permit the use of up to 29,500 AF/year of Middle Fork Project (MFP) surface water for interim use in the northern Sacramento County region.

2.1.6 Groundwater Quality

The groundwater quality in the upper aquifer system is regarded as superior to that of the lower aquifer system. The upper aquifer is preferred over the lower aquifer principally because the lower aquifer system (specifically the pre-Mehrten formation) contains higher concentrations of iron and manganese, and in some cases arsenic. Water from the upper aquifer generally does not require treatment (other than disinfection). The lower aquifer system also has higher concentrations of total dissolved solids (TDS, a measure of salinity) than the upper aquifer, although it typically meets standards as a potable water supply. In general, at depths of approximately 1,200 feet or greater (actual depth varies throughout the basin), the TDS concentration can exceed 2,000 milligrams per liter (mg/L). At such concentrations, the groundwater is considered non-potable without treatment.

² Spring data are based on field measuring from April through June.

Figure 2-5 – Groundwater Elevation Hydrographs



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Background Water Quality. The chemistry and quality of groundwater for the Sub-Basin has been described in detail in the DWR Feasibility Report, American Basin Conjunctive Use Project, June 1997. A comparison of groundwater quality data with applicable water quality standards and guidelines for drinking and irrigation indicate elevated levels of TDS, specific conductance, chloride, sodium, bicarbonate, boron, fluoride, nitrate, iron, manganese, and arsenic in some locations of the Sub-basin (DWR, 1997).

Total Dissolved Solids. The Secondary (aesthetic) Maximum Contaminant Level (MCL) concentration for TDS is 500 mg/L. A review of readily available data (described in the following paragraphs) indicate that TDS concentrations in groundwater are below the MCL throughout much of the region, therefore TDS concentrations should not limit the potable use of groundwater by the overlying agencies.

Regionally high TDS levels exist in the WPCGMP area along the Sacramento River extending from the Sacramento International Airport northward to Bear River. The highest levels of TDS can be found in an area extending just south of Nicholas to Verona, between Reclamation District 1001 and the Sutter Bypass. Some wells in this area have had TDS exceeding 1,000 mg/L (DWR, 1997). Specifically concentrations of TDS in excess of 7,000 mg/l have been reported in a DWR monitoring well located 2 miles east of Nicholas.

This DWR well (AB-1-deep), is screened to sample groundwater at depths of 950-970 feet bgs. This well was intentionally completed at this depth to observe the groundwater quality below the base of fresh water in this portion of the WPCGMP area. In addition, historic groundwater quality data collected from wells located throughout much of Placer and northern Sacramento counties show TDS levels ranging from 160-336 mg/L, with the average concentration being 228 mg/L (USGS, 2001a). These data generally represent groundwater quality at depths less than 600 feet bgs.

Locally TDS data has been collected by Roseville and Lincoln in their respective groundwater production wells. TDS concentrations in Lincoln production wells range between 230 and 330 mg/L

(Lincoln, 2003). TDS concentrations in Roseville production wells range between 230 and 470 mg/L (Roseville, 2005).

Iron and Manganese. The Secondary MCLs for iron and manganese is 0.3 and 0.05 mg/L, respectively. A review of readily available data (described in the following paragraphs) indicates that iron and manganese concentrations in groundwater exceed the MCLs in parts of the region, possibly limiting the potable use of groundwater by the overlying agencies or, at least, requiring treatment of the groundwater prior to use.

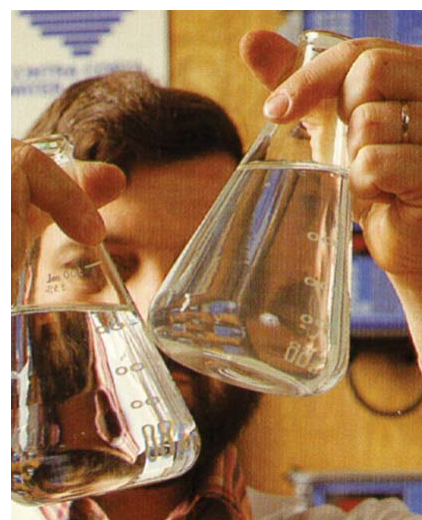
Concentrations of iron in groundwater from several wells near the Sacramento International Airport exceed the Secondary MCL and elevated concentrations were also noted in DWR monitoring well AB-1-deep (DWR, 1997).

Manganese has also been reported at elevated concentrations in the western portion of the WPCGMP area, within several wells located along the Sacramento River at reported concentrations exceeding 0.20 mg/L (DWR, 1997). Historic groundwater quality data in the region show iron concentrations ranging from 0.003-0.048 mg/L, with an average concentration of 0.012 mg/L, and manganese concentrations ranging from 0.0009 to 0.090 mg/L with an average concentration of 0.009 mg/L (USGS, 2001a). These data generally represent groundwater quality at depths less than 600 feet bgs.

Local iron and manganese groundwater quality data has been collected by Roseville and City of Lincoln in their respective groundwater production wells. Iron and manganese concentrations in City of Lincoln production wells range between non-detect and 1.8 mg/L and non-detect and 0.07 mg/L, respectively (Lincoln, 2003). Iron and manganese concentrations in Roseville production wells range between non-detect and 0.85 mg/L, and non-detect and 0.023 mg/L, respectively (Roseville, 2005).

Arsenic. The Primary MCL for arsenic is 0.010 mg/L, effective as of January 2006. A review of readily available data indicates that arsenic is present in groundwater throughout many areas of the region, and in some places exceeding the MCL. Overall, the extent of areas where arsenic exceeds the MCLs in groundwater is believed to be sporadic and isolated and, currently, arsenic concentrations in groundwater are not significantly affecting the use of groundwater as a potable water supply.

Arsenic concentrations were observed at low to moderate levels in wells in the southwestern portion of the WPCGMP area.



Arsenic concentrations in some wells in this area neared 0.050 mg/L. Historic groundwater quality data in the region show arsenic concentrations ranging from 0.001-0.018 mg/L, with an average concentration of 0.05 mg/L (USGS, 2001a). These data generally represent groundwater quality at depths less than 600 feet bgs.

Local arsenic groundwater quality data has been collected by Roseville and Lincoln in their respective groundwater production wells. Arsenic concentrations in Lincoln production wells range between non-detect and 4.8 mg/L (Lincoln, 2003). Arsenic concentrations in Roseville production wells range between non-detect and 0.0035 mg/L (Roseville, 2005).

Nitrate. The Primary MCL for nitrate is 45 mg/L. A review of readily available data indicate that concentrations of nitrate in groundwater is well below the MCL throughout the region, therefore nitrate should not limit the use of groundwater as a potable water supply for overlying agencies.

Historic groundwater quality data in the region show nitrate concentrations ranging from 0.06 – 16 mg/L, with an average concentration of 5.9 mg/L (USGS, 2001a). These data generally represent groundwater quality at depths less than 600 feet bgs.

Local nitrate groundwater quality data has been collected by Roseville and Lincoln in their respective groundwater production wells. Nitrate concentrations in Lincoln production wells range from 5 to 10 mg/L (Lincoln, 2005). Nitrate concentrations in Roseville production wells range from 0.8 to 21 mg/L (Roseville 2005).

Known “Principal” Plumes/Contaminated Sites. Principal groundwater plumes or contaminated sites are known to exist within the WPCGMP area as discussed below, and shown on Figure 2-6. There are approximately 350 leaking underground storage tank sites [Central Valley Regional Water Quality Control Board (CVRWQB), 2005] and 40 other spill (SL) sites (DTSC, 2005) within Placer County that may have resulted in soil and/or groundwater contamination, however most of those sites pose little or no threat to the WPCGMP area.

The summaries provided in this section are based on information from one or more of the following sources; the City of Lincoln Groundwater Management Plan [Saracino, Kirby and Snow (SKS), 2003], the Roseville Sanitary Landfill Semi-Annual Water Quality Monitoring Report (CH2M Hill, 2005), the California Department of Toxic Substances’ Control (DTSC) Site Mitigation and Brownfield Reuse Program website (DTSC, 2005), the Leaking Underground Storage Tank Quarterly Report [Central Valley Regional Water Quality Control Board (CVRWQB), 2005] and the Region 9 Cleanup Sites in California website (USEPA, 2005).

Alpha Explosives

Alpha Explosives is a 23-acre site located approximately five (5) miles north-northwest of the Lincoln and about 1,500 feet north of Coon Creek (SKS, 2003). Nitrate and perchlorate concentrations exceed drinking water MCLs in local groundwater and are the primary constituents of concern (COC) at the site. In a 1999 report by

Anderson Consulting Group, it was reported that a plume of nitrate impacted groundwater extended approximately 600 feet north and south and 1,300 feet west of this site. Since 2002, Alpha Explosives, with State Water Resources Control Board (SWRCB) oversight, has been operating a pilot-scale study to evaluate the potential for using bioremediation to treat the soil and groundwater.

Roseville Sanitary Landfill

The Roseville Sanitary Landfill encompasses 115 acres near Galleria Boulevard and Berry Street in Roseville. The groundwater underneath the landfill is impacted by a variety of organic and inorganic constituents. Of primary concern are TCE, tetrachloroethene (PCE), carbon tetrachloride, vinyl chloride and other VOCs. A corrective action program was implemented in 1994-1995 that included the construction of an engineered landfill cover and implementation of a groundwater monitoring program. Since the landfill was capped in December 1995, COC concentrations in the groundwater have generally decreased. Groundwater in the vicinity of the landfill flows west-northwest.

Union Pacific Railroad – Roseville Railyard

The 640-acre Union Pacific Railroad site is located near Roseville Road and Vernon Street in Roseville. At this site, the Diesel Shop Operable Unit is responsible for locomotive maintenance and repair, and related structures, and has been active for more than 80 years. COCs

in the shallow groundwater at this site are diesel fuel and chlorinated solvents. The primary COCs are total petroleum hydrocarbons (TPH), with smaller amounts of VOCs, semi-volatile organic compounds (SVOC) and lead. Contamination is mostly limited to the upper aquifer, although small amounts of PCE have been detected in the lower aquifer zone (150-160 feet bgs). It is not known if this site is the source of the PCE in the lower aquifer.



The Remedial Action Plan (RAP) for portions of the site was approved in 2003 and includes groundwater monitoring for COCs and natural attenuation. A RAP for the North Area of the site was approved in 2001 and includes groundwater extraction. The extracted groundwater is treated with an air stripper and on-site industrial wastewater treatment plant.

Deluxe Cleaners

Deluxe Cleaners is a former dry cleaning facility located on Vernon Street in Roseville. A preliminary assessment conducted in 1991 resulted in a No Further Action declaration under CERCLA. How-

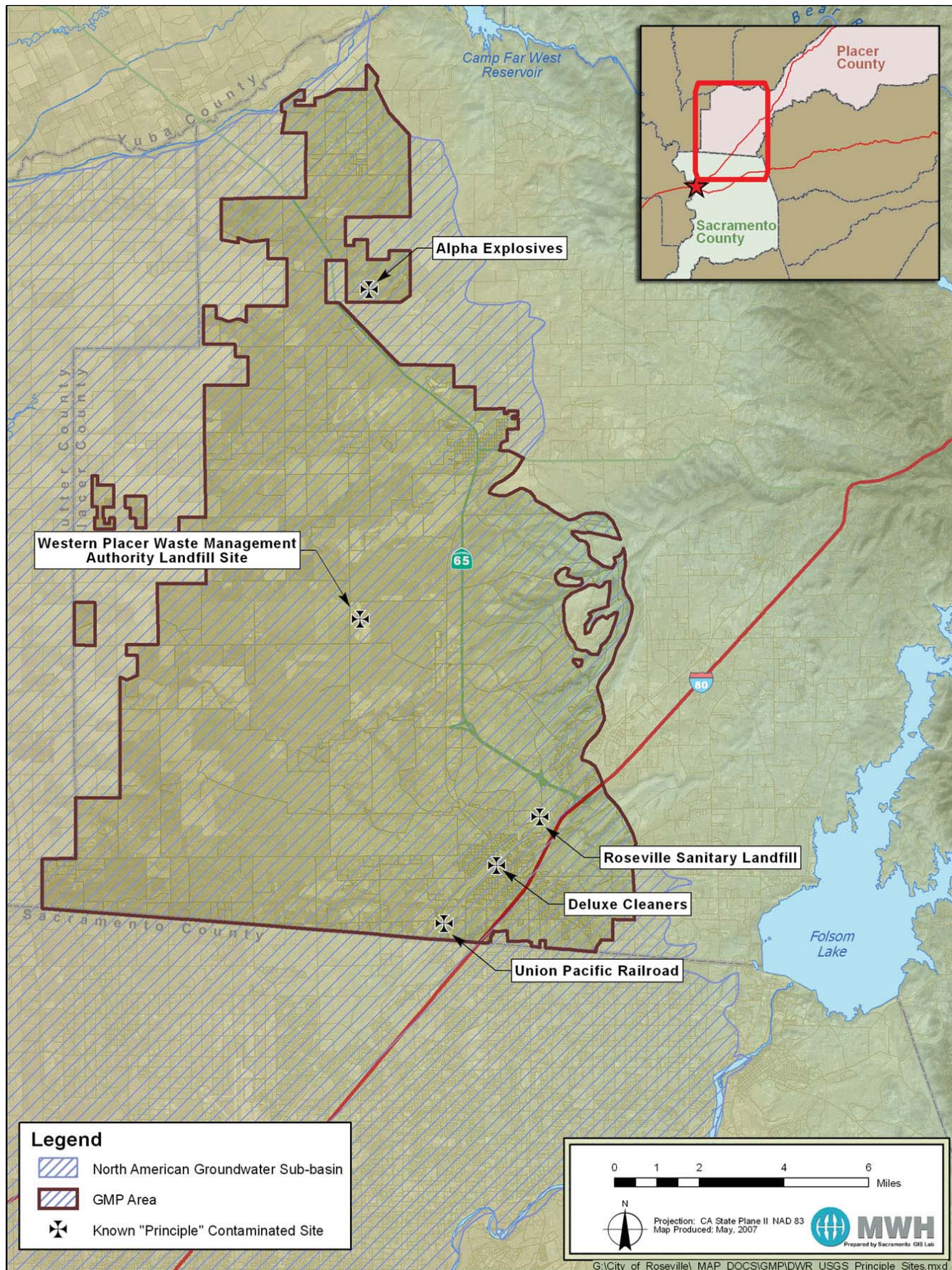


Figure 2-6 – Principle Contamination Sites

ever, since then high levels of TCE and PCE have been detected in the soil and groundwater underneath the site. In addition, TCE, PCE, and chloroform were detected in an emergency municipal well approximately 0.25 miles away from the site. As of 2004, the CVRWQCB had resumed investigations at the site.

Western Placer Waste Management Authority Landfill Site (WPWMALS)

WPWMALS is an active landfill at the southeast corner of Athens and Fiddymont Roads within Placer County. The members of the WPWMA are City of Lincoln, City of Rocklin, City of Roseville, and County of Placer. A recent water quality analysis report indicates degradation of groundwater, first identified in 1995 with a corrective action plan approved by the RWQCB in 1997, continuing, and identifies constituents of concerns in the on-site monitoring wells.

Other Sites

There are approximately 350 leaking underground storage tank sites (CVRWQB, 2005) and 40 other spill (SL) sites (DTSC, 2005) within Placer County that may have resulted in soil and/or groundwater contamination, however most of those sites pose little or no threat to the WPCGMP area as they are small in scale and not considered “principal”.

2.2 SURFACE WATER CONDITIONS

This section provides a summary description of surface water conditions of the major rivers and streams within the, or of importance, to the WPCGMP area.

2.2.1 American River

The American River drainage basin encompasses approximately 1,900 square miles. Folsom Reservoir is the principal reservoir in the basin with a storage capacity of 975,000 AF. Several smaller upstream reservoirs contribute another 820,000 AF of storage capacity. Nimbus Dam impounds Lake Natoma downstream of Folsom Dam and regulates releases from Folsom Reservoir to the lower American River. The entrance facilities to the Folsom South Canal are located along the south shore of Lake Natoma immediately upstream of Nimbus Dam. The mean annual flows in the lower American River is 3,300 cfs and the design capacity of the channel for flood flows is 115,000 cfs.

2.2.2 Sacramento River

The Sacramento River drainage basin upstream of the WPCGMP area encompasses approximately 23,500 square miles and produces an average annual runoff of about 17,000,000 AF as measured at the Freeport gauging station (below the confluence of the American River). Principal reservoirs controlling flows in the lower Sacramento River include Lake Shasta (4,522,100 AF), on the Sacramento river upstream of Redding, Trinity Lake (2,448,000 AF), which regulates deliveries made to the Sacramento from the Trinity River Basin, Lake Oroville (3,538,000 AF), and Folsom Reservoir (975,000 AF). Based on the 30-year record of data for the period 1968 through 1998, which spans a variety of water year types, individual monthly average flows have ranged from a low of 4,500



Confluence of Sacramento and American Rivers

cfs in October 1978 to a maximum of 87,000 cfs in January 1997. Overall the monthly flows of all 30 years range between 13,000 and 40,600 cfs, with the lowest flows occurring in October and peak flows in February. The 30-year average monthly flow during the wetter months of December through May is 32,200 cfs. During the typically drier months of June through November, the average monthly flow is 16,500 cfs.

2.2.3 Feather River

The Feather River drains approximately 3,700 square miles starting at its confluence with the Sacramento River near Yuba City and expanding east and northeast to the western slopes of the Sierra Nevada. Oroville Dam is the primary reservoir on the river with a storage capacity of approximately 3,500,000 AF; the second largest reservoir is Lake Almanor (Canyon Dam) with a storage capacity of 1,300,000 AF. The total storage in the watershed is approximately 5,200,000 AF. Water level data recorded from 1968-1998 on the Lower Feather River shows average monthly streamflows ranging from 2,400 cfs in October to 8,200 cfs in January. The maximum average monthly streamflow was 40,700 cfs, recorded in January 1997.

2.2.4 Bear River

The Bear River watershed encompasses approximately 292 square miles in Placer, Yuba and Sutter Counties. Camp Far West Reservoir is the principle reservoir on the river and has a storage capacity of approximately 104,000 AF, however two smaller impoundments (Lake Combie and Rollins Lake) exist in the upper watershed. Mean monthly flow rates, based on 76 years of data, range from approximately 1,200 cfs in February to 17 cfs in July. The highest mean monthly flow rate was 5,200 cfs in February 1986.

2.2.5 Dry Creek

The Dry Creek watershed encompasses approximately 101 square miles in Placer and Sacramento Counties. The watershed is highly developed and the creek is subject to highly variable flows affected by runoff events. Mean monthly flow rates based on 1999-2004 data show that stream flows range from 228 cfs in February to

13 cfs in July. During the dry season, much of Dry Creek's flow is treated effluent from the Roseville/Dry Creek Wastewater Treatment Plant.

2.2.6 Auburn Ravine

The Auburn Ravine watershed drains approximately 79 square miles, originating north of the City of Auburn and ending at the confluence with the East Side Canal. The surrounding land use is generally urbanized in the upper reaches of the stream and rural in the lower reaches of the stream. During winter, the stream flows mostly originate as precipitation runoff or wastewater treatment plant discharges. In the summer, flows are provided by Yuba, Bear, and American River waters that are diverted to Auburn Ravine for irrigation deliveries, as well as wastewater treatment plant discharges. Peak winter flows are typically several hundred cfs and the average 100-year flow is estimated to be approximately 17,000 cfs. Annual flows are typically lowest in October, when irrigation demands decrease and rains are not yet adequate to supply sufficient flows.

2.2.7 Coon Creek

The Coon Creek watershed drains an area that starts north and east of the City of Auburn and ends at its confluence with the East Side Canal. Coon Creek forms at the confluence of Orr Creek and Dry Creek west of Auburn. The watershed is urbanized in the upper basin near Auburn and Lincoln and rural on valley floor. Peak stream flows are typically several hundred cfs during the winter and the 100-year flow is estimated to be approximately 22,000 cfs. In the summer, upper basin flows are provided by diversions from the Bear River and lower basin flows (valley floor) are primarily agricultural return flows. Annual flows are typically lowest in October, when irrigation demands decrease and rains are not yet adequate to supply sufficient flows.

2.3 SURFACE WATER QUALITY

The following subsection describes the surface water quality of the major rivers and streams within the, or of importance to the WPCGMP area.

2.3.1 American River

Surface water quality in the American River is a function of the mass balance of water quality from tributary streams, diversions, minor agricultural return flows, subsurface drainage flows, with other impacts resulting from permitted discharges from M&I sources, urban runoff and spills. In general, the quality of water in the American River is high from the river's headwaters to its confluence with the Sacramento River. It is low



American River

in alkalinity, low in disinfection by-product precursor materials, low in mineral content, and low in organic contamination. Limited data also indicate that the water is low in microbial contamination from *Giardia* and *Cryptosporidium*. Turbidity levels in the American River tend to be higher in the winter than summer because of higher flows associated with winter storms.

2.3.2 Sacramento River

Sacramento River water quality is largely influenced by a mass balance of water quality from upstream reservoir release operations, tributary flows (including the lower American River), agricultural runoff, subsurface drainage flows, and diversions, with other impacts resulting from permitted discharges from M&I sources, urban runoff and spills. In general, the quality of the Sacramento River is high in the vicinity of the WPCGMP area. There are moderate amounts of alkalinity and minerals and low levels of disinfection by-product precursors. Turbidity levels in the Sacramento River are higher during the winter and early spring months, usually associated with reservoir releases or runoff from storm events. There are very infrequent detections of organic chemicals, most of which are pesticides or herbicides from upstream agricultural operations. Data collected to date, indicate that there is a low prevalence of *Giardia* and *Cryptosporidium* in the river, with protozoa only detected sporadically and at very low concentrations.

The characterization of Sacramento River water quality in the vicinity of the North American River Sub-Basin is based on Sacramento River Watershed Sanitary Survey reports (Archibald and Wallberg, 1995 & Montgomery Watson, 2000).

2.3.3 Feather River

Water quality in the Lower Feather River, downstream of Oroville Dam, is listed as a Section 303(d) impaired water quality segment. Diazinon, an organophosphorus insecticide, is the primary constituent of concern in the river. Mercury (from mining activities) and other pesticides are also present in the waters. The upper Feather River forks, upstream of Oroville Dam, generally suffer from elevated suspended sediment loads, especially during runoff events. The descriptions and summaries of the Feather River are partially based on the USGS's Water Quality in the Sacramento River report (Domagalski et. al., 2000).

2.3.4 Bear River

Throughout the Bear River watershed, surface water quality is affected by upstream reservoir releases and diversions, and past mining activities. In the Lower Bear River basin, water quality is also impacted by agricultural runoff. The primary water quality concerns in Bear River stem from past mining activities, which have resulted in heavy metals such as mercury accumulating in the river sediment.

2.3.5 Dry Creek

Surface water quality in Dry Creek is largely influenced by urban activities. During summer months, the water quality may closely resemble that of highly treated wastewater effluent as it provides a majority of the stream flow during that time. In the fall, water

quality likely contains trace metals, organic chemicals and other urban contaminants commonly found after the first rains of the season. The Dry Creek descriptions and water quality summaries are based upon information provided in the Dry Creek Watershed Coordinated Resource Management Plan (Placer County and Sacramento County, 2003).

2.3.6 Auburn Ravine

Water quality in Auburn Ravine is affected by the quality of urban stormwater runoff, wastewater treatment plant discharges, failing septic systems along the ravine, and agricultural return flows, as well as the quantity of irrigation water, which acts to dilute these sources of constituent loading. Water quality analyses have revealed high concentrations of heavy metals such as copper, lead and mercury. The source of these pollutants is primarily stormwater runoff, although wastewater treatment plant discharges are a significant source of copper and lead at times. Diazinon is the only pesticide detected in recent Auburn Ravine samples.

2.3.7 Coon Creek

Coon Creek water quality is also influenced by urban stormwater runoff, wastewater treatment plant discharge, and agricultural return flows, as well as the quantity of irrigation water, which acts to dilute these sources of constituent loading. Analyses have shown that the water quality is most negatively affected by excess nutrients which result in depleted dissolved oxygen levels. The primary sources of the excess nutrients are wastewater treatment plant discharges and creek-side cattle grazing operations. Diazinon is the only pesticide detected in recent Coon Creek samples. The descriptions and water quality summaries of Auburn Ravine and Coon Creek are based on the Auburn Ravine/Coon Creek Ecosystem Restoration Plan (Placer County, 2002).

2.4 WATER USE

This section provides a description of plan participant's water use. Current and future water demands and surface water supplies, groundwater supplies and recycled water supplies are presented. **Table 2-1** provides a summary of plan participant's urban water use in the WPCGMP area and **Figure 2-7** provides projected annual water demands.

2.4.1 ROSEVILLE

The following sections are a summary of Roseville's water use.

2.4.1.1 Demands

In 2004, Roseville's total water demand was 32,612 AF. Roseville's projected water demand is expected to increase to 55,792 AF in 2025, which is shown in **Figure 2-7**.



Auburn Ravine Diversion

2.4.1.2 Surface Water Supplies

Existing Conditions. Roseville currently has a surface water supplies of up to 66,000 AF/year diverted from Folsom Lake. These supplies include a 32,000 AF/year Central Valley Project (CVP) contract with the U.S. Bureau of Reclamation, a 10,000 AF/year contract with PCWA with 20,000 AF/year of options, and a 4,000 AF/year contract with SJWD which is available in Water Forum designated wet and normal years.

Proposed and existing Roseville and other plan participant water facilities are shown on **Figure 2-8**.

Future Conditions. Future considerations for Roseville include the improvements of its facilities to maximize the use of all of its surface water supplies.

2.4.1.3 Groundwater

Existing Conditions. Currently, Roseville does not utilize groundwater, but is pursuing opportunities to use banked groundwater supplies for back up, and peak daily demands. Roseville has four groundwater production wells (Atlantic, Oakmont, Darling Way, and Diamond Creek), three of which are ready for aquifer storage and recovery (ASR) operations with one additional well (Woodcreek North) scheduled to be completed by summer 2008 (**Figure 2-8**). A summary of Roseville's and plan participant production municipal wells is presented on **Table 2-2**.

Future Conditions. Roseville is implementing conjunctive use projects including their ASR program at the Diamond Creek Well and evaluating the feasibility of direct and in-lieu groundwater recharge as part of the Dry Creek Recycled Water Groundwater Recharge Feasibility Study in an effort to maximize the yield of both their surface water and groundwater supplies.

2.3.1.4 Recycled Water

Existing Conditions. Roseville owns and operates two regional waste water treatment plants (WWTP): Dry Creek and Pleasant Grove WWTP; both facilities provide full Title 22 (tertiary) treatment. Plant inflows are from within Roseville City limits, SJWD,

and part of PCWA Zone 1. Roseville owns and operates a recycled water distribution system for landscape irrigation within the city limits (Roseville, 2000). Delivered in ubiquitous purple pipes, the city delivered 2,045 acre-feet of recycled water in 2005.



Future Conditions. It is anticipated that Roseville will continue to expand its system to more fully utilize and optimize recycled water supplies. Treated effluent that exceeds Roseville's recycled water demands could potentially be made available for in-lieu groundwater recharge purposes. The Dry Creek Recycled Water Groundwater Recharge Feasibility Study identifies and evaluates potential opportunities to recharge groundwater in Placer and Sacramento Counties through application of recycled water as described in Section 1.5.1.4.

2.4.2 LINCOLN

The following sections provide a summary of Lincoln's water use.

2.4.2.1 Demands

In 2004, Lincoln's total water demands were 7,539 acre-feet. With anticipated expansion of the city limits in the 2006 Draft General Plan EIR, demand is projected to reach 53,000 acre-feet (Environmental Science Associates (ESA), 2006).

2.4.2.2 Surface Water

Existing Conditions. Lincoln is located in PCWA's Zone 1 service area. Surface water deliveries are purchased from PCWA, which are treated at the Sunset and Foothill Water Treatment Plants. In 2004, Lincoln purchased 7,241 acre-feet of surface water from PCWA. Lincoln also purchases raw water from Nevada Irrigation District (NID).

Future Conditions. Lincoln will primarily meet future demands with surface water from PCWA and NID. Recycled water and groundwater will also be used to supplement these primary sources.

Table 2-1. Urban Water Use in the WPCGMP Area

Water Purveyors	Surface Water Supply/Contract Amounts		Treated Water Demand (AF/year)		Currently Groundwater Pumping?
			2004	Projected 2025	
PCWA	PG&E	100,400	38,035 (Zone 1 only) ⁽²⁾	73,994 (Zone 1 and 5) ⁽²⁾	No
	MFP	65,000 ⁽¹⁾			
	CVP	35,000			
	Total	200,400			
City of Roseville	MFP transfer from PCWA	30,000	32,612 ⁽³⁾	55,792 ⁽³⁾	No ⁽⁴⁾
	CVP	32,000			
	San Juan	4,000			
	Total	66,000			
City of Lincoln	PCWA	34,000 ⁽⁵⁾	7,539 ⁽⁶⁾	53,000 ⁽⁶⁾	Yes ⁽⁷⁾
	NID	12,000 ⁽⁵⁾			
	Total	46,000 ⁽⁵⁾			
CAW West Placer Service Area	Total Treated Water Purchased from PCWA		0 ⁽⁸⁾	15,748 ⁽⁹⁾	No

mgd – million gallons per day **WTP** – water treatment plant **PG&E** - Pacific Gas & Electric **CVP** - Central Valley Project **MFP** - Middle Fork American River Project

(1) PCWA's entitlement is equal to the total of the Middle Fork American River Project (MFP) entitlement (120,000 AF/year) less transfers to City of Roseville and San Juan Water District (30,000 and 25,000 AF/year, respectively). The temporary 29,000 AF/year of MFP transfer currently under contract to Sacramento Suburban Water District located in Sacramento County is included in the 120,000 AF/year amount.

(2) Source : Placer County Water Agency 2005 Urban Water Management Plan

(3) Source : City of Roseville 2005 Urban Water Management Plan

(4) Roseville has three backup supply wells to meet potential peak demands only. These wells are equipped for aquifer storage and recovery. Additional wells may be operational by the end of 2008.

(5) Source : City of Lincoln 2006 General Plan Update

(6) Source : City of Lincoln 2005 Urban Water Management Plan. Volume includes recycled water supplies. Estimated through 2030.

(7) City of Lincoln wells operate as backup and emergency supply and to manage daily peak demands (goal is to average 10% of annual demand)

(8) Currently unknown value assumed to be zero

(9) Total water demand for West Placer Service Area at build out (year 2020) based on demands provided in the Water System Comprehensive Planning Study (2006)

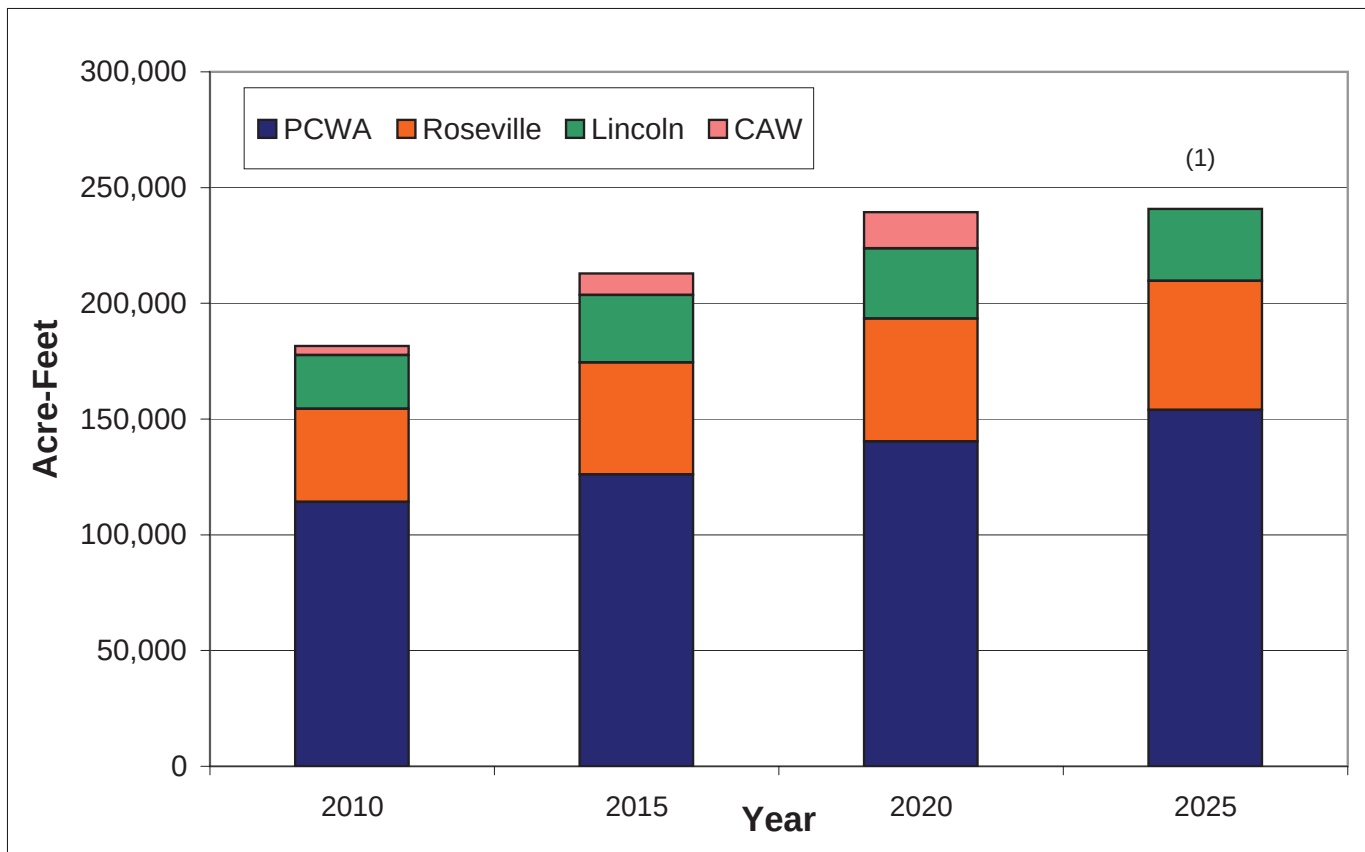


Figure 2-7 – Projected Water Demands (treated and raw water)

2.4.2.3 Groundwater

Existing Conditions. The City utilizes groundwater from five wells to provide emergency, back up, and peaking supplies as a source for its backup water supply. Liquid chlorine (sodium hypochlorite) is added to the pumped groundwater at the well site for preventative disinfection. All well sites have 10,000-gallon pressure tanks. In 2004, Lincoln pumped 298 acre-feet of groundwater.

Future Conditions. The City has plans to increase the number of municipal water supply wells in order to increase water supply reliability, provide emergency supplies and help meet peak demand. Studies by Spectrum-Gasch (1999) and Boyle Engineering (1990) show that groundwater resources are available in the Lincoln area. The City is currently completing additional groundwater investigations. The results of these investigations will be analyzed and used to help determine optimal well spacing and pumping schedules. The City estimates additional wells will be built. Geologic logging, bore hole geophysical logging and aquifer stress tests have been and will continue to be conducted as the City expands its well capacity.

2.4.2.4 Recycled Water

Lincoln recently completed a new Wastewater Treatment and Reclamation Facility (WWTRF) for the purpose of treating wastewater generated within the City.

Existing Conditions. The 3.3 MGD WWTRF began operation in 2004 and generated an initial 2.4 MGD of average dry weather flow with expansion capacity to 12 MGD. Flow is expected to increase to 6 MGD over the next 5 to 10 years. The WWTRF replaced the former Waste Water Treatment Plant, which is being decommissioned. Effluent from the WWTRF undergoes treatment processes that include oxidation, coagulation, clarification, filtration, and disinfection with ultraviolet light.

Recycled water from the WWTRF is currently used for irrigation on approximately 400 acres at three sites, including:

1. Approximately 170 acres at West Placer Waste Management Authority (Lastufka) property, south of the WWTRF
2. 105 acres at Antonio Mountain Ranch, south of the WWTRF
3. 117 acres at the Warm Springs site, west of the WWTRF

During the non-irrigation season, effluent is stored for future use. Areas that currently receive recycled water are capable of using approximately 400 million gallons per year in normal precipitation conditions.

The WWTRF is capable of producing recycled water that meets DHS requirements in Title 22 for unrestricted reuse. Projects currently in design will allow construction of the necessary distribution system to deliver additional recycled water to users within the city limits by 2008. It is anticipated that these new users may

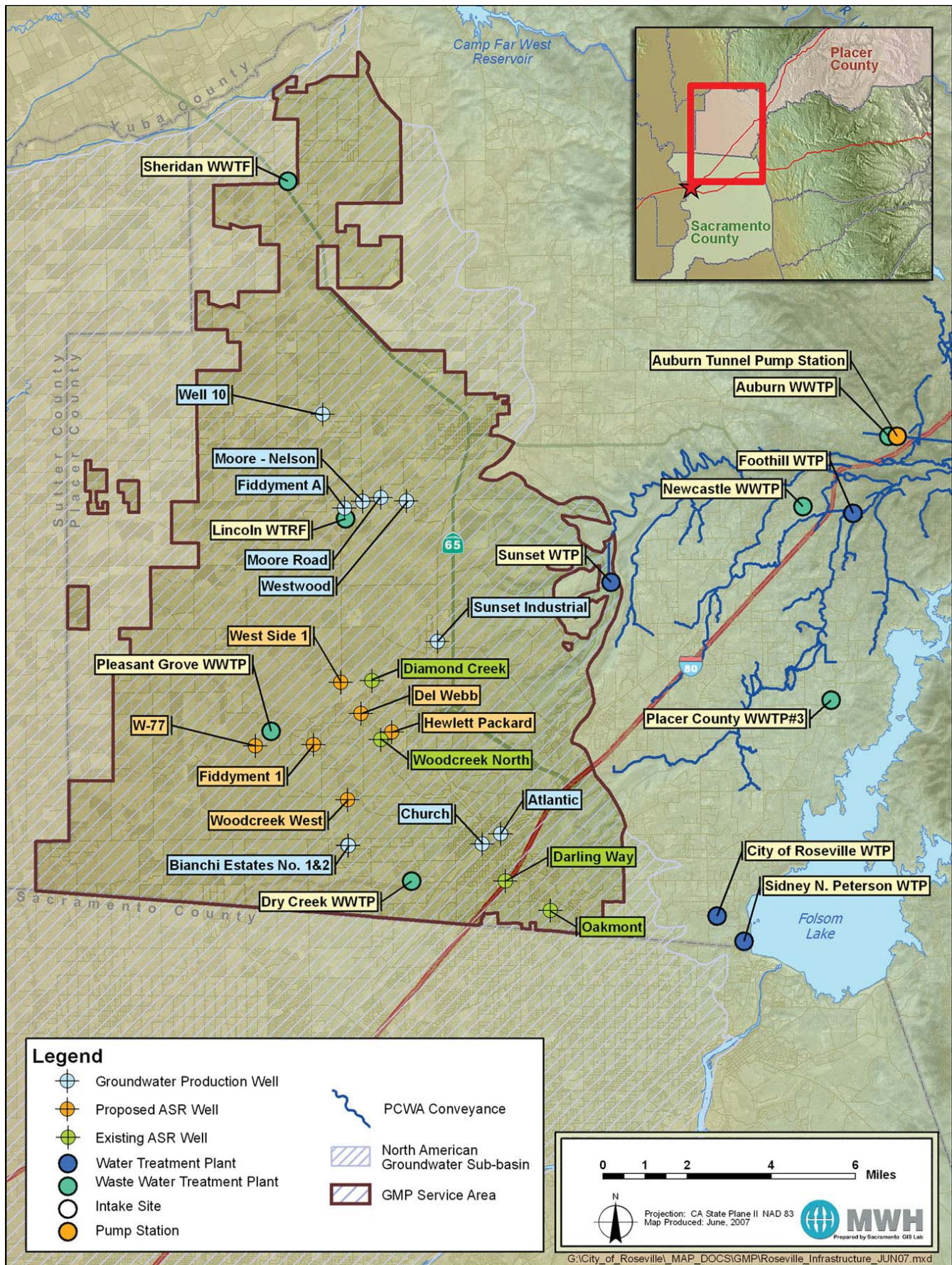


Figure 2-8 – Existing Roseville/Lincoln/PCWA/CAW Facilities

account for as much as 1,400 AF/year of recycled water by 2010 (including irrigation of the proposed Highway 65 Bypass right of way).

Effluent produced by the Lincoln WWTRF is of sufficient quality to allow unrestricted reuse, including the farming of salinity sensitive crops.

Future Conditions. Further, the City is in the process of updating its General Plan and new build-out wastewater flow projections are estimated to be approximately 22 to 24 MGD. The Placer Nevada Wastewater Authority (PNWA), comprised of western Placer and Nevada County public agency jurisdictions, is considering expansion of the Lincoln WWTRF as a regional wastewater treatment and reclamation facility. If implemented for this purpose, the total average wastewater flow at an expanded WWTRF could be as much as 32 MGD, at build-out.

The goal of the Lincoln reclamation project is to utilize all reclamation water produced by the WWTRF. The 2002 Reclamation Study competed during the planning phase for the WWTRF improvements revealed nearly 25,000 AF/year of potential industrial and agricultural demand for recycled water in the greater Lincoln area. Some of these users have been incorporated into the Reclamation Master Plan and others may be included in the future as wastewater flows to the WWTRF increase.

2.4.3 PCWA

The following sections are a summary of PCWA's water use.

2.3.3.1 Demands

Currently, PCWA provides treated drinking water for urban areas and raw water for agricultural irrigation and rural uses.

2.4.3.1.1 Urban

Treated water customers include M&I entities primarily located within Zone 1. Urban water demands were approximately 28,000 AF in 2000. As part of PCWA's Water Systems Infrastructure Plan (WSIP), the 2005 treated water demand was projected to be approximately 35,000 AF. Projections suggest that treated water demand will increase to 81,380 AF by 2030 (PCWA, 2003). Existing M&I treated water customers receive water from four WTPs operated by PCWA (two are located in the Upper Zone 1 system and two are in the Lower Zone 1 service area). The four WTP's have a total treatment capacity of 78 MGD.

2.4.3.1.2 Agricultural

Raw water customers generally obtain water service for irrigation, livestock, and, more recently, golf courses and other public landscaped areas. Raw water customers obtain water service through a series of canals and waterways.

Table 2-2. Summary of Plan Participant Production Wells in the WPCGMP Area

Owner	Well Name	State Well ID	Installation Date	Pump Capacity (gpm)	Well Depth (ft bgs)	Boring Depth (ft bgs)	Well Diameter (in)	Operational Status
City of Roseville	Diamond Creek	11N06E17D003M	11/6/2002	2,700	460	502	20	Emergency M&I supply
	Woodcreek North	11N06E20	9/28/2006	2,000 (est.)	530	540	20	Estimated Pump Station Completion June 2008.
	Fiddymont 1	--	5/1/2006	1,800 (est.)	513	520	18	Not yet in service. Awaiting pump station construction.
	W-77	--	4/1/2006	1,800 (est.)	526	531	18	Not yet in service. Awaiting pump station construction.
	Atlantic St.	--	1947	800	290	290	14	Emergency M&I supply
	Church St.	10N06E02B01	1947	800	245	245	14	Emergency M&I supply
	Oakmont	10N07E18D	12/18/1977	2,000	356	370	16	Emergency M&I supply
	Darling Way	10N06E12M01	5/26/1958	1,000	303	304	14	Emergency M&I supply
City of Lincoln	Well 2	--	1984	950	275	285	14 (to 120 ft) 6 (120 to 274 ft)	Out of service. 6" well screen installed in 1990. Equipment modifications to be completed 2006 will increase pump capacity to 950 gpm.
	Well 4	--	7/14/1990	500	320	320	16 (to 280 ft) 8 (278 to 320 ft)	Out of service. Originally drilled to 290 and constructed to 284 ft. Well deepened to 320 and 8" screen installed below 280 ft. Excessive sand in the discharge. To be replaced by Well 10.
	Well 6 (Westwood)	12N06E28	--	800	--	--	16	Operational
	Well 7 (Moore Road)	12N06E20	9/27/2001	1,000	300	309	16	Operational
	Well 8 (Fiddymont A)	12N06E30	9/1/2004	1,400	317	347	16	Operational
	Well 9 (Moore-Nelson)	12N06E29	--	1,800	340	350	16	Not yet in service. Pump station construction in progress.
	Well 10	--	--	--	--	--	--	Currently in design. Scheduled for construction in 2006.
	Bianchi Estates #1 ¹	10N06E05L03M	9/24/1979	550	400	--	12	Emergency M&I supply
PCWA	Bianchi Estates #2 ¹	10N06E05L04M	10/12/1979	500	335	--	12	Emergency M&I supply
	Sunset Industrial	11N06E09H01M	Aug-64	800	198	--	14	Emergency M&I supply

¹ Supply has been replaced with surface water (2003)

-- Information Not Available

Agricultural water demand in the WPCGMP area is equal to the summation of the product of irrigation demand and cropped area for each crop or use type. This demand changes with time given the hydrologic wet/dry conditions, and the amount of evapotranspiration that occurs with each crop or use type that can be accounted for on a daily basis. PCWA estimates the Zone 5 agricultural demand in 2030 to be 70,000 acre-feet.

2.4.3.2 Surface Water

Existing Conditions. PCWA's surface water entitlements include: water purchased from Pacific Gas and Electric Company (PG&E) from its Drum-Spaulding Project (100,400 AF/year), MFP water (120,000 AF/year), and CVP contract water (35,000 AF/year). PCWA has transfer agreements³ with Roseville, San Juan Water District, and Sacramento Suburban Water District for 30,000, 25,000, and 29,000 AF/year of MFP water, respectively. PG&E water, which has been fully utilized, is diverted along PG&E canals at various diversion points. MFP water is diverted at the American River Pump Station (ARPS) near the Auburn Dam site, downstream of the confluence of the North and Middle Fork of the American River. PCWA currently does not have facilities to exercise its CVP entitlement; the authorized point of diversion of which is at Folsom Lake. Contract entitlement amounts described above are for normal and wet conditions; under dry and critical conditions, PCWA water supplies are subject to curtailment, and alternative water supplies or cutbacks in raw water deliveries will be necessary to meet demands.

PCWA also shares raw water canal capacity with NID and South Sutter Water District. Through interim purchase agreements, PCWA has obtained temporary water supplies from these agencies, purchasing a few thousand acre-feet per year on a case-by-case basis in the recent past. However, these purchases are not considered permanent water supplies.

Future Conditions. To meet its future demands PCWA will continue to rely on surface water, groundwater, and recycled water.

2.4.3.3 Groundwater

Existing Conditions. Currently PCWA does not pump groundwater to an appreciable extent. Groundwater can be pumped at the Sunset Industrial Park as a backup supply, however, elevated levels of silica make this practice a 'last resort' situation. Also, isolated portions of the Martis Valley (outside the WPCGMP area) are served by small amounts of groundwater to meet local needs.

Most of the agricultural pumping is met by self-supplied groundwater in PCWA's Zone 5.

Future Conditions. PCWA is evaluating conjunctive use projects including PCWA's Western Placer County Groundwater Storage Study to possibly develop alternatives for increasing groundwater recharge and storage with conjunctive use operations in western Placer County. This study is described in further detail in Section



PCWA Canal

1.5.3.2. PCWA as part of its water connection charge projects has developed a groundwater supply program to serve at times of emergencies, backup to the surface water system and peaking.

2.4.3.4 Recycled Water

Existing Conditions. PCWA currently does not own or operate wastewater treatment or recycled water distribution facilities. Only the cities of Auburn, Lincoln, and Roseville have their own WWTP for their respective city limits; the remaining Zone 1 wastewater goes to the two regional WWTPs located in Roseville.

Future Conditions. In the future PCWA may consider utilizing recycled water from Roseville or Lincoln for agricultural and/or groundwater recharge uses.

2.4.4 CAW

The following sections are summary of CAW's West Placer Service Area's water use.

2.4.4.1 Demands

Existing demands within the California American Water Company's (CAW) West Placer Service Area are entirely for M&I and include the Dry Creek/West (Placer Vineyards) region, Dry Creek/East region, and a portion of the Curry Creek region. CAW demands are

based on projected land use changes in the West Placer Service Area from rural to urban as part of a residential master planned communities.

The West Placer Service Area accounts for approximately 1,100 of the estimated 56,800 total active customer connections in the Sacramento District of CAW (CAW, 2006). The current population of customer connections of the CAW West Placer Service Area is 3,041 and projected growth based upon land use is expected to reach approximately 24,500 to 28,000 residential dwelling units (DU) according to growth scenario (SACOG, 2006).

2.4.4.2 Surface Water

Existing Conditions. Currently, CAW uses surface water supplied by PCWA and conveyed through Roseville's distribution system as the sole source of water in the service area. In the future, treated surface water will be delivered to the service area from the future Sacramento River Diversion facility. The Sacramento River Diversion facility is intended to allow withdrawals from the Sacramento River in order to relieve some of the withdrawals currently made from the American River. After construction of the facility, the proposed water supply will be part of PCWA's pending amendatory CVP contract with USBR for 35,000 AF/year.

Future Conditions. In the future CAW will have an increased demand for surface water which is anticipated to be provided by PCWA.

2.4.4.3 Groundwater

Existing Conditions. Currently groundwater is not used within the CAW West Placer Service Area. This existing condition is a result of a 1995 franchise agreement with Placer County that mandates no use of groundwater to prevent overdraft due to lack of policy control. CAW is of the understanding that this franchise agreement predates more recent conjunctive use planning studies and technical data that had enabled water agencies to plan to use groundwater conjunctively while sustaining a healthy groundwater basin.

Future Conditions. In the future, dry year supply is projected to be made up of surface water and groundwater. The contract between CAW and PCWA which does not allow use of groundwater in the West Placer water system will need to be clarified for future dry year supply. Although CAW intends to use surface water supplies to meet future demands, CAW also intends to supplement surface water supplies with groundwater using conjunctive use techniques for peaking and

backup water supply reliability.

2.4.4.4 Recycled Water

Existing Conditions. CAW currently does not own or operate wastewater treatment or recycled water distribution facilities. However, Roseville supplies recycled water to major golf course (Morgan Creek Golf Course) within the West Placer Service Area.

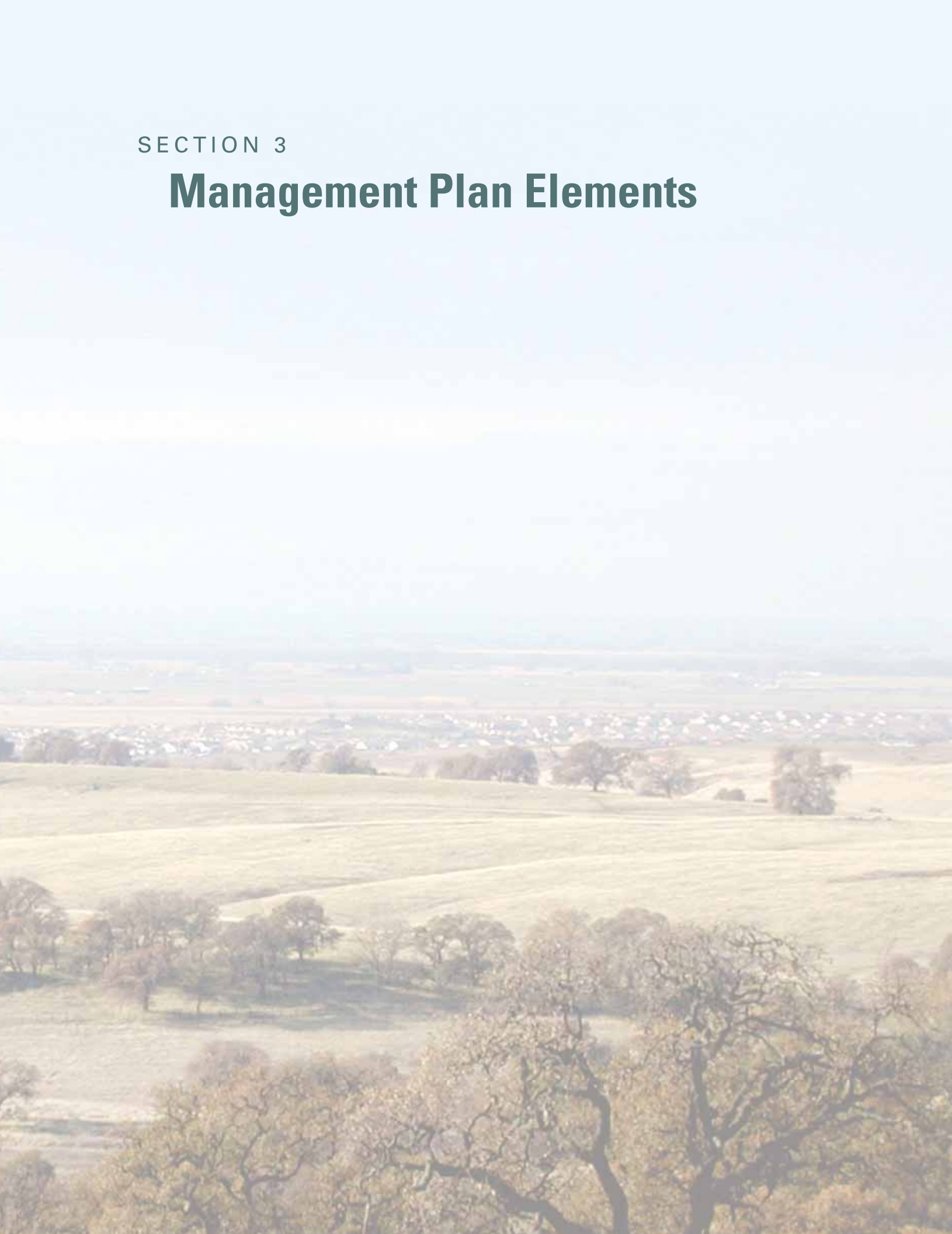
Future Conditions. Recycled water will continue to be available within the West Placer Service Area from Roseville. Additional recycled water use may be investigated.



³ Sacramento Suburban Water District has a temporary transfer agreement with PCWA to receive up to 29,000 AF/year of MFP water. In the WSIP, it is anticipated that PCWA will take back the MFP water to meet its buildout demand.

SECTION 3

Management Plan Elements



Management Plan Elements

The elements of this WPCGMP include an overall goal, a set of definable basin management objectives (BMOs), and a series of plan components that discuss and identify the actions necessary for meeting the goal and objectives (**Figure 3-1**).

The purpose of this section is to describe the actions set forth for management of the groundwater basin. The term “BMO” is defined in some detail under differing conditions where impacts may occur to the WPCGMP area if the BMO criteria are exceeded. The BMOs are intended to be specific enough to hold the management of the basin to quantitative values (where possible) but flexible so as to be adaptive to increased knowledge of how the groundwater basin behaves over time as better monitoring data is collected.

3.1 GROUNDWATER MANAGEMENT GOAL

The overarching goal of this WPCGMP is to maintain the quality and ensure the long term availability of groundwater to meet backup, emergency, and peak demands without adversely affecting other groundwater uses within the WPCGMP area.

3.2 MAKE UP OF A BMO

A BMO has four main components: 1) specific objective(s) that can be scientifically measured with some level of confidence, 2) a clearly defined monitoring program designed to collect data necessary to evaluate the BMO’s performance, 3) a reporting method of representing monitored data to identify success or forewarn of challenges with the management of the groundwater, and 4) programs and/or actions that are available to remedy a problem, if one is determined to exist. Each of these are explained in greater detail with references to sections in the Water Code, citations from other GMPs completed in the Sacramento Valley, and the California Groundwater Management Guidelines (Groundwater Resources Association of California, Second Edition, 2005).

The California State Water Code § 10753.7 (a) (1) states that the required components of management objective for the basin follow the excerpt below:

(1) Prepare and implement a groundwater management plan that includes basin management objectives for the groundwater basin that is subject to the plan. The plan shall include components relating to the monitoring and management of groundwater levels within the groundwater basin, groundwater quality degradation, inelastic land surface subsidence, and changes in surface flow and surface water quality that directly affect groundwater levels or quality or are caused by groundwater pumping in the basin.

This portion of the Water Code implies that BMO’s need to have sufficient specificity in numerical objectives so as to be scientifically defensible in its implementation through monitoring and management programs. For example, one objective might be a BMO that states that groundwater elevations will not fall below 100 feet below the ground surface in any location within the basin (example only). A monitoring program can be developed to measure groundwater elevations at key locations in the basin twice a year. This data is entered into a Database Management System (DMS) that compares the measured results to the BMO for a determination of performance. A report is generated that allows the WPCGMP governance body¹ of the groundwa-

ter basin to evaluate the data, make a judgment on the level of concern, and, if needed, perform certain functions to remedy the problem (i.e. implementation of specific programs or changes to daily pumping operations).

Based on Section 2 of this WPCGMP, what we understand about groundwater and its hydrologic properties, and an understanding that land use conditions change from year to year applying differing stresses on the aquifers, the remedy to a particular problem may or may not be in the area where the detected problem occurs. A good example is the regional cone of depression in the southern portion of the WPCGMP area. The regional cone is dependent on pumping throughout the north portion of Sacramento County to a certain degree, and pumping throughout the southern WPCGMP area. So a problem in one management area, may require actions in another management area to remedy the situation.

As mentioned earlier, the BMO's need to be specific and measurable. For this reason, the selection of BMO's and the values attached to each have to: 1) be evaluated on the reasonableness of measuring the BMO's performance, 2) have the ability to provide clear and continuous reporting on the BMO's performance, and 3) indicate action items that are necessary in meeting the BMO. For this reason, considerable thought and significant attention needs to be given to each BMO in this WPCGMP to satisfy these criteria.

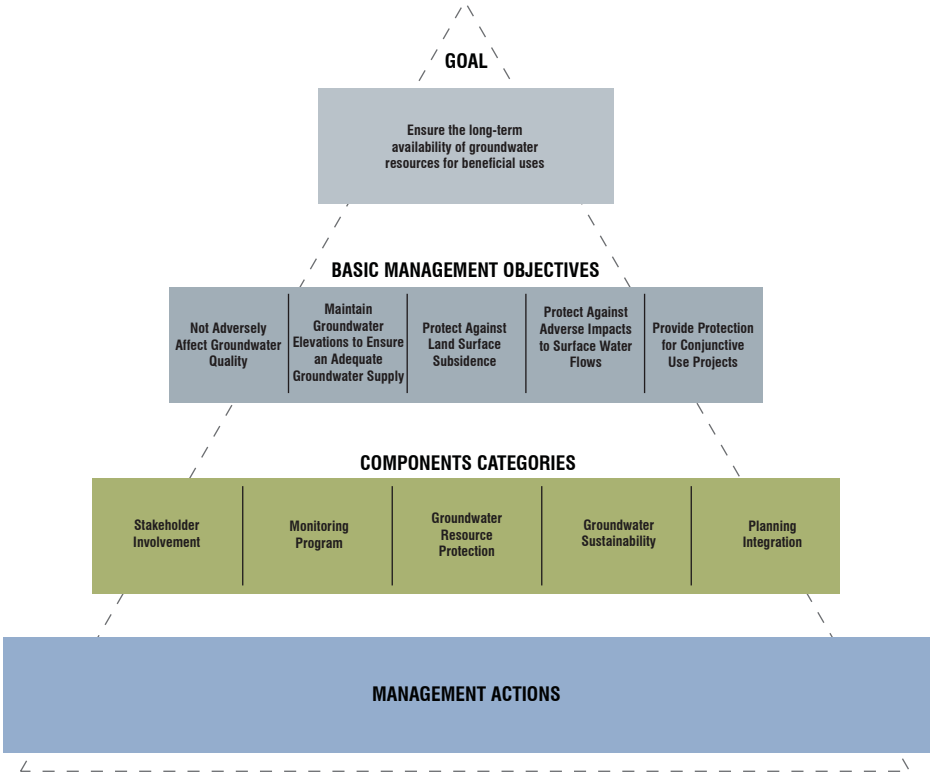
3.3 BASIN MANAGEMENT OBJECTIVES

To meet the goal stated above, the plan participants have adopted five BMOs. These BMOs include the following:

3.3.1 BMO #1 – Management of the groundwater basin shall not have a significant adverse affect on groundwater quality.

BMO #1 is intended to preserve overall groundwater quality by stabilizing groundwater contamination, avoiding known contaminated areas, and protecting recharge areas. Currently there is insufficient data to allow the plan participants to understand all of the groundwater quality characteristics for the entire WPCGMP area. However, what is understood about groundwater quality in the WPCGMP area is groundwater that is analyzed for potential supply for potable use by Roseville and Lincoln meets Department of Health Services (DHS) public health criteria.

Figure 3-1 – Organization of Management Plan Elements



Within the WPCGMP area, there are documented occurrences of isolated groundwater contamination. The plan participants will make use of groundwater within the basin that is not hindered by contamination, and that such use does not cause or exacerbate degradation of the quality of the resource either at the contamination sites or from naturally occurring contaminants present in the groundwater. Where groundwater contamination is currently documented or if it occurs in the future, the plan participants will coordinate and cooperate with appropriate State and Federal regulatory agencies and with other responsible parties. The plan participants will pursue all actions within their powers that result in the containment and eventual remediation of the contaminant.

Natural recharge of groundwater occurs primarily from percolation of irrigation water, infiltration along creeks and drainages, infiltration of precipitation, and subsurface flow. Protection of natural recharge is an important element of this BMO.

Implementation of this BMO will allow for a better understanding of groundwater quality in the WPCGMP area and how changes in groundwater quality may be influenced by management practices and implementation of conjunctive use programs. As additional data from the monitoring program becomes available, this BMO will be more clearly defined and corrective actions established. By meeting this BMO, the plan participants will not adversely affect groundwater quality for the benefit of basin groundwater users.

¹ A proposed governance body is discussed in Section 4.



3.3.2 BMO #2 – Manage Groundwater Elevations to ensure an adequate groundwater supply for backup, emergency, and peak demands without adversely impacting adjacent areas.

Over the past several decades, extensive groundwater pumping by agriculture, and more recently by urban development, has resulted in a persistent cone of depression in the southern Placer and northern Sacramento County areas. Due to the recent import of surface water into Sacramento County, southern Placer County groundwater elevations have stabilized at or near the cone of depression and some areas have recovered (See Hydrograph 10N06E0C001M in **Figure 2-5**). Results of the Sacramento County Water Forum Agreement (WFA) studies indicate that extensive lowering the aquifer can have adverse impacts on all groundwater users in the basin ranging from increased energy costs, to the need to deepen existing private and public wells, or even construction of new wells.

Full implementation of the conjunctive use programs in the basin may result in short term water levels being drawn down below previous historic lows, (this is a result of additional groundwater extraction during the drier and driest years). The intent of this BMO is to ensure an adequate groundwater supply by monitoring groundwater elevations within the WPCGMP area to maintain an acceptable “operating range.” The future governance body will develop operation criteria for the future management of elevations to insure fluctuations during these times be quantified and then minimized so that overall groundwater elevations in the WPCGMP area do not adversely affect the availability of groundwater.

3.3.3 BMO #3 - Participate in State and Federal Land Surface Subsidence Monitoring Programs.

Land subsidence can cause significant damage to essential infrastructure. As with groundwater quality, historic land surface subsidence data within the WPCGMP area is limited. However, the general understanding, based on DWR and National Geodetic Survey data is that historic land surface subsidence has been minimal in the WPCGMP area, with no known significant impacts to existing infrastructure. Given the historical trends, the potential for future land surface subsidence from groundwater extractions in the WPCGMP area appears remote. However, the plan participants intend to participate in State and Federal Land Surface Subsidence Programs.

DWR has recently begun developing a program to monitor subsidence in the Sacramento Valley. This program referred to as the Sacramento Valley - Land Surface Elevation Monitoring Program is in the beginning stages as DWR is gathering local support. DWR is actively seeking partners interested in cooperatively developing a land surface elevation network of Global Positioning System (GPS) monuments. Current project partners include Yuba County Water Agency and Butte, Glenn, and Tehama Counties. Participation ranges in form from financial assistance to in-kind staff hours. WPCGMD participants have agreed to join the DWR effort.

3.3.4 BMO #4 - Protect Against Adverse Impacts to Surface Water Flows in Creeks and Rivers due to groundwater pumping.

The intent of this BMO is to protect against adverse impacts to in stream water quality and quantity resulting from interaction between groundwater in the basin and surface water flows in the American and Sacramento River due to groundwater pumping.

At the present time, the flow regime is such that groundwater is not discharging to the river systems (i.e., rivers in the region are termed as losing streams to the groundwater) in the WPCGMP area. It is the intent of this WPCGMP that controllable operations of the groundwater system do not negatively impact the water quality and quantity of the area’s rivers and streams regardless of potential stream flow depletion due to groundwater pumping or



an accretion due to artificial groundwater recharge. The adopting governance body of this WPCGMP will seek to gain a better understanding in cooperation with SGA and others of potential impacts of adverse groundwater and surface water interactions.

3.3.5 BMO #5 – Ensure Groundwater Recharge Projects Comply with State and Federal Regulations and protect beneficial uses of groundwater.

With the implementation of conjunctive use projects through direct artificial recharge using spreading basin, field flooding or injection wells (i.e. ASR projects²), protection of groundwater users of artificial recharged water is currently of key regulatory importance. For this reason, the intent of this BMO is to recognize that the governance body will comply with appropriate State and Federal regulations when implementing groundwater recharge projects.

3.4 WPCGMP COMPONENTS

The WPCGMP includes a variety of components that are required by CWC § 10753.7, recommended by DWR Bulletin 118 (2003), optional under CWC § 10753.8, and other components that the plan participants have already begun. These components can be grouped into five general categories: 1) stakeholder involvement, 2) monitoring program, 3) groundwater resource protection, 4) groundwater sustainability, and 5) planning integration. Each category and its components are presented in this section. Under each component is a discussion, proposed actions, and identification of the objectives toward which the component is directed.

3.5 COMPONENT CATEGORY 1: STAKEHOLDER INVOLVEMENT (REQUIRED)

The management actions taken by the future governance body may have a wide range of impacts on a broad range of individuals and agencies that ultimately have a stake in the successful management of the basin. The local consumer may be most concerned about water rates or assurances that each time the tap is turned a steady, safe stream of water is available. To the industrial, agricultural, or agricultural-residential private well owner, they want to make sure their wells are safe from dewatering and degradation of water quality, and that energy costs do not increase significantly. To the environmental community and non-governmental organizations, they will want assurances that management of the basin does not create adverse environmental affects in the region. To large State and Federal water resource agencies, the degree to which the actions taken under this WPCGMP can achieve local supply reliability and further banking and exchange programs provides opportunities for State and Federal water programs to meet

statewide needs, particularly in drier years.

To address the needs of all the above stakeholders, this WPCGMP pursues several means of achieving broader involvement in the management of the WPCGMP area. These include: (1) involving members of the public and other interested parties, (2) involving other agencies within and adjacent to the WPCGMP area, (3) using advisory committees for development and implementation of the WPCGMP, (4) developing relationships with state and federal water agencies, and (5) pursuing a variety of partnerships to achieve local supply sustainability. Each of these is discussed further below.

3.5.1 Involving the Public

Groundwater in California is a public resource, and the WPCGMP Technical Review Committee (TRC) is committed to involving the public in the development and implementation of the WPCGMP. The primary reason for the WPCGMP is to “to maintain the quality and ensure the long-term availability of groundwater to meet backup, emergency, and peak demands without adversely affecting other groundwater uses within the WPCGMP area.” In order to meet this goal, the plan participants must intelligently manage current and future use of the shared groundwater Sub-basin underlying their city limits/service areas, respectively. To effectively manage this resource the plan participants must have public input and, ultimately, public approval at each decisive step. The plan participants understand that this can be accomplished only when the public is continually involved in the decision-making process.



May 2007 celebration of Roseville's first ASR well

The development of the WPCGMP was completed in many stages as entities interested in the development of this plan were added periodically and participated in the TRC. Roseville initially intended to create a GMP that covered an area comprised of their city limits. Soon after, PCWA agreed to develop a joint plan with Roseville. This partnership expanded the study boundaries to include that portion of PCWA's service area which is located within the Sub-

² In particular for ASR projects within the Central Valley, regulatory agencies are focusing on projects where chemically treated potable water is used as the source water used for recharge. Chemical treatment with the use of chlorine, when in the presence of dissolved organic carbon, causes the formation of disinfection by-products such as Trihalomethanes (THM). THMs routinely sampled and analyzed in potable source water, used for recharge, are at levels well below public drinking water criteria established DHS. However, based on the regulatory concerns, it is the intent of this WPCGMP to provide controls over who uses artificially recharged groundwater. These controls include monitoring the proposed position of new wells when being drilled into potential artificial recharged groundwater “bubble” areas and areas in a down gradient groundwater flow directions or providing surface water deliveries for preexisting groundwater users. For this reason, the adopting governance body of this WPCGMP will work in coordination with State and Federal regulators on conjunctive use projects within the study area to protect beneficial uses of groundwater.

basin. In addition to Roseville, the new study area includes the City of Lincoln and portions of the City of Rocklin. This expansion led to the project being named the WPCGMP.

In recognition that effectiveness of the WPCGMP is dependent on the agreed management decisions of all groundwater users in the area, the City of Lincoln accepted an invitation from Roseville and PCWA to become a GMP partner. CAW, a private water purveyor with a service area along the southwest edge of Placer County, joined the effort in early 2007 as a partner. The City of Rocklin is not a groundwater user; the city's municipal water supply needs are provided by PCWA. Finally, Placer County has been an active participant in the GMP's development; however, as the County is not a water purveyor it has not formally joined the WPCGMP as a full partner.

In accordance with CWC § 10753.2, public notices were published by GMP partners as required (Appendix A). These notices were supported by a variety of outreach and information activities conducted by plan participants as summarized in WPCGMP Public Outreach and Information Plan (Appendix B). It is anticipated the outreach plan will be adapted to meet the needs of the WPCGMP and its stakeholders as conditions in the basin change.

Table 3-1: Public notices published during development of the WPCGMP per CWC § 10753.2

Partner	Public Notice	Date and Publication
City of Roseville	Notice of intent to adopt a resolution to prepare a GMP	July 15 & 22, 2005; The Sacramento Bee
	Text of adopted resolution published	November 18 & 25, 2005; The Sacramento Bee
	Notice of public hearing to consider adoption of GMP	June 30 & July 7, 2007; Roseville Press Tribune
	Notice of public hearing to adopt GMP	¹ July 27, 2007; Posting of City of Roseville agenda to adopt a GMP
	Resolution of adoption	August 1, 2007
City of Lincoln	Notice of intent to adopt a resolution to prepare a GMP	November 30 & December 7, 2006; Lincoln News Messenger
	Text of adopted resolution published	February 1 & 8, 2007; Lincoln News Messenger
	Notice of public hearing to consider adoption of GMP	February 1 & 8, 2007; The Lincoln News Messenger
	Notice of public hearing to adopt GMP	¹ November 21, 2007, 2007; Posting of City of Lincoln agenda to adopt a GMP
	Resolution of adoption	November 27, 2007
Placer County Water Agency	Notice of intent to adopt a resolution to prepare a GMP	October 19 & 26, 2006; The Sacramento Bee/ Auburn Journal
	Text of adopted resolution published	November 9 & 16, 2006; The Sacramento Bee/ Auburn Journal
	Notice of public hearing to consider adoption of GMP	August 2 & 9, 2007; The Sacramento Bee/ Auburn Journal
	Notice of public hearing to adopt GMP	¹ August 31, 2007; Posting of PCWA agenda to adopt a GMP
	Resolution of adoption	September 6, 2007

¹ Agenda items posted in Compliance with Section 54954.2 of the California Brown Act.

Once the plan participant group was set, the TRC engaged in a series of briefings to inform and gauge specific stakeholder groups' interest and involvement in the WPCGMP. Stakeholder groups briefed on the plans development were: Roseville Public Utility Commission; Lincoln City Council; Placer County Water Agency Board of Directors; Sacramento Groundwater Authority; and the Water Caucus of the Water Forum. This activity was supported by a project website (www.wpcgmp.org). The website featured a history of plan development, plan content, participant contact information, links, public notices and other information materials. The plan participants will continue to use their respective websites to distribute information on WPCGMP implementation activities to the public until the governance body of the WPCGMP is in place (as described in detail in **Section 4.6**).

In addition to stakeholder briefings, the TRC hosted the WPCGMP Open House, June 14, 2007, at the McBean Pavilion in Lincoln. Meeting invitees included area water purveyors, regional environmental organizations, local landowners, business owners, government agencies, and other interested parties. This meeting provided the TRC the opportunity to discuss the GMP with the public and other stakeholders and incorporate their ideas and comments to the document. The draft WPCGMP was released for formal public comment following a July 11, 2007, public hearing by the Roseville City Council. Once public comments are received and incorporated to the document as necessary, the Roseville City Council is anticipated to adopt the plan by August 1, 2007. Formal adoption by other plan partners will begin following adoption by the City of Roseville.

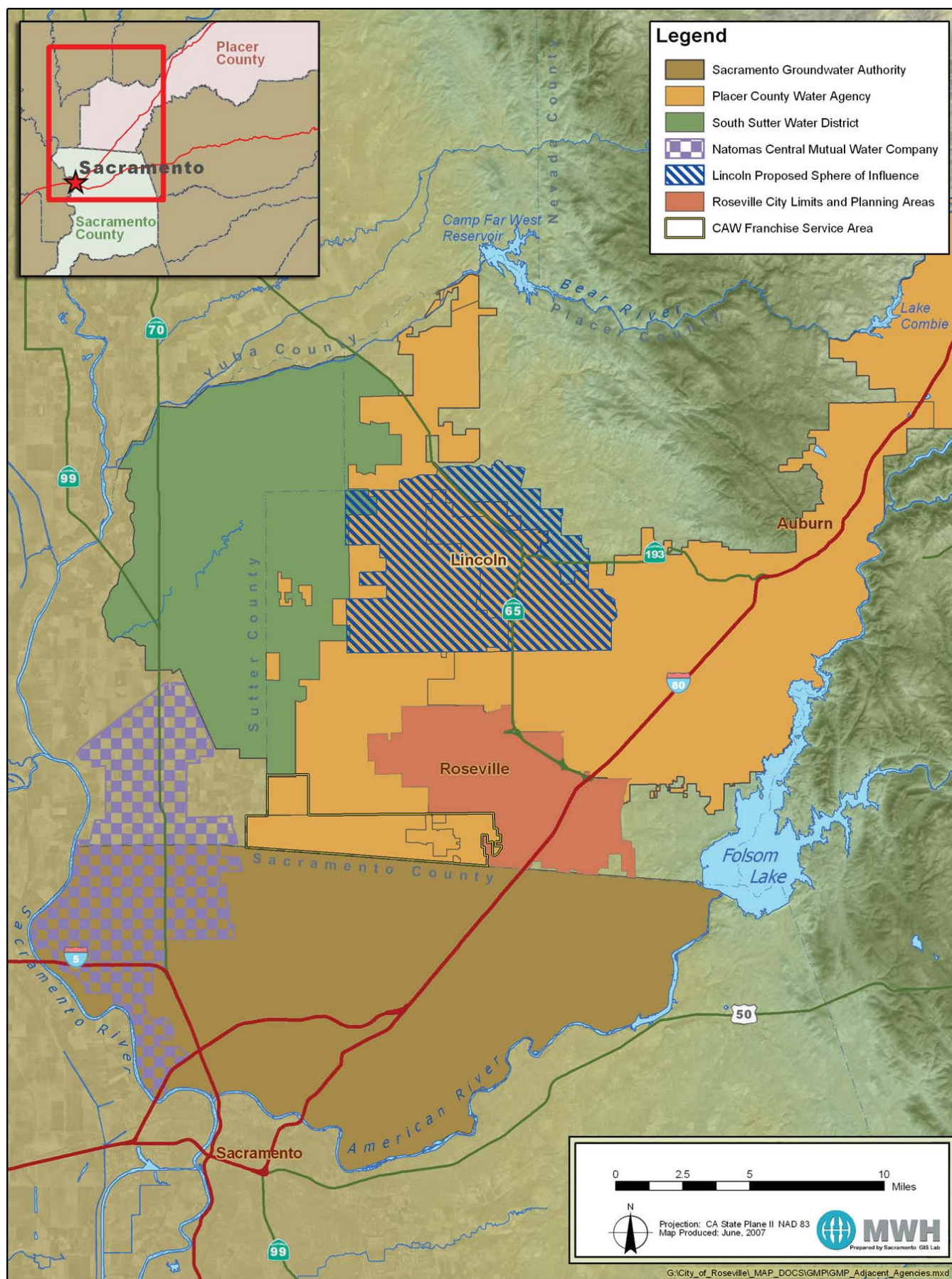
Actions — The governance body will take the following actions:

- Continue efforts to encourage public participation as opportunities arise.
- Review and take actions from the Public Outreach Plan as necessary during implementation of various aspects of the WPCGMP.
- Continue to provide briefings to the Water Forum Successor Effort on WPCGMP implementation progress.
- Work with basin stakeholders to maximize outreach on WPCGMP activities including the use of the plan and plan participants' websites.

3.5.2 Involving Other Agencies Within and Adjacent to the WPCGMP Area

Figure 3-2 shows adjacent purveyors within the WPCGMP area and some of the key adjacent entities that the WPCGMP has been coordinating with during development of this WPCGMP. Plan participants have provided briefings, presentations, and/or workshops to multiple adjacent agencies including the Sacramento Groundwater Authority (SGA) and its member agencies. Plan participant outreach has also included the Water and Environment Caucuses of the Water Forum, South Sutter Water District (SSWD), Natomas Central Mutual Water Company (NCMWC), Nevada Irrigation District (NID), San Juan Water District, City of Rocklin, City of Citrus Heights, Rio Linda/Elverta Community Water District, Yuba County Water Agency, Sacramento Suburban Water District, and Camp Far West Water District.

Figure 3-2 – Adjacent Agency Service Areas



Beginning in August 2007, Roseville's City Council, PCWA's Board of Directors, Lincoln's City Council, and CAW management plans to adopt the WPCGMP. This WPCGMP recognizes Placer County, South Sutter Water District, Sacramento Groundwater Authority, Natomas Central Mutual Water Company, and Nevada Irrigation District as a partner in managing the Sub-basin and has requested their review and assistance in the preparation of this WPCGMP.

Actions — The governance body of the WPCGMP will take the following actions:

- Continue a high level of involvement with SGA, SSWD, NC-MWC, NID and other interested parties in implementing the WPCGMP.
- Provide copies of the adopted WPCGMP and subsequent annual reports to representatives from the SGA, SSWD, NCMWC, NID and other interested parties.
- Meet with representatives from the SGA, SSWD, NCMWC, NID and other interested parties, as needed.
- Coordinate a meeting with other self supplied groundwater pumpers in the WPCGMP area to inform them of the plan participant's management responsibilities and activities, and develop a list of other self supplied groundwater pumpers concerns and needs to the plan participant's management.
- Coordinate a meeting with the agricultural groundwater pumpers in the WPCGMP area to inform them of the plan participant's management responsibilities and activities, and develop a list of agricultural groundwater pumpers concerns and needs to the plan participant's management.



3.5.3 Utilizing Advisory Committees

The plan participants have and will continue to use advisory committees in development and implementation of this WPCGMP. Prior to beginning development of the WPCGMP, the plan participants developed a group made up primarily of plan participants staff, named as the TRC to guide development of the WPCGMP. The TRC consisting of Roseville, PCWA, Lincoln, Placer County, CAW, and DWR staff and a representative from agricultural interests within the WPCGMP area and met periodically approximately on a bimonthly basis during the development of this WPCGMP.

Actions — The plan participants will take the following action:

- Upon adoption of the WPCGMP, the TRC will periodically meet to discuss scheduling and functions to guide implementation of the plan and provide these recommendations to the WPCGMP governance body.

3.5.4 Developing Relationships with State and Federal Agencies

Working relationships between the governance body and local, state, and federal regulatory agencies are critical in developing and implementing the various groundwater management strategies and actions detailed in this WPCGMP.

The TRC has developed on-going working relationships with local, state, and federal regulatory agencies (e.g., Placer County, Environmental Management Department (EMD), California DHS, etc.).

Actions — The governance body of the WPCGMP will take the following action:

- Continue existing and develop new working relationships with local, State, and Federal regulatory agencies.

3.5.5 Pursuing Partnership Opportunities

This WPCGMP is committed to facilitating partnership arrangements at the local, State, and Federal levels. Over the past decade, the greater Sacramento-area water community and other local leaders have made great strides toward regional planning and

collaboration on water issues. The historic WFA, which involved over 40 stakeholders and seven years of facilitated discussions, resulted in a regional framework to balance the competing demands for increased use of surface and groundwater with the environmental needs of the Lower American River through the year 2030. Several important partnerships have been formed to implement the WFA as well as provide a host of other benefits to water agencies and the customers that they serve.

While the facilities necessary to implement, develop and expand conjunctive use programs in the WPCGMP area have not been fully identified, the potential exists to develop and expand facilities on a Sub-basin wide level to achieve broader regional and statewide benefits. The needed facilities, however, would require substantial resources. To investigate any further opportunities would require resources provided through partnerships with potential beneficiaries.

Actions — The governance body of the WPCGMP will take the following actions:

- Continue to promote partnerships that achieve both local supply reliability and achieve broader regional and statewide benefits.
- Continue to track and apply for grant opportunities to fund regional groundwater management activities and local water infrastructure projects.

3.6 COMPONENT CATEGORY 2: MONITORING PROGRAM (REQUIRED)

At the heart of this WPCGMP is a monitoring program capable of assessing the current status of the basin and predicting responses in the basin as a result of future management considerations. The program includes monitoring groundwater elevations, monitoring groundwater quality, monitoring and assessing the potential for land surface subsidence resulting from groundwater extraction, and developing a better understanding of the relationship between surface water and groundwater along the Feather, Bear, American, and Sacramento Rivers and other smaller streams. Also important is the establishment of monitoring protocols to ensure the accuracy and consistency of data collected.

3.6.1 Groundwater Elevation Monitoring

DWR has collected a significant amount of groundwater elevation measurements extending from prior to 1950 to 2007. DWR's program collects biannual (spring and fall) groundwater level data from more than 32 wells throughout Placer County. In addition, over the past seven years the City of Lincoln has begun to collect extensive groundwater elevation measurements from production and monitoring wells within its service area. Plan participants have used some of this most recent data to generate a groundwater contour map for the WPCGMP area (see **Section 2.1.4**). However, because DWR only monitors and measures certain wells within the County, Roseville and Lincoln, groundwater contour maps for the County or the WPCGMP area have not been created on a consistent basis. As such, it is difficult to compare a historic contour map with a recent one. For this reason, plan participants are establishing a standardized network of wells that combines those monitored by DWR and other water purveyors. It is the plan participants' intent that the wells comprising this program be maintained as a consistent long-term network that represents overall groundwater elevation conditions in the basin. **Figure 3-3** shows the wells that will be evaluated to develop this network.

Wells will be selected to provide uniform geographic coverage throughout the approximately 192.5 square mile WPCGMP area, and in an area around the northern, western, eastern and southern perimeter of the WPCGMP area. The well network will be developed by first establishing a network of sampling grids using the following method:

- Overlay a matrix of evenly spaced points over the entire WPCGMP area.
- Surround matrix of points with polygons.
- Conform the boundaries of the polygons to WPCGMP area boundaries and regenerate area grids.

The resulting grid, shown on Figure 3-3, includes approximately 50 polygons of roughly equal area of about five square miles each. Plan participants will try to establish at least one monitoring well within each of the polygons to act as the future monitoring network.

Plan participants will give preference to wells currently in DWR's monitoring program. These wells will be evaluated first because (a) they have long records of historic groundwater level data and are useful in assessing trends within the groundwater basin, (b) uniform protocols were used in measuring and recording the water level data, and (c) these are typically non-producing wells, so water level readings represent relatively static levels.

Second, the plan participants will identify other municipal and private wells with well construction information, long records of groundwater elevation data and giving preference to those wells with the lowest recent extraction volumes.

Actions— Additional actions by the plan participants will include:

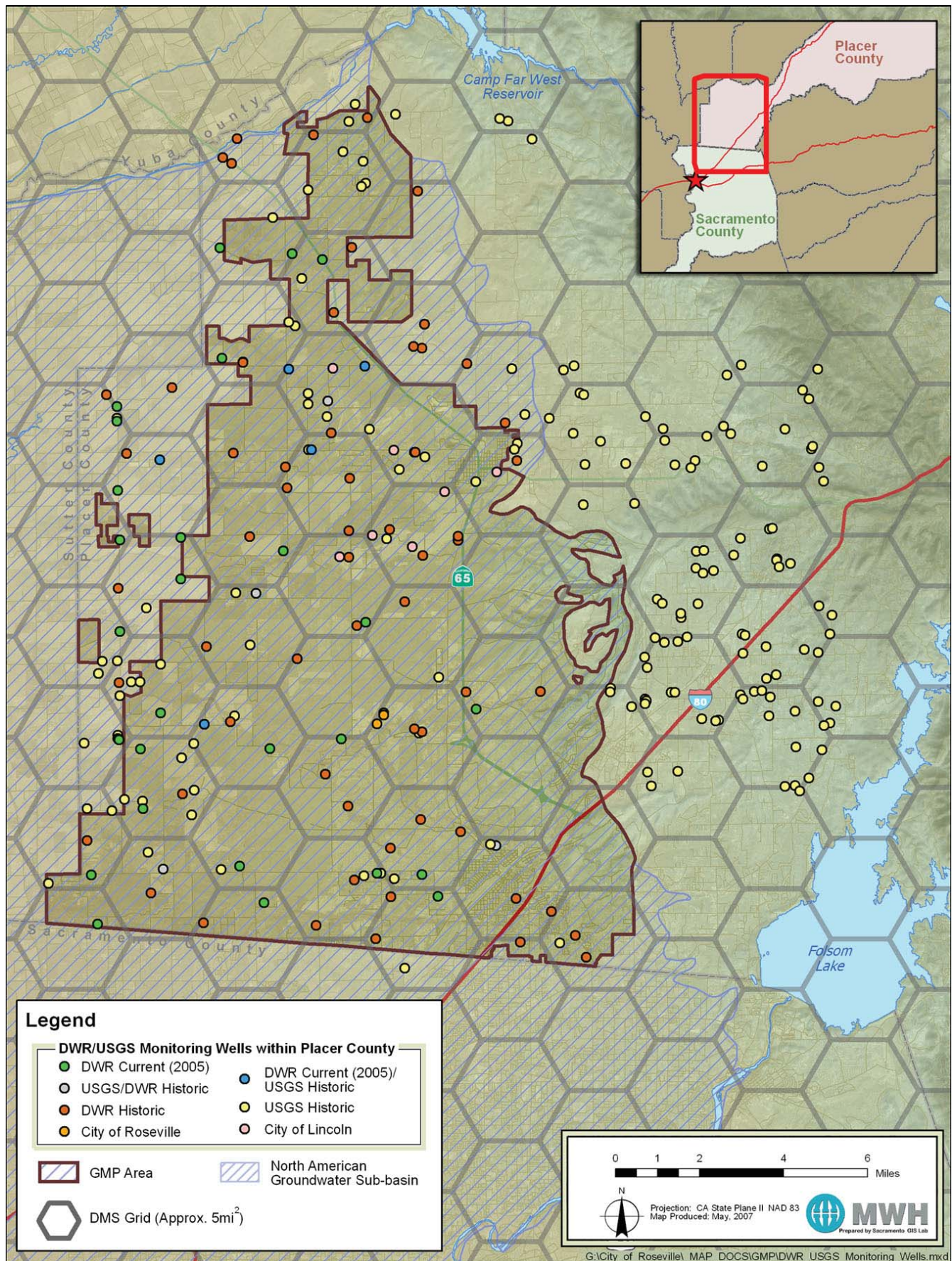
- Coordinate with DWR and others to identify an appropriate group of wells for monitoring for a spring 2008 set of groundwater elevation measurements.
- Coordinate with DWR and others to ensure that the selected wells are maintained as part of a long-term monitoring network.
- Coordinate with DWR to ensure that the timing of water level data collection by other agencies coincides within one month of DWR data collection. Currently DWR collects water level data in the spring and fall.
- Coordinate with other agencies to ensure that needed water level elevations are collected and verify that uniform data collection protocols are used among the agencies.
- Consider ways to fill gaps in the monitoring well network by identifying suitable existing wells or identifying opportunities for constructing new monitoring wells.
- Assess groundwater elevation trends and conditions based on the monitoring well network annually.
- Assess the adequacy of the groundwater elevation monitoring well network annually.
- Identify a subset of monitoring wells that will be monitored more frequently than twice annually to improve the plan participants' understanding of aquifer responses to pumping throughout the year.

3.6.2 Groundwater Quality Monitoring

Because most of the wells in the basin are used for agricultural purposes, an extensive record of water quality data is not available for most wells. More recently public water supply wells have been constructed in the WPCGMP area, and therefore water quality data is available for these wells. These wells are listed on **Table 2-3**. Roseville and Lincoln have compiled available historic water quality data for constituents monitored as required by DHS under CCR Title 22.

This level of monitoring is sufficient under existing regulatory guidelines to ensure that the public is provided with a safe and reliable backup drinking water supply. Based on the limited list of contaminated sites identified in Section 2.1.3, it may be advisable to have in place a network of shallow (less than 200 feet deep) monitoring wells on the eastern edge of the basin where recharge

Figure 3-3 – DWR, USGS, Roseville and Lincoln Wells



primarily occurs to serve as an early warning system for contaminants that could make their way to greater depths in the basin where production wells extracts groundwater. Over the past several years, Lincoln has begun to install such a network. In addition, Roseville has constructed three monitoring wells located adjacent to the Diamond Creek Well to collect groundwater elevation and quality data during direct recharge as a result of their Aquifer Storage and Recovery (ASR) program. Additional monitoring wells for groundwater elevation and quality data collection are anticipated as Roseville expands their ASR program in western portions of the City.



Figure 2-8 shows existing WPCGMP area production wells. CCR Title 22 water quality reporting is required by DHS for each of these public drinking water sources. The plan participant's water quality monitoring network includes these wells. The water quality monitoring well network may be expanded to include additional DWR and privately owned wells based on the outcome of coordination meetings with these agencies and various landowners.

Actions— The following actions will be taken by the plan participants to monitor and manage groundwater quality:

- Coordinate with cooperating agencies to verify that uniform protocols are used when collecting water quality data.
- Coordinate with local, state, and federal agencies to identify where wells may exist in areas with sparse groundwater quality data. Identify opportunities for collecting and analyzing water quality samples from those wells.
- Assess the adequacy of the groundwater quality monitoring well network annually.

3.6.3 Land Surface Elevation Monitoring

Subsidence of the land surface resulting from compaction of underlying formations affected by head (groundwater level) decline is a well-documented concern throughout much of the Central Valley. During a typical pumping season, changes in land surface elevation can be observed as a result of both elastic and inelastic subsidence in the underlying basin. Elastic subsidence results from the reduction of pore fluid pressures in the aquifer system and typically rebounds when pumping ceases or when groundwater is otherwise recharged resulting in increased pore fluid pressure. Inelastic subsidence occurs when pore fluid pressures decline to the point that aquitard (a silt or clay bed of an aquifer system) sediments collapse resulting in permanent compaction and reduced ability to store water in that portion of the aquifer.

While some land surface subsidence is known to have occurred as a result of groundwater extraction west of the Sacramento River, it is believed that the extent of subsidence east of the Sacramento River has been minimal. DWR maintains 13 extensometer stations in the northern Sacramento Valley: 3 in Glenn County, 5 in Butte County, 2 in Colusa County, 1 in Sutter County, and 2 in Yolo County.

According to DWR there is no documented evidence of land subsidence in the WPCGMP area (DWR, 1997). However, data from an extensometer indicate a small amount of downward land surface displacement occurred during the 1994, 1995, and 1996 summer irrigation seasons. This limited data set indicates that the land surface subsides and rebounds with groundwater elevation declines and increases, respectively. According to DWR, these records, based on this limited data set, show no permanent land subsidence has occurred at this station, which is located west of the WPCGMP area approximately at the intersection of Highway 99 and the Natomas Cross Canal.

Historical benchmark elevation data for the period from 1912 through the late 1960s obtained from the National Geodetic Survey (NGS) has been used to evaluate land subsidence in north Sacramento County. From 1947 to 1969 the magnitude of land subsidence measured at benchmarks north of the American River in Sacramento County ranged from 0.13 feet to 0.32 feet, with a general decrease in subsidence in a northeastward direction. This decrease is consistent with the geology of the area: formations along the eastern side of the Sacramento Valley are older than those on the western side and are subject to a greater degree of pre-consolidation making them less susceptible to subsidence. The maximum documented land subsidence of 0.32 feet was measured at both benchmark L846, located approximately two miles northeast of the former McClellan AFB, and benchmark G846, located approximately one mile northeast of the intersection of Greenback Lane and Elkhorn Boulevard.

Whether this is inelastic subsidence is indeterminate from the data, but it is clear that the magnitude of the potential subsidence of benchmarks during the above mentioned periods appears negligible.

An extensometer measures subsidence at a single point. To monitor subsidence within the WPCGMP area key survey stations would need to be located. NGS approved stations using a ground positioning system (GPS) or conventional leveling will determine the change in a single point land surface elevation and ultimately be used to evaluate land subsidence within the WPCGMP area.

As described previously, DWR has recently begun developing a program to monitor subsidence in the Sacramento Valley. This program referred to as the Sacramento Valley - Land Surface Elevation Monitoring Program is in the beginning stages as DWR is gathering local support. Land surface elevation data collected as part of this program could be used by cooperating agencies to evaluate if subsidence is being caused by groundwater pumping. DWR is actively seeking partners interested in cooperatively developing a land surface elevation network of GPS monuments. Current project partners include Yuba County Water Agency and Butte, Glenn, and Tehama Counties. Participation ranges from financial assistance to in-kind staff hours. WPCGMP participants have joined the effort.

DWR has identified a gap of subsidence data in Placer County. DWR estimates that 8 monuments would be needed to fill the gap. DWR has provided a rough per monument dollar estimate of \$4,500. For this reason, it is estimated that \$36,000 worth of monuments would be necessary to fill the gap. DWR will evaluate the information provided by Roseville and Lincoln and decide whether the survey points meet NGS standards.

Actions — While available data and reports indicate that land surface subsidence is not a concern in the WPCGMP area, the plan participants are interested in monitoring for potential land surface subsidence, which may include:

- Coordinate with other agencies, particularly the DWR, USGS, and SGA to determine if there are other suitable benchmark locations in the WPCGMP area to aid in the analysis of potential land surface subsidence.

3.6.4 Surface Water Groundwater Interaction Monitoring

The interaction between groundwater and surface water has not been extensively evaluated within the WPCGMP area. Due to the fact that only IGSM modeling results are available for the WPCGMP area, the plan participants recommend the following actions:

Actions — The plan participants will pursue actions to better understand the relationship between surface and groundwater in the WPCGMP area, including:

- Work cooperatively with DWR and others to compile available stream gage data and information on tributary inflows and diversions from the Feather, Bear, and Sacramento rivers to quantify net groundwater recharge or discharge between gages in the WPCGMP area.
- Coordinate with local, State, and Federal agencies to identify available surface water quality data from the Feather, Bear and

Sacramento rivers proximate to the WPCGMP area.

- Correlate groundwater level data from wells in the vicinity of river stage data to further establish whether the river and water table are in direct hydraulic connection, and if the surface water is gaining or losing at those points.
- Continue to coordinate with local, State, and Federal agencies and develop partnerships to investigate cost-effective methods that could be applied to better understand surface water-groundwater interaction along the Feather, Bear, and Sacramento rivers.
- Perform evaluations of accretion/depletion interactions for local streams that bisect the WPCGMP, such as Auburn Ravine and Coon Creek.



3.6.5 Protocols for the Collection of Groundwater Data

Through the work completed as part of the SGA's GMP, MWH has evaluated the accuracy and reliability of groundwater data collected by cooperating agencies within the Sacramento Region (MWH, 2002). The evaluation indicated a significant range of techniques, frequencies and documentation methods for the collection of groundwater

level and quality data. Although the groundwater data collection protocol may be adequate to meet the needs of individual agencies, the lack of consistency yields an incomplete picture of basin-wide groundwater conditions. Other types of groundwater data collection protocols are included in Sections 3.5.1 and 3.5.2 above.

Actions — To improve the comparability, reliability and accuracy of groundwater data within the WPCGMP area and SGA, the plan participants will take the following actions:

- Use a Standard Operating Procedure (SOP) for collection of water level data by each of the cooperating agencies. Appendix C includes a SOP for Manual Water Level Measurements. This SOP was prepared using guidance documents available through the Environmental Protection Agency (EPA) and was included in a technical memorandum developed for SGA summarizing the accuracy and reliability of groundwater data (MWH, 2002).
- Provide cooperating agencies with guidelines on the collection of water quality data developed by DHS for the collection, pretreatment, storage, and transportation of water sample.
- Provide training on the implementation of these SOPs to cooperating agencies, if requested.

3.6.6 Groundwater Data Management System

In order for the plan participants to achieve their primary objective of sustaining the groundwater resource within the WPCGMP area, it was essential to develop a data storage and analysis tool, or DMS. The DMS was developed by MWH under contract with the USACE. Other local sponsors included SGA and its member agencies, DWR, and SCWA.

The DMS is a public domain application developed in a Microsoft Visual Basic environment and is linked to a SQL database containing North American Basin purveyor data. The DMS provides the end-user with ready access to both enter and retrieve data in either tabular or graphical formats. Security features in the DMS allow for access restrictions based on a variety of user permission levels. Data in the DMS include:

- Well construction details.
- Known locations of groundwater contamination and potentially contaminating activities.
- Long-term monitoring data on monthly extraction volumes.
- Water elevations.
- Water quality
- Aquifer characteristics based on well completion reports.

The DMS allows for the viewing of regional trends in groundwater elevation and quality not previously available to the plan participants. The DMS has the capability of quickly generating well hydrographs and groundwater elevation contour maps using historic groundwater level data. The DMS also has the ability to view water quality data for CCR Title 22 required constituents as a temporal concentration graph at a single well or any constituent can be plotted with respect to concentration throughout the WPCGMP area. Presentation of groundwater elevation and quality data in these ways will be useful for making groundwater basin management decisions.

Groundwater data from a select group of Roseville's ASR compatible backup water supply wells and monitoring wells has already been loaded into the DMS. Other plan participants are currently in the process of evaluating the future use of the DMS. If used throughout the WPCGMP area, data transfer protocols will be established so that groundwater data in both the SGA and WPCGMP areas (by cooperating agencies, DWR, USGS, etc.) can be readily appended to the database and analyzed through the DMS. Annual summaries of groundwater monitoring data would then be prepared using the analysis tools in the DMS and presented in the update to the State of the Basin report (see Section 4).

Again, if the DMS were widely used and once fully populated and quality-control checked a summary of existing basin conditions would be prepared. From this, an initial summary analysis would be performed on at least an annual basis to assess the impacts of current and future plan participants' management actions on the groundwater system.

Actions — If widely used, to maintain and improve the usability of the DMS, plan participants will take the following actions:

- Provide users staff with training and use of a Data Management System (DMS).
- Populate and update a DMS with available groundwater, water quality, well, and surface water data.
- Develop list of recommended enhancements to a DMS.
- Provide resources for maintaining and updating a DMS.
- Provide resources for maintaining, updating and utilizing a groundwater model or the North American River IGSM.
- Develop and present a biennial State of the Basin Report.

3.7 COMPONENT CATEGORY 3: GROUNDWATER RESOURCE PROTECTION



Monitoring well containment box

Plan participants consider groundwater protection to be one of the most critical components of ensuring a sustainable groundwater resource. In this WPCGMP, resource protection includes both the prevention of contamination from entering the groundwater basin and the remediation of existing contamination plumes. Prevention measures include proper well

construction and destruction practices, development of wellhead protection measures, and protection of recharge areas. Measures to prevent contamination from human activities as well as contamination from natural substances such as saline water bodies from entering the potable portion of the groundwater system will be addressed as part of this component category.

3.7.1 Well Construction Policies

Placer County typically administers the well permitting program for the entire County, with the exception of lands within Roseville and Lincoln city limits. Placer County Environmental Management Department (EMD) well permitting program is detailed in Placer Counties Municipal Code sections 13.08, which define the purpose of the Well Water code as:

It is the purpose of this article to protect the health, safety, and general welfare of the people of the county of Placer by ensuring that the groundwater of this county will not be polluted or contaminated. To this end, minimum requirements are contained in this article for construction, reconstruction, repair, and destruction of water wells, cathodic protection wells, and monitoring wells. (Prior code § 4.800)



Placer County Municipal Code sections 14.11.030 defines the permit requirements as:

- a) When Required. No person shall dig, bore, drill, deepen, modify, repair, or destroy a water well, cathodic protection well, observation well, or monitoring well without first applying for and receiving a permit as provided in this article unless exempted by law.
- b) Penalty for Failure to Obtain Permit. Any person who commences any work for which a permit is required by this article without having previously obtained a permit shall be required, if subsequently granted a permit for this work, to pay double the standard permit fee.
- c) Emergency Work. The above provisions shall not apply to emergency work required on short notice to maintain drinking water or agricultural supply systems. For the emergency work, when county offices are closed, a permit may be issued after such work has commenced, provided the following conditions are met:
 - The permit application is made the first day county offices are open following said work; and
 - The well system serves an existing structure or facility or agricultural operation; and
 - The person responsible provides written documentation to the enforcement agency that such work was urgently necessary; and
 - Conformance with Standards. Demonstrate that all work performed was in conformance with the technical standards as designated in Section 13.08.060. (Prior code § 4.808)

The Well Water Code as part of the Placer County's Municipal Code may be found at the web address below:

<http://ordlink.com/codes/placer/index.htm>

Roseville's Environmental Utilities Engineering Division is the permitting agency for wells located within the Roseville's city limits. For this reason, Roseville is aware of proposed and active wells within the Roseville's city limits. In order to permit a well in Roseville, a Well Construction Application and Permit Form must be filed with the environmental utilities department. An engineer from Roseville provides inspection services when new wells are constructed including observations during well seal grouting.

This process is detailed in the Roseville's Well Water Code as part of the Roseville's Municipal Code. Roseville's Municipal Code section 14.11.010 defines the purpose of the Well Water code as:

It is the purpose of this chapter to protect the health, safety and general welfare of the people of the City of Roseville by ensuring that the ground waters of the City will not be polluted or contaminated. It is also the purpose of this chapter that all ground waters be used to the benefit of the people of the City of Roseville. To this end, minimum requirements are contained in this chapter for construction, reconstruction, repair, use and destruction of water wells, cathodic protection wells, monitoring wells, and soil boring activities undertaken to investigate the environmental condition or water-bearing capacities of a property. (Ord. 2895 § 1 (part), 1995.)

The City Municipal Code sections 14.11.030 defines the permit requirements as:

No person shall dig, bore, drill, deepen, modify, repair or destroy a water well, cathodic protection well, observation well, monitoring well or any other excavation that may intersect ground water without first applying for and receiving a well permit as provided in this chapter unless exempted by law. (Ord. 2895 § 1 (part), 1995.)

The Well Water Code as part of the Roseville's Municipal Code may be found at the web address below:

<http://bpc.iserver.net/codes/rosevill/index.htm>

Starting in 1998, Lincoln assumed the responsibility from the Placer County EMD for the construction of all private and public wells within the city limits. Lincoln's Public Works Department has a permitting process in place to facilitate this responsibility. Typically, Lincoln does not allow the permitting of new private wells within city limits.

Actions — The plan participants will take the following actions:

- Ensure that the SGA, SSWD, NCMWC, NID, and others are provided a copy of the plan participants/Placer County's well ordinance and procedures and understand the proper well construction procedures.
- Provide a copy of the most recently delineated plume extents (if any) to the SGA, SSWD, NCMWC, NID, and others.
- Coordinate with the SGA, SSWD, NCMWC, NID, and others to provide guidance as appropriate on well construction. Where feasible and appropriate, this could include the use of subsurface geophysical tools prior to construction of the well to assist in well design.

3.7.2 Well Abandonment and Well Destruction Policies



Placer County typically administers the well destruction program for the entire County, with the exception of lands within the Roseville and Lincoln city limits. Placer County EMD well destruction program is detailed in Placer County's Municipal Code sections 13.08.100., which defines the purpose of the Well Water code as:

"Except as otherwise specified, the standards for the construction, modification or destruction of wells shall be as set forth in:

- *a) Department of Water Resources Bulletin 74-81. The California Department of Water Resources Bulletin 74-81, "Water Well Standards, State of California," except as modified by subsequent revisions.*
- *b) All Subsequent Supplements and Revisions. All subsequent Bulletin 74-81 supplements or revisions issued by the Department of Water Resources, once the revised standards have been reviewed at appropriate public hearings. (Prior code § 4.820)*

Roseville's Municipal Code sections 14.11.030 defines abatement of abandoned wells as:

All persons owning an Abandoned Well as defined shall destroy it, following the guidelines set forth in Bulletin 74-90 and this chapter. (Ord. 2895 § 1 (part), 1995.)

Similar well construction policies, starting in 1998, Lincoln assumed the responsibility from the Placer County EMD for the permitting of all well destructions within the city limits. Lincoln's Public Works Department has a permitting process in place to facilitate this responsibility.

One concern expressed by the plan participants is that some abandoned domestic or agricultural wells may not have been properly destroyed. For this reason, the plan participants plan to take the following actions.

Actions — The plan participants will take the following actions:

- Review DWR well records for all known wells in the WPCGMP area which were reported abandonment and destruction. Rate and provide a survey on the confidence of proper destruction based on the information provided on the report.
- Ensure that the SGA, SSWD, NCMWC, NID, and others are provided a copy of the Roseville/Lincoln/Placer County's code and understanding the proper destruction procedures and support implementation of these procedures.

- Follow up with the SGA, SSWD, NCMWC on the reported abandoned and destroyed wells to confirm the information collected from DWR. Follow up with the SGA, SSWD, NCMWC, and NID on the reported abandoned and destroyed wells to confirm the information collected from DWR.
- Provide a copy of the information of abandoned and destroyed wells in Placer County to fill gaps in County records (if any).
- Meet with Placer County EMD and DWR to ensure that wells in the WPCGMP area are properly abandoned or destroyed.
- Meet with the Placer County Farm Bureau and Placer County Agricultural Commission to encourage them to help educate farmers regarding the identification and proper destruction of abandoned wells.
- Obtain "wildcat" map from California Division of Oil and Gas to ascertain the extent of historic gas well drilling operations in the area as these wells could function as conduits to groundwater if not properly destroyed.

3.7.3 Wellhead Protection Measures

Identification of wellhead protection areas is a component of the Drinking Water Source Assessment and Protection (DWSAP) Program administered by DHS. DHS set a goal for all water systems statewide to complete Drinking Water Source Assessments by mid-2003. Roseville has completed their required assessments by performing the three major components required by DHS:

- Delineation of capture zones around source wells
- Inventory Potential Contaminating Activities (PCAs) within protection areas
- Analyze the vulnerability of source wells to PCAs

Delineation of capture zones includes using groundwater gradient and hydraulic conductivity data to calculate the surface area overlying the portion of the aquifer that contributes water to a well within specified time-of-travel periods. Typically, areas are delineated representing 2-, 5-, and 10-year time-of-travel periods. These protection areas need to be managed to protect the drinking water supply from viral, microbial, and direct chemical contamination.

Inventories of PCAs include identifying potential origins of contamination to the drinking water source and protection areas. PCAs may consist of commercial, industrial, agricultural, and residential sites, or infrastructure sources such as utilities and roads. Depending on the type of source, each PCA is assigned a risk ranking, ranging from "very high" for such sources as gas stations, dry cleaners, and landfills, to "low" for such sources as schools, lakes, and non-irrigated cropland.

Vulnerability analysis includes determining the most significant threats to the quality of the water supply by evaluating PCAs in terms of risk rankings, proximity to wells, and Physical Barrier Effectiveness (PBE). PBE takes into account factors that could limit infiltration of contaminants including type of aquifer, aquifer material (for unconfined aquifers), pathways of contamination, static water conditions, hydraulic head (for confined aquifers), well

operation, and well construction. The vulnerability analysis scoring system assigns point values for PCA risk rankings, PCA locations within wellhead protection areas, and well area PBE; the PCAs to which drinking water wells are most vulnerable are apparent once vulnerability scoring is complete.

It is important that Roseville account for PCAs that exist in adjacent regions. PCA and capture zone information can be added to the DMS to aid in assessing wellhead protection. The DMS includes a feature that will automatically calculate wellhead protection areas if no data are available or if new well locations are proposed.

Actions — The plan participants will take the following actions:

- Request that the SGA, SSWD, NCMWC, and NID provide vulnerability summaries from the DWSAP to the plan participants governance structure to be used for guiding management decisions in the basin.
- Contact groundwater basin managers in other areas of the state for technical advice, effective management practices, and “lessons learned”, regarding establishing wellhead protection areas.

3.7.4 Protection of Recharge Areas



PCWA has evaluated surface geology within and directly adjacent to the WPCGMP boundary for the purpose of delineating areas of potentially high recharge rates (PCWA, 2005). Lincoln has also identified protection of natural recharge areas a key element of its management objectives (Lincoln, 2003). Natural recharge of area groundwater resources occurs

primarily from percolation of irrigation water, infiltration along the creeks and drainages, infiltration of precipitation, and subsurface inflow. Natural recharge rates can be maintained by keeping the major recharge areas free of impervious surfaces.

The efficiency of direct recharge through surface spreading, as opposed to natural recharge, is highly related to the infiltration rate of the surficial soil. Surface soils map for the WPCGMP area from the U.S. Department of Agriculture, showing soil classes with different infiltration rate, have been evaluated by PCWA. The best candidates would be pasture lands for stock grazing because flooding these vacant lands combined with proper land rotation will have little or no negative impacts on the agricultural economy. Native lands not reserved for habitat conservation might also be candidates. Areas along or near natural streams may be good

candidates for spreading activities due to the presence of subsurface alluvium and channels potentially useable for conveyance, although spreading may pose environmental impacts. Areas where canals, treated water systems, or possibly wastewater treatment plants are nearby may also be good candidates due to the proximity to potential water sources. Current recharge that may be of interest include the following:

- Nevada Irrigation District (NID) Bear River — Use of NID Canal to deliver raw surface water to recharge basins.
- Dry Creek Waste Water Treatment Plant (WWTP) — Convey recycled water via Dry Creek and divert water to recharge basins.
- Dry Creek WWTP — Create new diversion facilities on Dry Creek in Placer County for basin recharge from Dry Creek WWTP.

Currently the only artificial recharge site in the WPCGMP area is the Roseville ASR program, which is currently in a demonstration phase of testing. Plan participants are interested in implementing actions designed to protect future recharge areas both artificial and natural for the Roseville ASR program and other future artificial recharge sites in the WPCGMP area.

The runoff characteristics and recharge potential of the soil throughout the Lincoln area have been investigated and mapped (Saracino, Kirby, and Snow, 2003) — providing a qualitative indication of a real potential for deep percolation of surface water into the aquifer systems. Most of the soil cover across the North American Subbasin has been classified as having high runoff (low infiltration) potential, except in the vicinity of river and stream drainages (Montgomery Watson, 1995). A fairly large area surrounding Auburn Ravine, as well as Coon Creek, has been classified as having soils with moderate to high runoff potential (low to moderate infiltration potential). DWR (1995) characterizes the soil cover across the area as having dense subsoil that limits deep percolation of water applied at the surface; less dense soils occur in the vicinity of creeks such as Coon Creek and Auburn Ravine, providing better deep percolation and recharge. Boyle (1990) also identified the Markham Ravine drainage as a probable area of groundwater recharge and Spectrum-Gasch (1999) identified the Orchard Creek drainage, along with Auburn Ravine, as probable areas of significant recharge based on the inferred shallow depth to the upper aquifer zone in these areas.

Actions — The plan participants will take the following action:

- Develop a recharge program that identifies major natural recharge areas, quantifies current recharge rates, identifies potential sources of surface water that could be utilized for recharge, and methods for recharging groundwater.
- Identify potential activities that could adversely affect recharge quantities or qualities and formulate cohesive policies that the plan participants can use to manage or mitigate potential impacts.

3.7.5 Control of the Migration and Remediation of Contaminated Groundwater

Contaminated groundwater within the WPCGMP area is limited in comparison to groundwater contamination documented in the SGA area. However, within the WPCGMP area, groundwater contamination has been documented at the Union Pacific Railroad (UPRR) Roseville Yard, Alpha Explosives, Deluxe Cleaners, Roseville Sanitary Landfill, and Western Placer Waste Management Authority Landfill Site as described in Section 2.1.3. Although not documented within this WPCGMP, other sites of concern include localized contamination from industrial/commercial point sources such as other dry cleaning facilities and numerous fuel stations throughout the WPCGMP area.

While the plan participants do not have authority or the responsibility for remediation of this contamination, they are committed to coordinating with responsible parties and regulatory agencies to stay informed on the status and disposition of known contamination in the WPCGMP area.

There are a number of historic, current, and proposed activities in and near Lincoln that have the potential to contaminate groundwater. These activities, described in Lincoln's 2003 GMP, are not the only potential sources of contamination to Lincoln's groundwater. The activities included in the report are derived from information provided by Applied Engineering and Geology (AEG, 2003). These identified activities represent locations where there has been, is, or may be certain contaminants that have caused or could cause an adverse impact to groundwater within Lincoln's Sphere of Influence. Information to develop the locations was compiled from various sources including: Placer County Division of Environmental Health, Regional Water Quality Control Board, GeoTracker Database, AEG's files, Department of Toxic Substances Control, Environmental Data Resources, consultant reports, and others.

Actions — The plan participants will take the following actions:

- Map and monitor known contaminated sites while coordinating with known responsible parties (if any) to develop a network of monitoring wells to act as an early warning system for public supply wells.
- If detections occur in these monitoring wells, work with the responsible parties and the potentially impacted areas of the SGA, SSWD, NCMWC and NID to develop strategies to minimize the further spread of contaminants.
- Provide the SGA, SSWD, NCMWC and others with all information on mapped contaminant plumes and LUST sites for their information in developing groundwater extraction patterns and in the siting of future production or monitoring wells.
- Inform the SGA, SSWD, NCMWC, and NID of the presence of the interface and the approximate depth of the interface below their service area for their reference when siting potential wells.
- Establish and isolate zones around known contamination plumes so as to limit the placement of production wells whose pumping might otherwise exacerbate the contamination. Add offset requirements for landfills

3.7.6 Control of Saline Water Intrusion

Saline water intrusion from the Sacramento/San Joaquin River Delta (Delta) is not currently a problem in the WPCGMP area, and is not expected to become a problem in the future. Higher groundwater elevations associated with recharge from the American and Sacramento Rivers have maintained a historical positive gradient preventing significant migration of any saline water from the Delta into the Placer County region. These groundwater gradients will continue to serve to prevent any localized pumping depressions in the basin from inducing flow from the Delta into the WPCGMP area.

Actions — The plan participants will take the following actions:

- Track the progression, if any, of saline water bodies moving toward the east from the Delta. Because this is a highly unlikely scenario, this action will be limited to communicating with DWR's Central District Office on a biennial basis to check for significant changes in TDS concentrations in wells. DWR has a regular program of sampling water quality in select production wells throughout the adjacent Solano, San Joaquin, and Yolo counties. This will serve as an early warning system for the potential of saline water intrusion from the Delta.
- Determine and monitor the elevation of the fresh water/saline water vertical interface. Analyze for trends in sodium, chloride, and TDS that may indicate upconing of saline water.
- Observe TDS concentrations in plan participant's municipal wells that are routinely sampled under Title 22. This data will be readily available as part of the DMS and are already an on-going task for the annual review of basin conditions.
- Inform all stakeholders of the presence of the salinity interface and the approximate depth to the interface for their reference when siting potential wells. The plan participants will also ensure that Placer County EMD, along with Roseville and Lincoln, issues well permits, is aware of the interface. The plan participants will provide a map indicating the contour of the elevation of the base of fresh water in Placer County to EMD for their reference when issuing well permits.



3.8 COMPONENT CATEGORY 4: GROUNDWATER SUSTAINABILITY

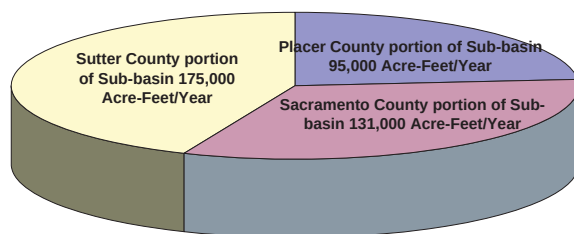
To ensure a long-term viable supply of groundwater, the plan participants are seeking to maintain the amount of groundwater stored in the basin over the long-term.

As described within the western Placer County Groundwater Storage Study, the calculated sustainable yield for the entire North American River Groundwater Subbasin is equal to 400,000 AF/year (PCWA, 2005). The Water Forum set the sustainable yield for Sacramento County portion of the subbasin at 131,000 AF/year with the remaining approximate 269,000 AF/year split 175,000 and 95,000 AF/year for Sutter and Placer County, respectively.

The “Long-term Average Sustainable Yield” definition for purposes of this WPCGMP is the average groundwater extraction calculated over a period of time commencing with the adoption of the WPCGMP. Given that agricultural groundwater extractions are estimated based on land use and crop type approximately every five years commensurate with the DWR Land Use Survey, each new year of data is added to the next and then averaged over the entire period of record. The 2000 extraction data will be added to the 2005 extraction data which will be added to the 2010 extraction data and so on. The “long-term” average is the average of the total extraction over the period of record (i.e. 2000 to 2010 in this example).

To ensure a sustainable resource, the plan participants continue to move forward with conjunctive use programs in the WPCGMP area including protection of natural recharge areas, pursuit of additional surface water supplies, increased use of recycled water, groundwater recharge and implementation of the WFA water conservation element. Current conjunctive management activities are described below.

Figure 3-4 – Recommended Sustainable Yield for the North American Groundwater Sub-Basin



3.8.1 Conjunctive Management Activities

Two primary activities will result in an improved ability to sustain the viability of the groundwater resource for the region. Conjunctive management is an activity that includes the planning and construction of facilities to increase the available surface water supply to the area as well as to create opportunities for the banking and exchange of water with local in-basin partners after local needs are met. These partnerships will result in increased surface water and perhaps revenue to pay for some of the necessary capital improvements to help sustain the resource in a cost-effective way (Conjunctive Management Activities).

The plan participants are committed to expanded direct recharge activities and have investigated a variety of ways of recharging water into the available storage space in the basin (see **Sections 1.5.1.3., 1.5.1.4., and 1.5.3.2.**) Opportunities for direct recharge from overlying land in the basin exist through recharge basins (e.g., abandoned aggregate mining pits or wetland habitat reserves) or through ASR. Roseville is currently implementing ASR programs where treated surface water is being injected into the groundwater and recovered through wells in the summer months and dry years. Most of the potential recharge opportunities could occur by providing raw or treated surface water or recycled water to municipal and agricultural users in-lieu of their extracting groundwater.

Actions — The plan participants will take the following actions:

- Continue to investigate conjunctive use opportunities within the WPCGMP area.
- Continue to investigate opportunities for the development of direct recharge facilities in addition to in-lieu recharge (e.g. injection wells or surface spreading facilities, through constructed recharge basins or in river or streambeds).

3.8.2 Demand Reduction

Another way to maintain the sustainable yield of the basin and continue to achieve in-lieu recharge is by reducing demand for potable water supplies by conservation and through the use of recycled water for landscape irrigation.

Water Conservation. Roseville, as a signatory to the WFA; Lincoln, as a signatory to the California Urban Water Conservation Council’s Memorandum of Understanding; and PCWA, as a signatory to both; are committed to implementing water conservation programs. As part of their respective agreements, each agency has implemented most, if not all, of the water conservation Best Management Practices (BMPs) listed in **Tables 3-2 and 3-3.**

Water Recycling. Currently Roseville and Lincoln have recycled water programs. Recycled water is currently produced at Roseville’s regional WWTPs at Dry Creek and Pleasant Grove Creek. Effluent from Roseville’s treatment plants is tertiary treated and meets Title 22 full body contact requirements for use of recycled water.

Roseville has made upgrades to transmission pipelines to allow more than 6 million gallon per day (MGD) of recycled water for use at area parks and golf courses. Roseville plans to expand its existing recycled water distribution system to reduce demands for potable water in the City and to minimize discharges to Dry Creek and Pleasant Grove Creek.

Wastewater from Lincoln is treated at a City-owned Wastewater Treatment and Reclamation Facility (WWTRF) located west-southwest of the downtown area. The 3.3 MGD WWTRF began operation in 2004 and generated an initial 2.4 MGD of average dry weather flow with expansion capacity to 12 MGD in 2020. The WWTRF replaced the Waste Water Treatment Plant, which has been decommissioned. Effluent from the WWTRF undergoes treatment processes that include oxidation, coagulation, clarification, filtration, and disinfection. This level of treatment allows the effluent to meet California Department of Health services (DHS) unrestricted reuse criteria (EcoLogic, 2001).

Wastewater effluent from the Lincoln WWTRF is utilized for irrigation on approximately 382 acres at three sites. During the non-irrigation season, effluent is stored for future use. Areas that currently receive recycled water are capable of using 1.8 MGD. Lincoln initiated a Wastewater Reclamation Study to determine the potential for reclaiming treated wastewater from the new WWTRF. According to an administrative draft, the objectives of the study are to:

- Identify potential reclamation areas near the plant.
- Review water supplies available in the area.
- Analyze applicable wastewater recycling regulations and summarize their impact on wastewater treatment facilities
- Evaluate the market for wastewater reclaiming opportunities.
- Identify and prioritize the most likely projects for wastewater reclamation.
- Actions. The plan participants will take the following actions:
- Continue to participate in their respective conservation efforts.
- Coordinate with City of Lincoln, SGA, SSWD, NCMWC, NID, and others to investigate further opportunities for expanded use of recycled water throughout the WPCGMP area.

Table 3-2: Water Conservation Best Management Practices Implemented by Roseville and PCWA

Water Forum Agreement Water Conservation Best Management Practices
1. Interior and exterior water audits and incentive programs for single-family residential, multi-family residual, and institutional customers 2. Plumbing retrofit of Existing Residential Accounts 3. Distribution System Water Audits, Leak Detection and Repair 4. Non-residential Meter Retrofit 5. Residential Meter Retrofit 6. Large Landscape Water Audits and Incentives for Commercial, Industrial, Institutional, and Irrigation Accounts 7. Landscape Water Conservation Requirements for New and Existing Commercial, Industrial, Institutional and Multifamily Developments 8. Public Information 9. School Education 10. Commercial and Industrial Water Conservation 11. Conservation Pricing for Metered Accounts 12. Landscape Water Conservation for New/Existing Single Family Homes 13. Water Waste Prohibition 14. Water Conservation Coordinator 15. Ultra-low Flush Toilet Replacement Program for Non-Residential Customers



3.9 COMPONENT CATEGORY 5: PLANNING INTEGRATION

With the number of water purveyors and cities serving the Western Placer County area, the need to integrate water management planning on a regional scale is a high priority. Individual purveyors and cities derive their supplies from the American River, the Sacramento River, the groundwater basin, or some mix of these sources. Their infrastructure systems are mostly independent; where interconnections do exist between purveyors or cities, they are typically for emergency purposes only.

3.9.1 Existing Integrated Planning Effort

The plan participants, or subsets thereof, are part of various existing integrated planning efforts. These efforts include the WFA, ARB IRWMP, and Integrated Surface and Groundwater Modeling.

- Water Forum Agreement. The WFA, as described in Section X, provides a regional conjunctive use framework with commitments from individual purveyors concerning groundwater and surface water operations, including limitations on surface water diversions from the lower American River during dry years. PCWA, Roseville, and CAW are all signatories to the WFA.
- ARB IRWMP. Regional Water Authority (RWA), Freeport Regional Water Authority (FRWA), and Sacramento County Water Agency (SCWA), along with it various members and stakeholders, have developed the American River Basin (ARB) Integrated Regional

Table 3-3: Water Conservation Best Management Practices Implemented by Lincoln and PCWA

California Urban Water Conservation Council's Water Conservation Best Management Practices
1. Water Survey Programs for Single-Family Residential and Multi-Family Residential Customers 2. Residential Plumbing Retrofits 3. System Water Audits, Leak Detection and Repair 4. Metering With Commodity Rates 5. Large Landscape Conservation Programs and Incentives 6. High-efficiency Washing Machine Rebate Programs 7. Public Information Programs 8. School Education Programs 9. Conservation Programs for Commercial, Industrial, and Institutional Accounts 10. Wholesale Agency Programs 11. Conservation Pricing 12. Water Conservation Coordinator 13. Water Waste Prohibition 14. Residential Ultra-Low-Flush Toilet Replacement Programs

Water Management Plan (IRWMP). The IRWMP, as described in Section 1, is a comprehensive planning document prepared on a regional scale that identifies priority water resources projects and programs with multiple benefits. The ARB IRWMP was adopted in May 2006. As projects/programs outlined in the IRWMP are implemented, the plan itself will be reviewed periodically to address changes, identify issues of concern, and provide for additional study and analysis. New projects/programs will continue to be identified and incorporated. The participants designed the IRWMP as a living document that can be readily updated as the needs of the region change over time. PCWA, Roseville, Lincoln, and CAW are involved in the ARB IRWMP through their participation in RWA.

- Integrated Surface Water and Groundwater Modeling. Plan participants continue to use and build on existing groundwater models for the Western Placer County area. The Integrated Groundwater and Surface Water Model, or IGSM, is a finite element, quasi three-dimensional, numerical model that provides a comprehensive simulation of all major components of the hydrological cycle in accordance with mass balance and water budget accounting procedures. Elements of the hydrologic cycle addressed by IGSM include precipitation, runoff, groundwater recharge, evaporation, consumptive use, groundwater extraction and injection, and subsurface inflow and outflow along the model boundaries. The simulation also includes interactions between surface streams and lakes, and aquifers.



- The IGSM, as a data intensive model, requires information like hydrogeology, hydrostratigraphy, land use, water use, and precipitation. An IGSM subregion, which is a group of model elements, typically represents a water district, irrigation district, city, other management areas, or unincorporated lands. Water and land use budgeting in the IGSM is performed on a subre-



gion-by-subregion basis. Two types of simulation runs are made using the: the dynamic run is mostly used for calibration of the model where changes in pumping and land use are occurring over time based on real or forecasted data; the static run is typically used for planning purposes and assists in looking at the change in the groundwater basin from one condition to another condition. Dynamic run calibrates input data using historical land use and water demand to produce a relationship in understanding how historical groundwater conditions are affected by historical hydrologic conditions. With fixed levels of land and water use, static runs are used to evaluate how the groundwater basin responds throughout a series of historical hydrologic conditions. This is typically the hydrologic period from water year 1922 to 1995.

- Three IGSM applications, North American River, Sacramento County, and San Joaquin County IGSM (NARIGSM, SCNIGSM, and SJCIGSM), were developed under the American River Water Resources Investigation (ARWRI) in the 1990s to simulate groundwater conditions in the Sacramento Valley. These models joined together cover the North and South American groundwater subbasins in the Sacramento Valley Basin and part of the San Joaquin Valley Basin. These IGSM models have been updated and applied widely to regional and local groundwater studies. SGA is currently updating the portion of the SCNIGSM model that lies in northern Sacramento County.

³ American River Water Resources Investigation (ARWRI) was completed cooperatively between Bureau of Reclamation and DWR in the mid 1990's. Objectives of the ARWRI include meeting projected year 2030 water demands in the five counties (El Dorado, Placer, Sacramento, San Joaquin, and Sutter counties) and stabilizing the groundwater basins.

Actions— The plan participants will take the following action:

- Continue to move forward with existing WFA and IRWMP implementation efforts.
- Coordinate with SGA and Sutter County on regional hydrologic modeling efforts and updates.

3.9.2 Potential Future Integrated Planning Efforts

Along with integrating the above mentioned existing planning efforts, plan participants recognize that there are potential future integrated planning efforts as described below.

Roseville and PCWA are already implementing integrated planning and management in the region through participation in their respective water efficiency programs (see Section 3.8.2.), and through the Roseville's recycled water program (see Section 3.8.2.).

Although not integrated, the following are other planning efforts which the plan participants will work toward integrating when appropriate.

- **Urban Water Management Planning.** Roseville, Lincoln, PCWA, and CAW are required to prepare Urban Water Management Plans (UWMP). These plans, as defined by CWC § 10610 et seq., require public water suppliers with more than 3,000 customers or that deliver more than 3,000 AF of water annually to identify conservation and efficient water use practices to help ensure a long-term, reliable water supply. As described in Sections 1.5.1.1., 1.5.2.1., 1.5.3.4., & 1.5.4.2., Roseville, Lincoln, PCWA, and CAW have submitted updated UWMPs to DWR.

- **DWSAP Program.** The DWSAP Program is administered by DHS. As a first step to a complete source protection program, DHS required water systems to conduct a preliminary assessment. The assessment includes the “delineation of the area around a drinking water source through which contaminants might move and reach that drinking water supply; an inventory of PCAs that might lead to the release of microbiological or chemical contaminants within the delineated area; and a determination of the PCAs to which the drinking water source is most vulnerable (<http://www.dhs.ca.gov/ps/ddwem/dwsap/overview.htm>).” The assessments only apply to agencies that deliver groundwater for public drinking water supply. Roseville and Lincoln have completed DWSAPs for their existing groundwater production wells.
- **Land Use Planning.** Effective January 1, 2002, State law required (SB610 and SB221) that a water supplier take certain actions to confirm sufficiency of water supply as a condition to approval of some new development projects. These actions involve the development of Water Supply Assessments and Written Verifications at the request of the land use authority. These documents provide an assurance that adequate water supplies are available before a project moves forward.

Actions— The plan participants will take the following action:

- Integrate other existing planning efforts where appropriate or communicate these planning efforts and subsequent planning actions to each plan participant.



Table 3-4: Summary table listing Action Items and showing which BMOs they support.

Action Items Related to BMO	BMO No. 1. Management of the groundwater basin shall not have a significant adverse effect on groundwater quality.	BMO No. 2. Manage Groundwater Elevations to ensure an adequate groundwater supply for backup, emergency, and peak demands without adversely impacting adjacent areas.	BMO No. 3. Participate in State and Federal Land Surface Subsidence Monitoring Programs.	BMO No. 4. Protect Against Adverse Impacts to Surface Water Flows in Creeks and Rivers due to groundwater pumping.	BMO No. 5. Ensure Groundwater Recharge Projects Comply with State and Federal Regulations and protect beneficial uses of groundwater.
Component No. 1 Stakeholder Involvement					
Involving the Public	✓	✓			
Involving Other Agencies Within & Adjacent to the WPCGMP area	✓	✓	✓	✓	✓
Using Advisory Committees	✓	✓	✓	✓	✓
Developing Relationships with State and Federal Agencies	✓	✓	✓	✓	✓
Pursuing Partnership Opportunities			✓		✓
Component No. 2 Monitoring Program					
Groundwater Elevation Monitoring		✓			✓
Groundwater Quality Monitoring	✓				✓
Land Surface Elevation Monitoring			✓		
Surface Water Groundwater Interaction Monitoring				✓	
Protocols for Collection of Groundwater Data	✓	✓			
Groundwater Data Management System	✓	✓	✓	✓	✓
Component No. 3 Groundwater Resource Protection					
Well Construction Policies	✓				
Well Abandonment and Destruction Policies	✓				
Wellhead Protection Measures	✓				
Protection of Recharge Areas	✓				
Control of the Migration and Remediation of Contaminated Groundwater	✓				
Control of Saline Water Intrusion	✓				
Component No. 4 Groundwater Sustainability					
Conjunctive Management Activities	✓	✓	✓	✓	✓
Demand Reduction	✓	✓	✓	✓	✓
Component No. 5 Planning Integration					
Existing Integrated Planning Efforts (Urban Water Management Planning, DWSAP Program, Land Use Planning, and Integrated Surface water and Groundwater Modeling)	✓	✓	✓	✓	✓

3.10 SUMMARY OF SECTION 3

Table 3-4 provides a summary of Section 3 for quick reference and for use in further sections. The table correlates which activities are related to one or more BMOs.

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A scenic landscape photograph showing rolling green hills in the foreground, a small town or village in the middle ground, and a hazy horizon under a pale sky. The hills are dotted with trees, some of which have autumn-colored foliage. The town is visible as a cluster of buildings in the distance.

SECTION 4

Plan Implementation

Plan Implementation

This section summarizes the various plan implementation activities for the WPCGMP.

Table 4-1 summarizes the action items presented in Section 3 with an implementation schedule. Many of these actions involve coordination by the plan participants with other local, State and Federal agencies within six months of the adoption of this GMP. A few activities involve assessing trends in basin monitoring data for the purpose of determining the adequacy of the monitoring network. These assessments will be made as new monitoring data become available for review by the plan participants and results will be documented in a biennial State of the Basin report.

4.1 BIENNIAL GMP IMPLEMENTATION REPORT

Plan participants will report on the progress made implementing the WPCGMP in a biennial State of the Basin report. The report will summarize groundwater conditions in the WPCGMP area and document groundwater management activities from the previous year. Much of the data used in the biennial State of the Basin report will come from the monitoring and successful implementation of the action items stated above and from data collected and potentially entered into a data management system (DMS). This report will include:

- A water budget: estimate of perennial yield;
- A description of data collection methods and frequencies;
- Identification of water quality constituents of concern with a summary and an interpretation of water quality data;
- Improved characterization of the groundwater basin through interpretation of the cross section(s);
- A summary and interpretation of groundwater elevation data;
- A summary of management actions during the period covered by the report with a discussion, supported by monitoring results, of whether these actions are achieving progress in meeting BMOs;
- Any special studies relevant to groundwater or the implementation actions; and
- A summary of any plan component changes, including the addition or modification of BMOs during the period covered by the report.

The biennial State of the Basin report will be completed by the second quarter of the first year and by the end of the first quarter every other year and will report on conditions and activities completed through December 31st of the prior year(s). The biennial State of the Basin report will try to coincide with SGA's State of the Basin reporting schedule.

4.2 FUTURE REVIEW OF WPCGMP

This WPCGMP is the first regionally coordinated groundwater management effort in Western Placer County. As such, implementation of many of the identified actions will likely evolve as the WPCGMP plan participant's appointed governance body actively manages and learns more about the subbasin. Many additional actions will also be identified in the biennial report described above. The WPCGMP is therefore intended to be a living document, and it will be important to evaluate all of the



actions and objectives over time to determine how well they are meeting the overall goal of the plan. The WPCGMP governance body plans to evaluate this entire plan within five years of adoption.

4.3 FINANCING

It is envisioned that implementation of the WPCGMP, as well as many other groundwater management-related activities will be funded from a variety of sources including the cost share program established by the WPCGMP plan participants in an implementation agreement; in-kind services by other agencies; State or Federal grant programs; and local, State, and Federal partnerships. Some of the items that would likely require additional resources include:

- Monitoring for groundwater quality or elevations in non-purveyor wells.
- Customization of the DMS interface.
- Preparation of WPCGMP biennial reports.
- Updates of the overall WPCGMP.
- Update of data sets and recalibration/improvement of existing groundwater model.
- Collection of future subsidence data.
- Construction of monitoring wells where critical data gaps exist.
- Stream-aquifer interaction studies.
- Implementation of the WPCGMP including:
 - Committee coordination.
 - Project management.

- Implementation of regional conjunctive use program.

During year one of plan implementation, an estimate of some of the likely costs associated with the actions outlined in Table 4-1 will be prepared.



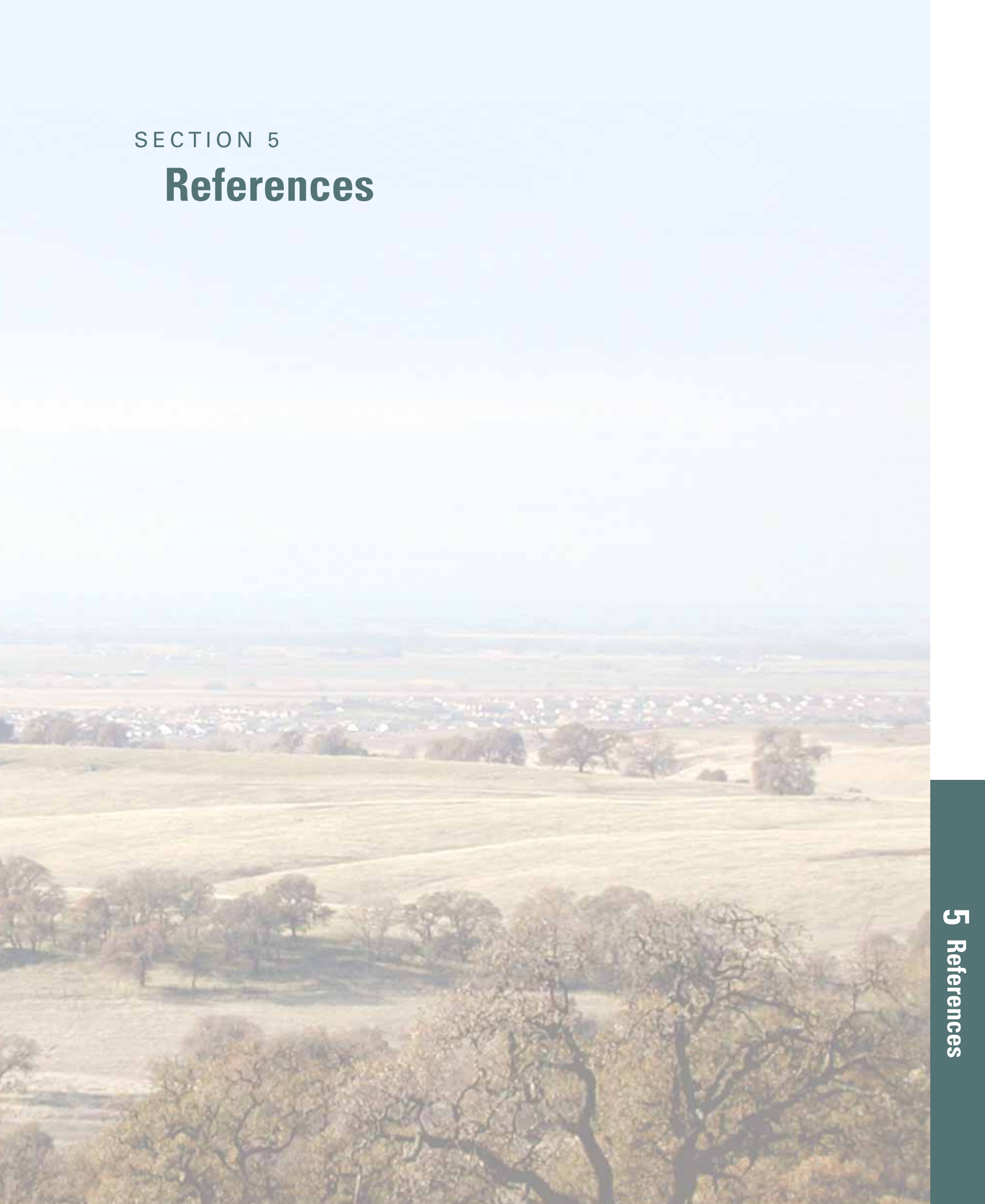
Table 4-1 Summary of WPCGMP Actions

Description of Action	Implementation Schedule	Reoccurrence Schedule
Plan Component #1 - Stakeholder Involvement		
Involving the Public		
1. Continue efforts to encourage public participation as opportunities arise.	6 months	On-going
2. Review and take actions from a Public Outreach Plan as necessary during implementation of various aspects of the WPCGMP.	6 months	On-going
3. Continue to provide briefings to the Water Forum Successor Effort on WPCGMP implementation progress.	6 months	On-going
4. Work with basin stakeholders to maximize outreach on WPCGMP activities, including the use of the plan and plan participants' websites.	6 months	On-going
Involving other Agencies adjacent to the WPCGMP area		
1. Continue a high level of involvement with SGA, SSWD, NCMWC, NID and other interested parties in implementing the WPCGMP.	6 months	On-going
2. Provide copies of the adopted WPCGMP and subsequent annual reports to representatives from the SGA, SSWD, NCMWC, NID and other interested parties.	12 months	24 months
3. Meet with representatives from the SGA, SSWD, NCMWC, NID and other interested parties, as needed.	6 months	On-going
4. Coordinate a meeting with other self supplied groundwater pumpers in the WPCGMP area to inform them of the plan participant's management responsibilities and activities, and develop a list of other self supplied groundwater pumpers concerns and needs to the plan participant's management.	6 months	12 months
5. Coordinate a meeting with the agricultural groundwater pumpers in the WPCGMP area to inform them of the plan participant's management responsibilities and activities, and develop a list of agricultural groundwater pumpers concerns and needs to the plan participant's management.	6 months	12 months
Utilizing advisory committees		
1. Upon adoption of the WPCGMP, the TRC will periodically meet to discuss scheduling and functions to guide implementation of the plan and provide these recommendations to the WPCGMP governance body.	6 months	6 months
Developing relationships with State and Federal Agencies		
1. Continue existing and develop new working relationships with local, state, and federal regulatory agencies.	6 months	On-going
Pursuing Partnership Opportunities		
1. Continue to promote partnerships that achieve both local supply reliability and achieve broader regional and statewide benefits.	6 months	On-going
2. Continue to track and apply for grant opportunities to fund regional groundwater management activities and local water infrastructure projects.	6 months	On-going
Plan Component #2 - Monitoring Program		
Groundwater Elevation Monitoring		
1. Coordinate with DWR and others to identify an appropriate group of wells for monitoring a Fall 2007 and future groundwater elevation measurements.	6 months	12 months
2. Coordinate with DWR and others to ensure that the selected wells are maintained as part of a long-term monitoring network.	6 months	12 months
3. Coordinate with DWR to ensure that the timing of water level data collection by other agencies coincides within one month of DWR data collection. Currently, DWR collects water level data in the spring and fall.	6 months	12 months
4. Coordinate with other agencies to ensure that needed water level elevations are collected and verify that uniform data collection protocols are used among the agencies	6 months	12 months
5. Consider ways to fill gaps in the monitoring well network by identifying suitable existing wells or identifying opportunities for constructing new monitoring wells.	6 months	12 months
6. Assess groundwater elevation trends and conditions based on the monitoring well network annually.	6 months	12 months
7. Assess the adequacy of the groundwater elevation monitoring network annually.	6 months	12 months
8. Identify a subset of monitoring wells that will be monitoring more frequently than twice annually to improve the plan participants' understanding of aquifer responses to pumping throughout the year.	6 months	12 months
Groundwater Quality Monitoring		
1. Coordinate with cooperating agencies to verify that uniform protocols are used when collecting water quality data	6 months	12 months
2. Coordinate with local, state, and federal agencies to identify where wells may exist in areas with sparse groundwater quality data. Identify opportunities for collecting and analyzing water quality samples from those wells.	6 months	12 months
3. Assess the adequacy of the groundwater quality monitoring well network annually.	6 months	12 months
Land Surface Elevation Monitoring		
1. Coordinate with other agencies, particularly DWR, USGS and SGA to determine if there are other suitable benchmark locations in the WPCGMP area to aid in the analysis of potential land surface subsidence	Immediately	24 months
Surface Water Groundwater Interaction Monitoring		
1. Work cooperatively with DWR and others to compile available stream gage data and information on tributary inflows and diversions from the Feather, Bear, and Sacramento Rivers to quantify net groundwater recharge or discharge between gages in the WPCGMP area.	12 months	12 months
2. Coordinate with local, state, and federal agencies to identify available surface water quality data from the Feather, Bear, and Sacramento rivers proximate to the WPCGMP area.	12 months	12 months
3. Correlate groundwater level data from wells in the vicinity of river stage data to further establish whether the river and water table are in direct hydraulic connection, and if the surface water is gaining or losing at those points	12 months	12 months
4. Continue to coordinate with local, state, and federal agencies and develop partnerships to investigate cost-effective methods that could be applied to better understand surface water-groundwater interaction along the Feather, Bear, and Sacramento rivers.	12 months	On-going
5. Perform evaluations of accretion/depletion interactions for local streams that bisect the WPCGMP, such as Auburn Ravine and Coon Creek.	12 months	12 months
Protocols for the Collection of Groundwater Data		
1. Use a Standard Operating Procedure (SOP) for collection of water level data by each of the cooperating agencies. Appendix C includes a SOP for Manual Water Level Measurements. This SOP was prepared using guidance documents available through the Environmental Protection Agency (EPA) and was included in a technical memorandum developed for SGA summarizing the accuracy and reliability of groundwater data (MWH, 2002).	6 months	On-going
2. Provide cooperating agencies with guidelines on the collection of water quality data developed by DHS for the collection, pretreatment, storage, and transportation of water samples (DHS, 1995).	6 months	On-going
3. Provide training on the implementation of these SOPs to cooperating agencies, if requested.	6 months	12 months
Groundwater Data Management System		
1. Provide users staff with training and use of a Data Management System (DMS).	9 months	none
2. Populate and update a DMS with available groundwater, water quality, well, and surface water data.	9 months	12 months
3. Develop list of recommended enhancements to a DMS.	15 months	12 months
4. Provide resources for maintaining and updating a DMS.	Immediately	On-going
5. Provide resources for maintaining, updating and utilizing a groundwater model or the North American River IGSM.	15 months	12 months
6. Develop and present an biennial State of the Basin Report	12 months	12 months

Description of Action	Implementation Schedule	Reoccurrence Schedule
Plan Component #3 - Groundwater Resource Protection		
Well Construction Policies		
1. Ensure that the SGA, SSWD, NCMWC, NID and others are provided a copy of the plan participants/Placer County's well ordinance and procedures and understand the proper well construction.	6 months	none
2. Provide a copy of the most recently delineated plume extents (if any) to the SGA, SSWD, NCMWC, NID, and others.	6 months	none
3. Coordinate with the SGA, SSWD, NCMWC, NID, and others to provide guidance as appropriate on well construction. Where feasible and appropriate, this could include the use of subsurface geophysical tools prior to construction of the well to assist in well design.	6 months	none
Well Abandonment and Well Destruction Policies		
1. Review DWR well records for all known wells in the WPCGMP area which were reported abandonment and destruction. Rate and provide a survey on the confidence of proper destruction based on the information provided on the report.	6 months	none
2. Ensure that the SGA, SSWD, NCMWC, NID, and others are provided a copy of the Roseville/Lincoln/Placer County's code and understanding the proper destruction procedures and support implementation of these procedures.	6 months	none
3. Follow up with the SGA, SSWD, NCMWC on the reported abandoned and destroyed wells to confirm the information collected from DWR. Follow up with the SGA, SSWD, NCMWC, and NID on the reported abandoned and destroyed wells to confirm the information collected from DWR.	6 months	none
4. Provide a copy of the information of abandoned and destroyed wells in Placer County to fill gaps in County records (if any).	6 months	none
5. Meet with Placer County EMD and DWR to ensure that wells in the WPCGMP area are properly abandoned or destroyed.	6 months	none
6. Meet with the Placer County Farm Bureau and Placer County Agricultural Commission to encourage them to help educate farmers regarding the identification and proper destruction of abandoned wells.	6 months	none
7. Obtain "wildcat" map from California Division of Oil and Gas to ascertain the extent of historic gas well drilling operations in the area as these wells could function as conduits to groundwater if not properly destroyed.	6 months	none
Wellhead Protection Measures		
1. Request that the SGA, SSWD, NCMWC, and NID provide vulnerability summaries from the DWSAP to the plan participants governance structure to be used for guiding management decisions in the basin.	6 months	none
2. Contact groundwater basin managers in other areas of the state for technical advice, effective management practices, and "lessons learned", regarding establishing wellhead protection areas.	6 months	none
Protection of Recharge Areas		
1. Develop a recharge program that identifies major natural recharge areas, quantifies current recharge rates, identifies potential sources of surface water that could be utilized for recharge, and methods for recharging groundwater.	24 months	none
2. Identify potential activities that could adversely affect recharge quantities or qualities and formulate cohesive policies that the plan participants can use to manage or mitigate potential impacts.	24 months	none
Control of the mitigation and remediation of contaminated groundwater		
1. Map and monitor known contaminated sites while coordinating with known responsible parties (if any) to develop a network of monitoring wells to act as an early warning system for public supply wells.	18 months	none
2. If detections occur in these monitoring wells, work with the responsible parties and the potentially impacted areas of the SGA, SSWD, NCMWC and NID to develop strategies to minimize the further spread of contaminants.	18 months	none
3. Provide the SGA, SSWD, NCMWC and others with all information on mapped contaminant plumes and LUST sites for their information in developing groundwater extraction patterns and in the siting of future production or monitoring wells.	18 months	none
4. Inform the SGA, SSWD, NCMWC, and NID of the presence of the interface and the approximate depth of the interface below their service area for their reference when siting potential wells.	18 months	none
5. Establish and isolate zones around known contamination plumes so as to limit the placement of production wells whose pumping might otherwise exacerbate the contamination. Add offset requirements for landfills.	18 months	none
Control of Saline Water Intrusion		
1. Track the progression, if any, of saline water bodies moving toward the east from the Delta. Because this is a highly unlikely scenario, this action will be limited to communicating with DWR's Central District Office on a biennial basis to check for significant changes in TDS concentrations in wells. DWR has a regular program of sampling water quality in select production wells throughout the adjacent Solano, San Joaquin, and Yolo counties. This will serve as an early warning system for the potential of saline water intrusion from the Delta.	12 months	24 months
2. Determine and monitor the elevation of the fresh water/saline water vertical interface. Analyze for trends in sodium, chloride, and TDS that may indicate upconing of saline water.	6 months	12 months
3. Observe TDS concentrations in plan participant's municipal wells that are routinely sampled under Title 22. This data will be readily available as part of the DMS and are already an on-going task for the annual review of basin conditions.	6 months	12 months
4. Inform all stakeholders of the presence of the salinity interface and the approximate depth to the interface for their reference when siting potential wells. The plan participants will also ensure that Placer County EMD, along with Roseville and Lincoln, issues well permits, is aware of the interface. The plan participants will provide a map indicating the contour of the elevation of the base of fresh water in Placer County to EMD for their reference when issuing well permits.	12 months	12 months
Plan Component #4 - Groundwater Sustainability		
Conjunctive Management Activities		
1. Continue to investigate conjunctive use opportunities within the WPCGMP area.	6 months	On-going
2. Continue to investigate opportunities for the development of direct recharge facilities in addition to in-lieu recharge (e.g. injection wells or surface spreading facilities, through constructed recharge basins or in river or streambeds).	6 months	On-going
Demand Reduction		
1. Continue to participate in their respective conservation efforts.	12 months	On-going
2. Coordinate with City of Lincoln, SGA, SSWD, NCMWC, NID, and others to investigate further opportunities for expanded use of recycled water throughout the WPCGMP area.	12 months	On-going
Plan Component #5 - Planning Integration		
Existing Integrated Planning Efforts		
1. Coordinate with SGA and Sutter County on regional hydrologic modeling efforts and updates.	9 months	24 months

SECTION 5

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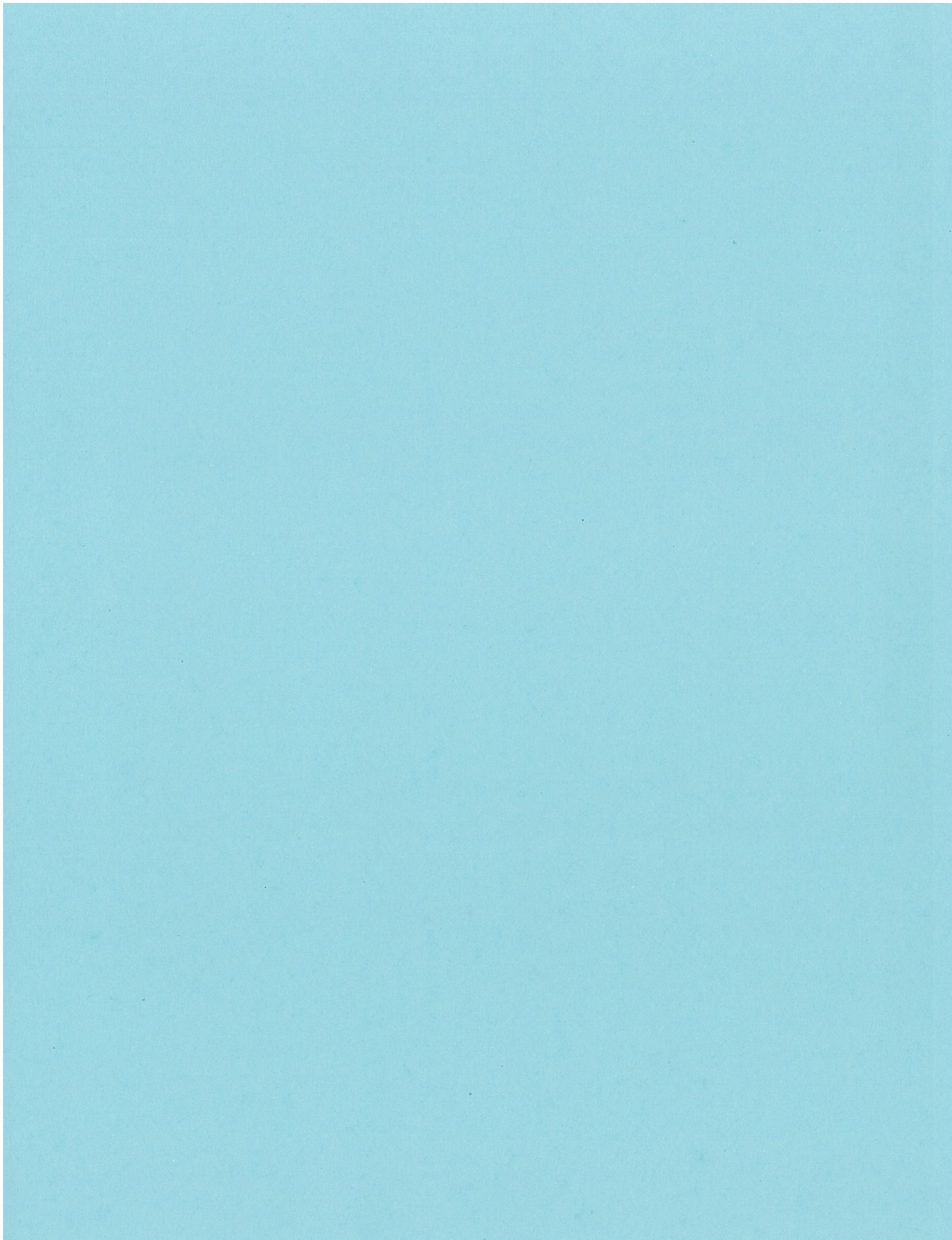
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Appendices





APPENDIX A

WPCGMP Participants' Public Notices

NO 573 PUBLIC NOTICE

**NOTICE OF ROSEVILLE
CITY COUNCIL MEETING AGENDA
ITEM FOR RESOLUTION OF INTENTION
TO PREPARE A GROUNDWATER
MANAGEMENT PLAN**

The Roseville Environmental Utilities Department will ask the Roseville City Council to consider the adoption of a resolution of intention to prepare a Groundwater Management Plan (GMP) with Placer County Water Agency (PCWA) at its regularly scheduled 7:00 p.m., August 3, 2005 meeting. This matter will be included as an item on the Roseville City Council meeting agenda. The public is invited to attend the meeting which will be conducted at the Council Chambers located at City Hall, 311 Vernon Street, Roseville CA.

The City of Roseville (City) has developed and uses groundwater as an integral part of its water supply portfolio. Although the City relies primarily on surface water, it occasionally uses groundwater to meet peak demands (particularly during summer months). Additionally, groundwater is a reliable supply for the City during drought. The objective of the GMP is to strengthen the City's understanding and enhance the management of the groundwater resource. For more information on the preparation of the GMP, please contact the City's Project Manager, Mr. Ken Glotzbach, City of Roseville Environmental Utilities Department, at (916) 746-1751.

Run 2Ti, July 15 & 22, 2005

\$597.08 = 2 Fridays

R3 Sacramento Bee
11/18/05

NO 426 PUBLIC NOTICE

RESOLUTION NO. 05-396

A RESOLUTION OF THE CITY OF ROSEVILLE
DECLARING ITS INTENT TO PREPARE A
GROUNDWATER MANAGEMENT PLAN AND ADOPT
A STATEMENT OF PUBLIC PARTICIPATION

The Roseville City Council (the City) does hereby find that:

WHEREAS, the City was formed in 1956, and WHEREAS, one of the purposes of the City is to provide for the protection, preservation, and enhancement for current and future beneficial uses of groundwater resources within the jurisdiction of the City limits and WHEREAS, the City has jurisdiction in the Sacramento Groundwater Authority for purposes of protecting groundwater resources in the North American Groundwater Basin in Sacramento County, north of the American River;

WHEREAS, the City recognizes the adopted Groundwater Management Plan for the North Area Groundwater Basin completed by the Sacramento Groundwater Authority; and WHEREAS, one of the City's primary functions is to develop, adopt and implement a plan for the management of groundwater resources in the City jurisdictional limits and WHEREAS, the City intends to develop and complete a groundwater management plan in partnership with Placer County Water Agency (PCWA), recognizing and integrating the City's existing groundwater management plan;

NOW, THEREFORE, be it resolved that: 1. The City intends to develop, adopt and implement a groundwater management plan with PCWA, and any other consented to by PCWA's groundwater management plan shall include the following components:

a. Basin Management Objectives;

b. Components relating to the monitoring and management of groundwater levels, groundwater quality, groundwater quality, infiltration and surface subsidence, and changes in surface flow and surface water quality that directly affect groundwater levels or quality or are caused by groundwater pumping;

c. Monitoring protocols to track changes in conditions related to the components in Section 1(b) and to generate information for the purpose of meeting Basin Management Objectives and establishing effective management of groundwater;

d. A plan to involve Sacramento Groundwater Authority, the City of Lincoln, South Sutter Water Agency, and other local agencies, water purveyors, and private well owners in the North American Groundwater Basin and adjacent basins within the City and PCWA's service area in the development of the groundwater management plan;

e. A map depicting the Groundwater Basin beneath the City and PCWA service areas as defined by California Department of Water Resources and Public Law 111 and the jurisdictional areas of the City and PCWA, and the boundaries of Sacramento Groundwater Authority, the City of Lincoln, South Sutter Water Agency, and other local agencies, and water purveyors in the North American Groundwater Basin and adjacent basins within the City and PCWA's service area;

f. Development recommendations related to implementation of the groundwater management plan;

g. The City further intends to provide and allow broad opportunity for public involvement in the development of the groundwater management plan for the North American Groundwater Basin and adjacent basins within the City and PCWA's service area. The City's plan for public involvement shall include the following:

h. The formation of a Technical Review Committee and Policy Committee to guide development of the groundwater management plan;

i. Coordination and participation from Sacramento Groundwater Authority, the City of Lincoln, South Sutter Water Agency, and other local agencies, water purveyors, and private well owners; and

j. Public review and comment period at future public hearings.

Milestones

of the Mare Island shipyard, St. Peter's Chapel and Officers' Row Mansions and gardens. A lunch will be hosted on the grounds. There will be a stop at the Jelly Belly factory on the way.

The trip will take place

Recreation is offering a trip to the Strauss Festival in Elk Grove. The show features elegantly costumed dancers and professional musicians playing the music of Vienna's Waltz King, Johann Strauss, Jr.

The event takes place from

will get their chance to help at a Bloodsource Blood Drive, held from 11 a.m. to 5 p.m. today at the United Artists movie theater, 520 North Sunrise Ave.

For information call (800) 995-4420 extension 11014.

www.rosevillept.com

— Sacramento Valley Information Meetings —
We'll be discussing your future.

**Will you
be here?**

Edison Campus
Wednesday, July 11 & 18

5-7 p.m.

Roseville Campus

Thursday, July 12 & 19

6-8 p.m.

Yuba City Campus

Tuesday, July 10 & 17

5-7 p.m.

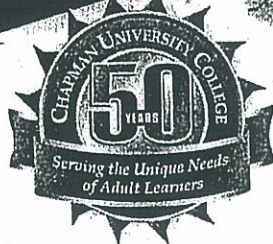
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Folsom - 50 Iron Point Circle, Suite 140 • 866-CHAPMAN • www.chapman.edu/folsom
Yuba City - 1275 Tharp Road, Suite B • 866-CHAPMAN • www.chapman.edu/yubacity

Chapman University is accredited by, and is a member of, the Western Association of Schools and Colleges.
Teacher training and credential programs are accredited by the California Commission on Teacher Credentialing.

PUBLIC NOTICE

Intent to Review and Adopt Proposed Western Placer County Groundwater Management Plan

The City of Roseville (City) will hold a public hearing to review and consider the adoption of the proposed Western Placer County Groundwater Management Plan (WPCGMP). The City has released a DRAFT version of the WPCGMP for public review. A copy of the proposed WPCGMP can be accessed online at www.wpcgmp.org or may be obtained for the cost of reproduction at the Office of the City Clerk, City of Roseville, located at City Hall, 311 Vernon Street, Roseville, CA.

The public hearing will be on July 18, 2007 at 7:00 p.m. at the regularly scheduled meeting of the City Council held in Council Chambers located at City Hall, 311 Vernon Street, Roseville, CA. The public is invited to provide comments on the WPCGMP up to and including the close of the public comment portion of this agenda item at the City Council meeting scheduled for July 18, 2007. Any protests by landowners in the area covered under the WPCGMP must comply with the requirements set forth in Water Code section 10753.6 and be provided to the City of Roseville, in writing, prior to the close of the public comment portion of this agenda item at the July 18, 2007 7:00 p.m. meeting of the City Council.

The WPCGMP outlines a series of actions to protect Roseville's crucial groundwater resources in the western portion of the County. The overall goal of the WPCGMP is to maintain water quality and to ensure the long term availability of groundwater to meet backup, emergency, and peak demands without adversely affecting other groundwater uses within the WPCGMP area. To achieve this goal, the WPCGMP sets forth five management objectives and five primary plan components identifying specific actions to be implemented for the purpose of maintaining the overall health of the underlying groundwater basin.

For more information please contact Ken Glotzbach at (916) 746-1751 or kglotzbach@roseville.ca.us.

to reach out to families affected by Down syndrome in Placer County and beyond.

"I look at (Malachi), he's an absolute joy, he's the love of our lives — both boys are the loves of our lives," Haskin said. "That was kind of my urge to start the coalition, because there are other families like us out there."

Haskin operates the coalition out of the family's Roseville home. Haskin has a bachelor's degree in child development and worked with children with disabilities for more than a decade before Malachi was born.

"I loved it, and after Malachi was born I just really felt this is what I was called to do," she said. "I just felt like God put it in my heart."

The coalition is designed to educate the public and to provide charitable resources,



Malachi Haskin's parents say their son is capable of accomplishing the same goals as any young boy.

port.

"The one comment we get time and time again, why they keep coming back, is that it's so positive, the focus is so positive," Haskin said. "People tell me I'm not being realistic. I'm just choosing to focus on the positive instead of dwelling on the negative." Haskin said she wishes

even harder.

The Haskins and coalition volunteers are currently focusing their efforts on Cruisin' for Down Syndrome, a car show and family friendly event that will be held at the Gold Country Fairgrounds in Auburn today.

The car show, in its third year, is actually the reason the coalition exists in the first place, Haskin said. Kahla Campbell, a family friend and Folsom High graduate, planned and produced the inaugural car show and donated the proceeds to Haskin as start-up money for the coalition.

"We just love doing the car show," she said. "My husband and I love cars — our first date was a car show — and we try to take something everybody loves, but also do something to raise awareness. In everything we do, we try to raise awareness."

The inaugural show pro-

in a fun way.

Weimar resident Cynthia Meikle said she and her hus-

to have a network of people with kids who have the same diagnosis," Cynthia Meikle

and they're just like any other children. They're special and unique."

PUBLIC NOTICE

Intent to Review and Adopt Proposed Western Placer County Groundwater Management Plan

The City of Roseville (City) will hold a public hearing to review and consider the adoption of the proposed Western Placer County Groundwater Management Plan (WPCGMP). The City has released a DRAFT version of the WPCGMP for public review. A copy of the proposed WPCGMP can be accessed online at www.wpcgmp.org or may be obtained for the cost of reproduction at the Office of the City Clerk, City of Roseville, located at City Hall, 311 Vernon Street, Roseville, CA.

The public hearing will be on July 18, 2007 at 7:00 p.m. at the regularly scheduled meeting of the City Council held in Council Chambers located at City Hall, 311 Vernon Street, Roseville, CA. The public is invited to provide comments on the WPCMP up to and including the close of the public comment portion of this agenda item at the City Council meeting scheduled for July 18, 2007. Any protests by landowners in the area covered under the WPCGMP must comply with the requirements set forth in Water Code section 10753.6 and be provided to the City of Roseville, in writing, prior to the close of the public comment portion of this agenda item at the July 18, 2007 7:00 p.m. meeting of the City Council.

The WPCGMP outlines a series of actions to protect Roseville's crucial groundwater resources in the western portion of the County. The overall goal of the WPCGMP is to maintain water quality and to ensure the long term availability of groundwater to meet backup, emergency, and peak demands without adversely affecting other groundwater uses within the WPCGMP area. To achieve this goal, the WPCGMP sets forth five management objectives and five primary plan components identifying specific actions to be implemented for the purpose of maintaining the overall health of the underlying groundwater basin.

For more information please contact Ken Glotzbach at (916) 746-1751 or kglotzbach@roseville.ca.us.

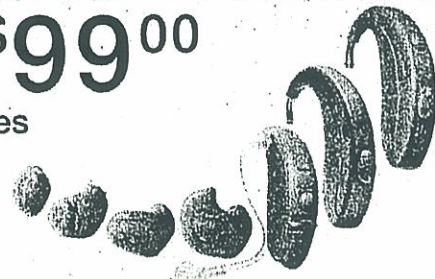
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Roseville

RG

RESOLUTION NO. 07-426

ADOPTING THE WESTERN PLACER COUNTY GROUNDWATER
MANAGEMENT PLAN

WHEREAS, on August 3, 2005, the City Council authorized staff to prepare a groundwater management plan; and

WHEREAS, in order to promote regionally consistent and cooperative groundwater management goals and objectives, staff proposed development of a joint plan with Placer County Water Agency; and

WHEREAS, the Ground Water Management Plan was prepared in accordance with the California Groundwater Management Act, AB3030 and SB 1938; and

WHEREAS, the City Council has reviewed the proposed Western Placer County Groundwater Management Plan;

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of Roseville hereby adopts the Western Placer County Groundwater Management Plan, pursuant to California Water Code Section 10753.

PASSED AND ADOPTED by the Council of the City of Roseville this 1st day of August, 2007, by the following vote on roll call:

AYES COUNCILMEMBERS: Allard, Roccucci, Garcia, Garbolino, Gray

NOES COUNCILMEMBERS: None

ABSENT COUNCILMEMBERS: None


MAYOR

ATTEST:


for: City Clerk

Placer County Water Agency
PO BOX 6570
Auburn, CA 95604

DECLARATION OF PUBLICATION
(C.C.P. 2015.5)

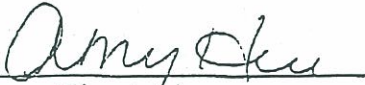
COUNTY OF SACRAMENTO

STATE OF CALIFORNIA

I am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not a party to or interest ed in the above entitled matter. I am the printer and principal clerk of the publisher of The Sacramento Bee, printed and published in the City of Sacramento, County of Sacramento, State of California, daily, for which said newspaper has been adjudged a newspaper of general circulation by the Superior Court of the County of Sacramento, State of California, under the date of September 26, 1994, Action No. 379071; that the notice of which the annexed is a printed copy, has been published in each issue thereof and not in any supplement thereof on the following dates, to wit:

October 19, 26, 2006

I certify (or declare) under penalty of perjury that the foregoing is true and correct and that this declaration was executed at Sacramento, California, on October 26, 2006.


(Signature)

NO 302 PUBLIC NOTICE

NOTICE OF PLACER COUNTY WATER AGENCY
BOARD OF DIRECTORS MEETING AGENDA ITEM
FOR RESOLUTION OF INTENTION TO PREPARE
AN UPDATED WEST PLACER GROUNDWATER
MANAGEMENT PLAN

The Placer County Water Agency Board of Directors will consider the adoption of a resolution of intention to update the Agency's West Placer Groundwater Management Plan (WPGMP) at its regularly scheduled meeting on November 2, 2006 at 2:00 p.m. The public is invited to attend the meeting and be heard on this matter, which meeting will be held at Placer County Board of Supervisors Chambers, 750 Fujweiler Avenue, Auburn, California.

Placer County Water Agency primarily relies on surface water supplies to meet the demands of its customers. The Agency has recently adopted an Integrated Water Resources Plan (August 2004) that recommends the use of groundwater in its supply strategy for anticipated future demands, particularly during periods of drought. The purpose of reviewing and updating the West Placer Groundwater Management Plan is to develop objectives for sustainable use of groundwater in the supply strategy for West Placer County. This new WPGMP will be prepared in partnership with the City of Roseville, the City of Lincoln, and Placer County. For further information about preparation of the WPGMP, please contact Mr. Tony Filonzi of the Placer County Water Agency Engineering Department at (530) 823-4886.

27 October 19, 26, 2006

Placer County Water Agency
PO BOX 6570
Auburn, CA 95604

DECLARATION OF PUBLICATION
(C.C.P. 2015.5)

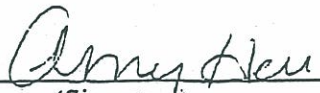
COUNTY OF SACRAMENTO

STATE OF CALIFORNIA

I am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not a party to or interest in the above entitled matter. I am the printer and principal clerk of the publisher of The Sacramento Bee, printed and published in the City of Sacramento, County of Sacramento, State of California, daily, for which said newspaper has been adjudged a newspaper of general circulation by the Superior Court of the County of Sacramento, State of California, under the date of September 26, 1994, Action No. 379071; that the notice of which the annexed is a printed copy, has been published in each issue thereof and not in any supplement thereof on the following dates, to wit:

November 9, 16, 2006

I certify (or declare) under penalty of perjury that the foregoing is true and correct and that this declaration was executed at Sacramento, California, on November 16, 2006.


(Signature)

NO 433 PUBLIC NOTICE

RESOLUTION NO. 06 - 45 OF THE BOARD OF DIRECTORS OF THE PLACER COUNTY WATER AGENCY DECLARING ITS INTENT TO UPDATE ITS WEST PLACER GROUNDWATER MANAGEMENT PLAN AND ADOPT A STATEMENT OF PUBLIC PARTICIPATION

WHEREAS, one of the responsibilities of Placer County Water Agency (Agency) is to provide for sustainable use of groundwater resources within Placer County; and

WHEREAS, the Agency adopted a West Placer Groundwater Management Plan on October 6, 1994 and updated this plan on November 4, 2003; and

WHEREAS, the Agency needs to update the 2003 plan to reflect current water resources planning in western Placer County and the practices of its Integrated Water Resources Plan accepted on August 17, 2006; and

WHEREAS, the Agency intends to prepare, adopt, and implement this updated groundwater management plan in partnership with the City of Roseville, the City of Lincoln, and Placer County;

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Placer County Water Agency that:

1. The Board intends to prepare, adopt, and update its West Placer Groundwater Management Plan. Among other content, the updated groundwater management plan will include basin management objectives, plan components, and management actions. The plan components will also include stakeholder input, monitoring, sustainable use and protection of groundwater resources, and implementation.
2. The Agency further intends to provide for and allow for public involvement in the preparation of this updated groundwater management plan. The plan for public involvement includes outreach and workshops with stakeholders.

The foregoing resolution was duly passed at meeting of the Board of Directors of the Placer County Water Agency held on November 2, 2006, by the following roll call:

AYES DIRECTORS: Lowell Jarvis, Mike Lee, Otis Wollan,
Chair Alex Ferreira

NOES DIRECTORS: None

ABSENT DIRECTORS: Pauline Reccucci

Signed and approved by me after its passage this 2nd day of November, 2006.

Chair, Board of Directors
Placer County Water Agency

ATTEST
Clerk, Board of Directors
Placer County Water Agency

21 November 9, 16, 2006

PROOF OF PUBLICATION

STATE OF CALIFORNIA
County of Placer

I am a citizen of the United States and a resident of Placer County. I am over the age of eighteen years, and not a party to the below mentioned matter. I am the principal clerk of The Auburn Journal, a newspaper of general circulation, which is printed and published in the City of Auburn, County of Placer. This newspaper has been judged a newspaper of general circulation by the Superior Court of the State of California, in and for the County of Placer, on the date of May 26, 1952 (Case Number 17407). The notice, of which the attached is a printed copy (set in type not smaller than nonpareil) has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to-wit:

November 9, 16

In the year of 2006

I certify, under penalty of perjury, that the foregoing is true and correct.

De Ann Ogata
Signature

Dated in Auburn, California

November 16, 2006

The following space is reserved for the County Clerk's filing stamp

PROOF OF PUBLICATION OF

1614290

16142490

Public Notice

See attached

PROOF OF PUBLICATION
THE AUBURN JOURNAL
1030 High St. P.O. Box 5910
Auburn, CA 95604-5910

PROOF OF PUBLICATION

[illegible]

PROOF OF PUBLICATION
THE AUBURN JOURNAL
1030 High St. P.O. Box 5910
Auburn, CA 95604-5910

PROOF OF PUBLICATION

STATE OF CALIFORNIA
County of Placer

I am a citizen of the United States and a resident of Placer County. I am over the age of eighteen years, and not a party to the below mentioned matter. I am the principal clerk of The Auburn Journal, a newspaper of general circulation, which is printed and published in the City of Auburn, County of Placer. This newspaper has been judged a newspaper of general circulation by the Superior Court of the State of California, in and for the County of Placer, on the date of May 26, 1952 (Case Number 17407). The notice, of which the attached is a printed copy (set in type not smaller than nonpareil) has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to-wit:

October 19

26

In the year of 2006

I certify, under penalty of perjury, that the foregoing is true and correct.

Dee Ann Ogao
Signature

Dated in Auburn, California

October 26, 2006

The following space is reserved for the County Clerk's filing stamp

PROOF OF PUBLICATION OF

16140090

Notice of Placer County Water Agency Board of
Directors Meeting Groundwater Mgt. Plan

16140090-1
NOTICE OF PLACER COUNTY WATER AGENCY BOARD OF DIRECTORS MEETING AGENDA ITEM FOR RESOLUTION OF INTENTION TO PREPARE AND ADOPT AN UPDATED WEST PLACER GROUNDWATER MANAGEMENT PLAN
The Placer County Water Agency Board of Directors will consider the adoption of a resolution of intention to update the Agency's West Placer Groundwater Management Plan (WGMP) at its regularly scheduled meeting on November 2, 2006 at 12:00 p.m. The public is invited to attend the meeting and be heard on this matter. This meeting will be held at Placer County Board of Supervisors Chambers, 715 Fullerton Avenue, Auburn, California 95604.
Placer County Water Agency primarily relies on surface water to meet the demands of its customers. The Agency has recently adopted an Integrated Water Resources Plan (August 2006) that recommends the use of groundwater in its supply strategy to anticipate future demands particularly during periods of drought. The purpose of reviewing and updating the West Placer Groundwater Management Plan is to develop a plan for sustainable use of groundwater in the supply strategy for West Placer County. This new WGMP will be prepared in partnership with the City of Roseville, the City of Lincoln and Placer County. For further information about preparation of the WGMP, please contact Mr. Travis Fitch at Placer County Water Agency Engineering Department at (916) 848-3271 or 848-3270.
Published in Auburn Journal, October 19, 26, 2006, 1 page (16140090-1)

PROOF OF PUBLICATION
THE AUBURN JOURNAL
1030 High St. P.O. Box 5910
Auburn, CA 95604-5910

NO 452 PUBLIC NOTICE

Intent to Review and Consider Adoption of An Updated West Placer County Groundwater Management Plan

The Placer County Water Agency (Agency) will hold a public hearing to review and consider the adoption of an updated West Placer County Groundwater Management Plan (WPCGMP). The Agency has released a DRAFT version of the updated WPCGMP for public review. A copy of the proposed updated WPCGMP can be accessed online at www.pcwa.net or may be obtained for the cost of reproduction at the Agency's Business Center located at 144 Ferguson Road in Auburn, CA.

The public hearing will be on August 16, 2007 at 2:00 p.m. at the regularly scheduled meeting of the Agency Board of Directors located at the Business Center. The public is invited to provide comments on the proposed updated WPCMP up to and including the close of the public comment portion of this agenda item at the Board meeting scheduled for August 16, 2007. Any protests by landowners in the area covered under the WPCGMP must comply with the requirements set forth in California Water Code Section 10753.6 and be provided to the Placer County Water Agency, in writing, prior to the close of the public comment portion of this agenda item at the August 16, 2007 2:00 p.m. meeting of the Board of Directors.

The reasons for updating the Agency's West Placer County Groundwater Management Plan are to reflect progress made towards conjunctive use in west Placer County and to establish an inter-Agency document that aligns policy. This plan was prepared in partnership with the City of Roseville, City of Lincoln, and California American Water Company. In summary, the proposed WPCGMP outlines a series of actions to protect crucial groundwater resources in the western portion of the County. The overall goal of the WPCGMP is to maintain water quality and to ensure the long term availability of groundwater to meet backup, emergency, and peak demands without adversely affecting other groundwater uses within the WPCMG area. To achieve this goal, the updated WPCGMP sets forth five management objectives and five primary plan components identifying specific actions to be implemented for the purpose of maintaining the overall health of the underlying groundwater basin. Actions of the WPCGMP will be implemented in partnership with the participants of the plan development.

For more information please contact
Tony Firenzi at (530) 823-4886 or
tfirenzi@pcwa.net.

2T1 August 2, 9, 2007

P3

File

06028E

P 3

16189229

PUBLIC NOTICE

**Intent to Review and Consider Adoption of An
Updated West Placer County Groundwater
Management Plan**

The Placer County Water Agency (Agency) will hold a public hearing to review and consider the adoption of an updated West Placer County Groundwater Management Plan (WPCGMP). The Agency has released a DRAFT version of the updated WPCGMP for public review. A copy of the proposed updated WPCGMP can be accessed online at www.pcwa.net or may be obtained for the cost of reproduction at the Agency's Business Center located at 144 Ferguson Road in Auburn, CA.

The public hearing will be on August 16, 2007 at 2:00 p.m. at the regularly scheduled meeting of the Agency Board of Directors located at the Business Center. The public is invited to provide comments on the proposed updated WPCMP up to and including the close of the public comment portion of this agenda item at the Board meeting scheduled for August 16, 2007. Any protests by landowners in the area covered under the WPCGMP must comply with the requirements set forth in California Water Code Section 10753.6 and be provided to the Placer County Water Agency, in writing, prior to the close of the public comment portion of this agenda item at the August 16, 2007 2:00 p.m. meeting of the Board of Directors.

The reasons for updating the Agency's West Placer County Groundwater Management Plan are to reflect progress made towards conjunctive use in west Placer County and to establish an inter-Agency document that aligns policy. This plan was prepared in partnership with the City of Roseville, City of Lincoln, and California-American Water Company. In summary, the proposed WPCGMP outlines a series of actions to protect crucial groundwater resources in the western portion of the County. The overall goal of the WPCGMP is to maintain water quality and to ensure the long term availability of groundwater to meet backup, emergency, and peak demands without adversely affecting other groundwater uses within the WPCMG area. To achieve this goal, the updated WPCGMP sets forth five management objectives and five primary plan components identifying specific actions to be implemented for the purpose of maintaining the overall health of the underlying groundwater basin. Actions of the WPCGMP will be implemented in partnership with the participants of the plan development.

For more information please contact Tony Firenzi at (530) 823-4886 or tfirenzi@pcwa.net.

Published in Auburn Journal: August 2, 9, 2007

A G E N D A

BOARD OF DIRECTORS PLACER COUNTY WATER AGENCY

September 6, 2007
2:00 p.m., Regular Meeting

Placer County Water Agency Business Center
American River Room
144 Ferguson Road
Auburn, California

Members of the Board of Directors:

LOWELL JARVIS, District 3
Chairman of the Board

GRAY ALLEN, District 1
ALEX FERREIRA, District 2

MIKE LEE, District 4, Vice Chairman
OTIS WOLLAN, District 5

* * * * *

A. CALL TO ORDER

1. Roll Call
2. Pledge of Allegiance
3. Introductions & Presentations

- B. PUBLIC COMMENT: This is the time for any member of the public to address the Board of Directors on any matter not on the agenda that is within the subject matter jurisdiction of the Agency. Directors and Agency staff are limited by law to brief responses and clarifying questions to such comments and Directors may request staff to report back to the Board concerning such matter and direct staff to put the matter on a future agenda. Any item that is on this agenda may be addressed by the public during the Board's consideration of that item. Comments shall be limited to **five minutes** per person, or such other time limit as may be imposed by the Chair, in order to enable the Board to complete its agenda within a reasonable period of time.

C. REPORTS BY DEPARTMENT HEADS

D. AGENDA CHANGES AND REVIEW

- E. **CONSENT CALENDAR:** All items listed under the consent calendar are considered to be routine and will be approved by one motion. There will be no separate discussion of these items unless a member of the Board, audience, or staff requests a specific item be removed from the consent calendar for separate action. Any item so removed will be taken up following the motion to approve the consent calendar.
1. Approve and file:
 - a. August 2, 2007, minutes.
 - b. Check Register 07-16 expenses disbursed.
 - c. Budget transfers, as recommended by the Director of Financial Services. **See attached and other non-routine budget transfers that may be included as part of specific items that follow.**
 - d. Matters related to the Board of Directors as follows:
 - 1) Expenses for previous months;
 - 2) Anticipated expenses in excess of \$500.00; **none at this time.**
 - 3) Anticipated costs of transportation, lodging, and associated fees for travel outside the State of California to be paid by the Agency; **none at this time.**
 - e. General Manager's expense reimbursement claim summary.
 2. Approve Quitclaim of Easement for portion of the Sugarloaf Canal pipe with Keith K. Clayton.
 3. Receive Report on Review for CEQA for Lakeshore Water Treatment Plant Grading project, declare the project categorically exempt from CEQA and authorize the filing of the Notice of Exemption.
 4. Approve Right of Way and Easement Agreement and payment of \$5,000 to Mary O. Dutra for the easements for the Foothill Raw Water Supply Pipeline project.
 5. Approve the Submittal of PCWA General Manager David A. Breninger's name to Association of California Water Agencies for the National Water Resources Association Board of Directors for the term 2008-09.
 6. Approve passage of **Resolution No. 07-__ adopting the updated West Placer County Groundwater Management Plan.**
 7. Adopt **Resolution No. 07-__ initiating proceedings for annexation of Dry Creek Elementary School to Zone No. 1 and setting a public hearing thereon.**
 8. Receive and file PCWA's bond rating upgrade dated July 2007.

- F. AGREEMENTS AND CONTRACTS: Items listed below include award of bid proposals, new contracts, sole source contracts and agreements, amendments to existing construction contracts and professional services agreements, and various change orders, and may be approved by one motion or some combination thereof.

Award:

1. Approve the following with Black and Veatch:
 - a. Engineering Services Contract for various Middle Fork Project Betterments.
 - b. Task Order No. 2007-01 for Middle Fork Betterments in an amount not to exceed \$25,740.00.
2. Approve Settlement Agreement between Placer County Water Agency and Sacramento Municipal Utility District and authorize General Manager to send letters to the State Water Resources Control Board and to the Federal Energy Regulatory Commission as provided in the agreement.

Existing:

3. Approve Amendment No. One with Starr Consulting for treatment plant water quality consulting services for the Auburn Water Treatment Plant project, Ophir WTP Pipelines project, and the Sacramento River Diversion project in an amount not to exceed \$19,690.00.
4. Approve the following for the Foothill Raw Water Supply Pump Station project, Contract #2005-09, with Pacific Mechanical Corporation:
 - a. Contract Change Order No. Twenty One in the increased amount of \$46,839.00.
 - b. Progress Pay Estimate No. Seventeen in the amount of \$3,462,542.05.
5. Approve Amendment No. One to the On-call Supervisory and Data Acquisition Services Consulting Contract with MCC Control Systems, LP in an amount not to exceed \$100,000.00.
6. Approve Change Order No. 1 for Contract P-06-02 Paving Services, Intermountain Slurry Seal, Inc., to extend the contract period through September 12, 2008, with a possible price increase, not to exceed 5%.
7. Approve Amendment No. Three to contract with Richard C. Harlan for five-year safety inspections and reports for French Meadows and Hell Hole Dams.

G. WATER AVAILABILITY AND WATER SUPPLY

1. Zone 1 water service; take action as appropriate.
 - a. Treated Water
 - 1) Four Facilities Agreements (FA) for a total of 7.5 acre feet or 11.5 equivalent dwelling units (EDUs)
 - FA 2193, Sierra de Montserrat, Amendment No. Two, Loomis
 - FA 2223, Wade Simmons Waterline, Revision No. 1, Newcastle
 - FA 2284, Jack in the Box, Rocklin
 - FA 2392, Stanford Plaza – Lot 58 Phase 1B, Rocklin
 - 2) Single Connections (In fill): Four applications for a total of 2.6 acre feet or 4.0 EDUs
 - b. Raw Water: None
2. Zone 4 water service; take action as appropriate.
 - a. Treated Water
 - 1) Two Facilities Agreements (FA) for a total of 9.2 acre feet or 14.0 EDUs
 - FA 2287, Timilick Phase 2 Residential (formerly Eaglewood Phase 2 Residential), Revision No. 1, Martis Valley
 - FA 2342, Martis Camp Unit No. 2, (formerly Siller Ranch), Amendment No. 1, Martis Valley
3. Requests for response from Agency on water availability; take action as appropriate.
 - a. SB 221 (tentative map)
 - b. SB 610 (environmental process)
 - c. All other requests or information
4. Reports and response on water resource policy, planning and management issues and interests; take action as appropriate:
 - a. Water rights and contracts
 - b. Land use and water policy
 - c. Water supply, service, and infrastructure system
 - d. Water use efficiency and conservation
 - e. American River Pump Station Project
 - f. Sacramento River Diversion Project
 - g. Regional water matters
 - h. Delta and State water matters

H. MIDDLE FORK AMERICAN RIVER PROJECT, (FERC PROJECT 2079),
RELICENSING PROGRAM

1. Report on relicensing process, schedule, and activities; take action as appropriate.
2. Report on financial matters and services; take action as appropriate.

I. GENERAL ITEMS

1. Receive report on Renewal and Replacement Projects and Water Connection Charge Projects to be undertaken within the next five years. Take action as appropriate.
2. Consider the following for Agency's intention to undertake Renewal and Replacement and Water Connection Charge Projects; take action as appropriate:
 - a. At 2:00 p.m. or as soon thereafter as can be heard, open the noticed public hearing, note any comments received by the Agency and solicit comments from the public with respect to the Agency's intention to undertake projects.
 - b. If comments are received which are sufficient to warrant modifications, the hearing may be continued to a later Board of Directors' meeting to allow sufficient time for the Agency to respond to comments.
 - c. If no comments are received which are sufficient to warrant continuation of the hearing, staff recommends that the Board adopt **Resolution No. 07-__ determining to proceed with projects.**
3. Consider \$35 million of 2007 debt for Capital Improvement Projects and adopt **Resolution No. 07-__ authorizing the sale of Second Senior Water Revenue Certificates of Participation, Series 2007, and associated debt documents and related actions.** Take action as appropriate.

(NOTE: Prior to adoption, temporarily adjourn as PCWA Board of Directors and convene as the Board of Directors of the PCWA Public Facilities Corporation in special session; see Supplemental Agenda attached.)

4. Review activities scheduled for PCWA Fiftieth Anniversary commemoration.

J. REPORTS BY DIRECTORS: In accordance with Government Code § 54954.2(a), Directors may make brief announcements or brief reports on their own activities. They may ask questions for clarification, make a referral to staff or take action to have staff place a matter of business on a future agenda.

- K. REPORTS BY LEGAL COUNSEL
- L. REPORTS BY GENERAL MANAGER
- M. CLOSED SESSION
- N. REPORT FROM CLOSED SESSION
- O. ADJOURNMENT

THE NEXT RESOLUTION NUMBER IS 07-25

In compliance with the Americans with Disabilities Act, if you need special assistance to participate in this meeting, please contact the Clerk to the Board at (530) 823-4860. Notification by Wednesday noon preceding the meeting will enable the Agency to make reasonable arrangements to ensure accessibility to this meeting. [28 CFR 35.102-35.104 ADA Title II]

In accordance with Government Code Sec. 54954.2(a) this notice and agenda were posted in the Agency's outdoor bulletin board at the Placer County Water Agency Business Center at 144 Ferguson Road, Auburn, California, on August 31, 2007.

Schedule of Upcoming Board Meetings

- **Thursday, September 13, 2007, 5:30 p.m.** – Special Board of Directors meeting at Placer County Water Agency Business Center, 144 Ferguson Road, Auburn, California. 50th Anniversary Celebration
- **Thursday, September 20, 2007, 2:00 p.m.** – Regular Board of Directors meeting at Placer County Water Agency Business Center, 144 Ferguson Road, Auburn, California.

9/7/07 PC. Tony
file
EG
PCWA
P5

RESOLUTION NO. 07- 25 OF THE BOARD OF DIRECTORS OF THE PLACER COUNTY WATER
AGENCY ADOPTING THE UPDATED WEST PLACER COUNTY GROUNDWATER
MANAGEMENT PLAN

WHEREAS, On November 2, 2006 the Board of Directors passed Resolution 06-45 declaring its intent to
update its West Placer County Groundwater Management Plan and adopt a statement of public
participation; and

WHEREAS, the Agency prepared an updated plan in partnership with the City of Roseville, City of
Lincoln, and California-American Water Company in order to promote regionally consistent and
cooperative goals and objectives; and

WHEREAS, the updated West Placer County Groundwater Management Plan was prepared in accordance
with the California Groundwater Management Act, Assembly Bill 3030, and Senate Bill 1938; and

NOW, THEREFORE, BE IT RESOLVED that the Board of Directors of the Placer County Water
Agency hereby adopts the updated West Placer County Groundwater Management Plan.

The foregoing resolution was duly passed at meeting of the Board of Directors of the Placer County Water

Agency held on September 6, 2007, by the following on roll call:

AYES DIRECTORS: Gray Allen, Alex Ferreira, Mike Lee, Otis Wollan,
and Chairman Lowell Jarvis

NOES DIRECTORS: None

ABSENT DIRECTORS: None

Signed and approved by me after its passage this 6th day of September, 2007.



Chair, Board of Directors
Placer County Water Agency

ATTEST:



Clerk, Board of Directors
Placer County Water Agency

L1

From: legals [mailto:legals@goldcountrymedia.com]
Sent: Wednesday, November 22, 2006 9:07 AM
To: Sharon Crawford
Cc: Greg Young
Subject: Re: City of Lincoln legal notice of public hearing

Scheduled as requested

Your order number is: # 16144303 this is the number that I will need if you call me.
The order number will change with every ad you place with us.

To view your legals on line it has to be done the day it is published only. Do the following:
Good luck.

1. goldcountrymedia.com.
2. Gold Country Media Front.
3. On the left side click on paper name.
4. Go to classified, Legals/Public Notices.

Thank for placing your legal ad with Gold Country Media Legal Department.

Terry Clark
Legal Advertising Consultant
Direct phone number (916) 774-7946
----- Original Message -----
From: Sharon Crawford
To: legals@goldcountrymedia.com
Cc: Greg Young
Sent: Tuesday, November 21, 2006 11:46 AM
Subject: City of Lincoln legal notice of public hearing

Wendy,

Please publish the attached legal notice in the 11/30th and the 12/7th issues of the Lincoln News Messenger. Please confirm receipt of this e-mail.

If you have any questions, please call me.

Thank you,

Sharon Crawford
Public Works Department
Office Supervisor
640 Fifth Street
Lincoln, CA 95648
(916) 645-8576
(916) 645-6152 (fax)

L1

-----Original Message-----

From: gyoung@tullyandyoung.com [mailto:gyoung@tullyandyoung.com]
Sent: Thursday, December 07, 2006 4:16 PM
To: Greg Young
Subject: Email-A-Friend for goldcountryclassifieds.com classifieds

This ad was sent to you by gyoung@tullyandyoung.com from
<http://www.goldcountryclassifieds.com/>.

16144303
 NOTICE OF PUBLIC HEARING
 NOTICE IS HEREBY
GIVEN that the City Council of the City of Lincoln will conduct a public
hearing on Tuesday, December 12, 2006 at the hour of 6:30 p.m. or thereafter
at the McBean Park Pavilion, 65 McBean Park Drive, regarding the City's intent
to adopt a resolution of intention to (1) prepare an update to the City of
Lincoln Groundwater Management Plan (GMP), adopted in November 2003, and (2)
cooperate in the preparation of the Western Placer County Groundwater
Management Plan (WPCGMP) with the City of Roseville, the Placer County Water
Agency and the County of Placer, pursuant to the Groundwater Management Act
(California Water Code §10750 et seq.). Interested persons are invited to
attend.
 If you have questions, please contact John Pedri in the
Department of Public Works at (916) 645-8576.
 Published in Lincoln News
Messenger: November 30, December 7, 2006

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associated with this message. Click the link below to view the incident.
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Read the acceptable use policy: <http://systems.townnews.com/public/aup/>

L2

RESOLUTION NO. 2006-259

**A RESOLUTION OF THE LINCOLN CITY COUNCIL
OF INTENTION TO (1) CO-DRAFT THE WESTERN PLACER COUNTY
GROUNDWATER MANAGEMENT PLAN WITH THE CITY OF ROSEVILLE,
PLACER COUNTY WATER AGENCY AND PLACER COUNTY, AND
(2) UPDATE THE CITY OF LINCOLN'S 2003 GROUNDWATER
MANAGEMENT PLAN PURSUANT TO THE GROUNDWATER
MANAGEMENT ACT (WATER CODE, §§ 10750 et seq.)**

WHEREAS, pursuant to the Groundwater Management Act (Water Code, §§ 10750 et seq.) the City of Lincoln (City) adopted a Groundwater Management Plan (GMP) in November of 2003; and

WHEREAS, the adopted City of Lincoln GMP addressed the monitoring and management associated with the portion of the basin directly underlying the City; and

WHEREAS, the City has been actively implementing management actions included in the adopted GMP; and

WHEREAS, the Groundwater Management Act encourages the periodic review and update of adopted GMPs; and

WHEREAS, the Utility Director desires to update the City's adopted GMP to reflect actions taken over the past two (2) years since its adoption; and

WHEREAS, the City of Roseville and the Placer County Water Agencies also have adopted groundwater management plans in recent years; and

WHEREAS, the City of Lincoln, the City of Roseville, the Placer County Water Agency, and the County of Placer (hereinafter referred to as the Parties) have service areas that include the same groundwater basin; and

WHEREAS, it is the expressed intent of the Legislature to encourage local agencies to work cooperatively to manage groundwater resources within their jurisdictions; and

WHEREAS, the Parties recognize the value of cooperating for more effective groundwater management as it relates to the overall quality and reliability of this collective resource in the broader groundwater basin; and

WHEREAS, the City of Lincoln is a local agency authorized to adopt a groundwater management plan, whether an update of the City-only GMP or a regional plan, pursuant to the provisions of the Groundwater Management Act; and

L2

WHEREAS, Water Code §10753.2 requires that, before preparing a Groundwater Management Plan, a local agency must first hold a public hearing to consider whether to adopt a Resolution of Intent to Draft a Groundwater Management Plan; and

WHEREAS, following the publication of notice required by law, the City held a public hearing on December 12, 2006, to receive public comment on whether it should adopt a resolution of intention to (1) update the City of Lincoln GMP and (2) co-draft a regional Groundwater Management Plan; and

WHEREAS, after considering the public comment and other information presented at the hearing, the Lincoln city Council determined that it is in the best interest of the City to (1) prepare an update to its currently adopted GMP, and (2) participate with the other Parties in the cooperative preparation of a regional Groundwater Management Plan.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF LINCOLN DOES HEREBY RESOLVE AS FOLLOWS:

1. The Lincoln City Council deems it advisable and in the best interest of the City to (1) prepare an update to the City of Lincoln GMP, adopted in November 2003, and (2) cooperate in the preparation of the Western Placer County Groundwater Management Plan with the City of Roseville, the Placer County Water Agency and the County of Placer.
2. The City hereby declares its intention to (1) update the 2003 GMP, and (2) co-draft the Western Placer County Groundwater Management Plan, pursuant to Water Code §10750 et seq.
3. The Director of Public Works is directed to take any additional action necessary and appropriate to implement this resolution.

PASSED and ADOPTED this 12th day of December, 2006, by the following roll call vote:

AYES:	COUNCILMEMBERS:	Stackpoole, Cosgrove, Short, Santini, Nakata
NOES:	COUNCILMEMBERS:	
ABSENT:	COUNCILMEMBERS:	

ATTEST:
Patricia Avila
CITY CLERK

Date: January 25, 2007
Publish: February 1, 2007 and February 8, 2007

Customer No. 17C1160

----- Message from "Greg Young" <gyoung@tullyandyoung.com> on Thu, 4 Oct 2007 12:25:36 -
0800 -----

To: "Greg Young" <gyoung@tullyandyoung.com>, "Greg Young" <gyoung@tullyandyoung.com>
Subject: Greg Young wanted you to see this (from GoldCountryClassifieds.com)

From: Greg Young,

16201689

NOTICE OF PUBLIC HEARING

NOTICE IS HEREBY GIVEN that the City Council of the City of Lincoln will conduct a public hearing on Tuesday, October 23, 2007 at the hour of 6:30 p.m. or thereafter at the McBean Park Pavilion, 65 McBean Park Drive, regarding the City's intent to review and consider adoption of the Western Placer County Groundwater Management Plan (WPCGMP), pursuant to the Groundwater Management Act (California Water Code §10750 et seq.). Interested persons are invited to attend.

A copy of the proposed WPCGMP can be accessed online at www.wpcgmp.org or may be obtained for the cost of reproduction in the City's Public Works Department, at 640 Fifth Street, Lincoln, CA 95648.

If you have questions, please contact John Pedri, Director of Public Works at (916) 645-8576.

Patricia Avila
City Clerk

Date: October 1, 2007

Published in Lincoln News Messenger: October 4, 11, 2007

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----- Message from "Sharon Crawford" <scrawfor@ci.lincoln.ca.us> on Mon, 6 Nov 2006 08:14:12
-0800 -----

To: "Greg Young" <gyoung@tullyandyoung.com>
Subject: FW: Staff Report and Resolution for GMP

Greg,

L3

Gwen found the reso & staff report as attached.

Sharon

From: Gwendolyn Scanlon
Sent: Monday, November 06, 2006 8:10 AM
To: Sharon Crawford
Subject: Staff Report and Resolution for GMP

Thanks,

Gwen

Gwendolyn Scanlon
Office Assistant II
Department of Public Works
City of Lincoln
640 Fifth Street
Lincoln, CA 95648
916-645-4070 ext. 227
916-645-6152 fax



CITY COUNCIL/REDEVELOPMENT AGENCY MEETING AGENDA

A CLOSED SESSION WILL BE HELD AT 5:30 PM, NOVEMBER 27, 2007, IN THE MAIN CONFERENCE ROOM OF CITY HALL, 640 FIFTH STREET TO DISCUSS:

1. Conference with Real Property Negotiator-City Manager- Pursuant to Government Code Section 54956.8 – APN #019-290-003 – Sundance - Lakeview Properties, LLC et al

November 27, 2007
6:30 PM

PLEASE NOTE: THE CITY COUNCIL MEETING WILL BE HELD AT THE MCBEAN PARK PAVILION, LOCATED AT 65 MCBEAN PARK DRIVE, LINCOLN, CALIFORNIA 95648.

1. **ROLL CALL**
2. **PLEDGE OF ALLEGIANCE**
INVOCATION – Bill Rontani, St. James Episcopal Church
3. **PRESENTATIONS – none**
4. **CONSENT AGENDA**

NOTICE TO THE PUBLIC

All matters listed under the Consent Agenda are considered to be routine and all will be enacted by one motion. There will be no separate discussion of these items unless a member of the City Council or a citizen requests a specific item to be removed from the Consent Agenda for separate action. Any items removed will be considered after the motion.

- 5.1 **CITY MANAGER'S DEPARTMENT**
 - A. Adopt **Resolution 2007-196** approving warrants of October 29 *and* November 5, 2007.
 - B. Approve minutes of the November 13, 2007 Council meeting.
 - C. Adopt **Resolution 2007-197** in support of issuing a Tom Bradley commemorative stamp.
- 5.2 **COMMUNITY DEVELOPMENT DEPARTMENT**
 - A. **Ordinance 827B** adding Section 16.48.060 to the Lincoln Municipal Code Pertaining to Temporary Political signs. (***second reading***).
- 5.3 **LIBRARY**
 - A. Approve Administrative Policy No. 99 regarding Library Meeting Room Policy.

6. CITIZENS ADDRESSING THE COUNCIL

Policy for Citizens Addressing the Council:

As in the past, we will listen respectfully to what any citizen addressing Council may have to say regarding an item NOT scheduled for a public hearing or another matter of concern affecting the City of Lincoln. However, those addressing the Council will be limited to five minutes, unless extended by the Mayor. Comments from the audience WITHOUT coming to the podium will be disregarded or ruled out of order. ALL comments/questions should be addressed to the Mayor. In most cases questions will be either answered during the meeting, in writing, or in some cases, the issue will be set for a future agenda.

7. PUBLIC HEARINGS

7.1 **COMMUNITY DEVELOPMENT DEPARTMENT**

A. **Ordinance 828B Amending Chapter 15 of the Lincoln Municipal Code Pertaining to the Adoption of International and Uniform Building Codes**

Council needs to allow for a staff report regarding the proposed Ordinance amending Chapter 15 of the Lincoln Municipal Code.

Action Required:

- Open the required public hearing to receive testimony.
- Waive reading and introduce **Ordinance 828B** amending Chapter 15 of the Lincoln Municipal Code pertaining to the adoption of International and Uniform Building Codes. *(first reading)*

8. STAFF REPORTS

8.1 **CITY MANAGER'S DEPARTMENT**

A. **Relocation Plan and Move for the Lincoln Archives Building**

Council needs to allow for a brief staff report regarding the relocation plan and subsequent move of the Lincoln Archives.

Action Required:

- Approve the relocation plan of the Lincoln Archives to the Civic Center with the offer of assistance of the Public Works Department to accomplish this move.

8.2 **PUBLIC WORKS DEPARTMENT**

A. **Western Placer County Groundwater Management Plan**

Council needs to allow for a brief staff report regarding the Western Placer County Groundwater Management Plan (WPCGMP).

Action Required:

- Motion to adopt **Resolution 2007-198** (1) Adopting the Western Placer County Groundwater Management Plan and (2) Approving the Memorandum of Agreement for

Implementation of the Western Placer County Groundwater Management Plan (WPCGMP) and authorizing the City Manager and City Clerk to execute the WPCGMP.

B. Quiet Zone Evaluation of Public Streets at Grade Crossings of the Union Pacific Railroad Tracks Within the City of Lincoln

Council needs to allow for a staff report and PowerPoint presentation regarding the Quiet Zone Evaluation draft report prepared by Railroad Controls Limited.

Action Required:

-Provide staff with further direction.

- 9. COUNCIL INITIATED BUSINESS**
- 10. COUNCIL COMMITTEE REPORTS**
- 11. ADJOURNMENT**

RESOLUTION NO. 2007- 198

**A RESOLUTION OF THE LINCOLN CITY COUNCIL TO
(1) ADOPT THE WESTERN PLACER COUNTY GROUNDWATER
MANAGEMENT PLAN, AND
(2) APPROVE THE MEMORANDUM OF AGREEMENT FOR
IMPLEMENTATION OF THE WESTERN PLACER COUNTY
GROUNDWATER MANAGEMENT PLAN**

WHEREAS, pursuant to the Groundwater Management Act (Water Code, §§ 10750 et seq.) the City of Lincoln (City) adopted a Groundwater Management Plan (GMP) in November of 2003; and

WHEREAS, the adopted City of Lincoln GMP addressed the monitoring and management associated with the portion of the basin directly underlying the City; and

WHEREAS, the City has been actively implementing management actions included in the adopted GMP; and

WHEREAS, the Groundwater Management Act encourages the periodic review and update of adopted GMPs; and

WHEREAS, the City of Lincoln, City of Roseville, Placer County Water Agency and California-American Water Company have jointly prepared the Western Placer County Groundwater Management Plan (WPCGMP) to join together in a regional plan; and

WHEREAS, the City of Lincoln, following required public noticing, held a Public Hearing on the WPCGMP on October 23, 2007; and

WHEREAS, the City of Lincoln is a local agency authorized to adopt a groundwater management plan, and

WHEREAS, the City of Lincoln, City of Roseville, Placer County Water Agency and California-American Water Company have also drafted a Memorandum of Agreement for Implementation of the WPCGMP (Implementation MOA), and

WHEREAS, the Implementation MOA addresses how the Parties intend: (1) to coordinate their efforts in implementing the WPCGMP; (2) to memorialize the Parties' express understanding relating to such efforts; and (3) to allocate costs to be expended in administering the WPCGMP's implementation, and

WHEREAS, after considering the public comment and other information presented at the hearing, the Lincoln City Council determined that it is in the best interest of the City to (1) adopt the WPCGMP, and (2) approve the Implementation MOA.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF LINCOLN DOES HEREBY RESOLVE AS FOLLOWS:

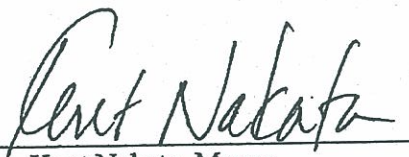
1. The Lincoln City Council deems it advisable and in the best interest of the City to (1) adopt the Western Placer County Groundwater Management Plan, and (2) approve the Memorandum of Agreement for the Implementation of the Western Placer County Groundwater Management Plan.
2. The City hereby agrees to (1) adopt the Western Placer County Groundwater Management Plan, and (2) approve the Memorandum of Agreement for the Implementation of the Western Placer County Groundwater Management Plan.
3. The Director of Public Works is directed to take any additional action necessary and appropriate to implement this resolution.

PASSED and ADOPTED this 27th day of November, 2007, by the following roll call vote:

AYES: COUNCILMEMBERS: Stackpoole, Cosgrove, Short, Santini, Nakata

NOES: COUNCILMEMBERS: None

ABSENT: COUNCILMEMBERS: None

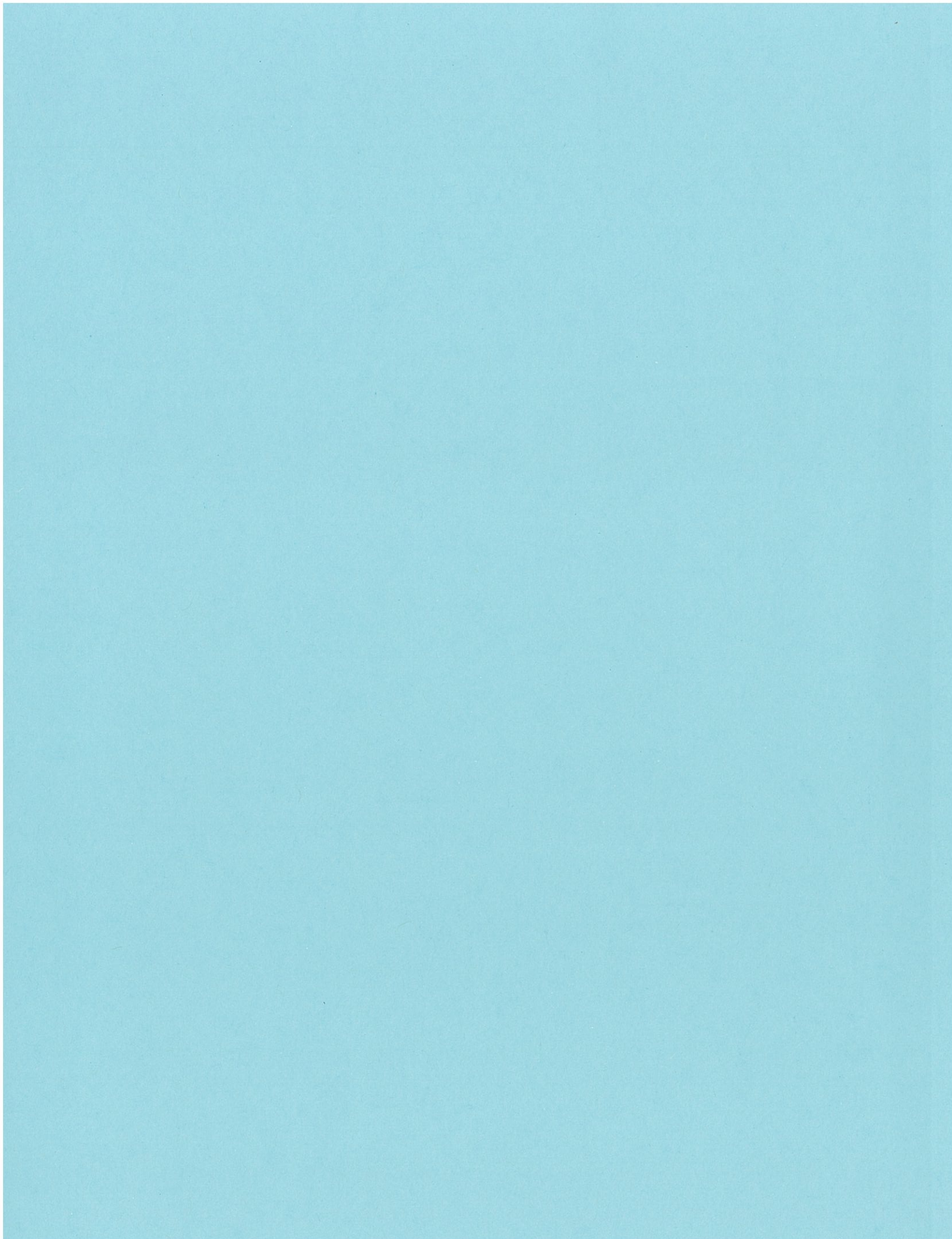

Kent Nakata, Mayor

ATTEST:


Patricia Avila, City Clerk

APPROVED AS TO FORM:

City Attorney



APPENDIX B

WPCGMP Public Outreach Plan

WESTERN PLACER COUNTY GROUNDWATER MANAGEMENT PLAN

TASK 2.4: STAKEHOLDER INVOLVEMENT

Setting

Developed in stages since early 2005, the Western Placer County Groundwater Management Plan (GMP) is a collaborative effort by local water purveyors to monitor urban pumping of groundwater reserves during normal and wet years. Moreover, by employing groundwater management practices that maintain and enhance underground supplies in Western Placer County, the program will provide for greater water supply reliability during drought periods. The GMP's staged approach stems from the inclusion of new partners at various intervals in the planning process, with the City of Roseville serving as the original proponent. Other partners, in order of their formal inclusion, are Placer County Water Agency (PCWA), City of Lincoln, and California American Water (CalAm). Although Placer County is not yet a formal participant in the GMP, staff has been active participants.

When completed, the GMP will feature four key elements, the content of these satisfy Senate Bill 1938 requirements: basin goals, basin management objectives (BMOs), plan components, and management actions. All major GMP elements have been developed and reviewed by staff at each partner agency. These elements are now ready for presentation to elected officials, key stakeholders and other interested parties for their input and feedback.

Goals and Objectives

Provide a public involvement mechanism for elected officials, water purveyors, farmers, ranchers, environmentalists and other interested parties to comment, validate and rank current and future GMP measures and action items. Through various public outreach methods, plan proponents will seek to gather support and acceptance of the proposed GMP.

Discussion

MWH will facilitate presentations/workshops to the boards/councils of each partner agency and conduct a public meeting for key stakeholders and other interested parties. Meetings will be supported by public notices, creation of a stakeholder database, a public website and a GMP Workbook.

2.4.1: BOARD/COUNCIL PRESENTATIONS:

MWH will facilitate one presentation to the boards/councils of each partner agency (total of five). Presentations will feature a 15-minute PowerPoint presentation, followed by a 30 minute question-and-answer session. The presentation schedule, in order, will be City of Roseville, Placer County Water Agency, City of Lincoln, CalAm, and Placer County. MWH will further coordinate presentations to the City of Roseville Public Utilities Commission and the Water Caucus of The Water Forum. MWH will also attend various one-on-one briefings with locally elected officials as necessary. Stakeholder interest cards will be provided at each meeting for members of the public wishing to be added to the stakeholder database.

Supporting elements:

- Agenda Packet: GMP and Joint Powers Agreement (JPA) administrative drafts, and GMP Fact Sheet
- Print and electronic copies of the GMP PowerPoint presentation
- Stakeholder interest cards

2.4.2: STAKEHOLDER INVOLVEMENT:

MWH will facilitate a partner-led public meeting at a location geographically convenient for interested parties and key stakeholders, such as Nevada Irrigation District, South Sutter Water District, Natomas Central Mutual Water Company, Rio Linda/Elverta Community Water District, and Yuba County Water Agency. Beverages and light snacks will be served. The three-hour workshop will present the GMP, gather stakeholder feedback, and provide attendees the opportunity to rank how various actions and measures meet their expectations. Overarching components of the GMP will be posted on a stand-alone website for stakeholders to review prior to the workshop.

Supporting elements:

- GMP Workbook
- GMP Website
- Public Notices
- Stakeholder Database

Workshop Invitees:

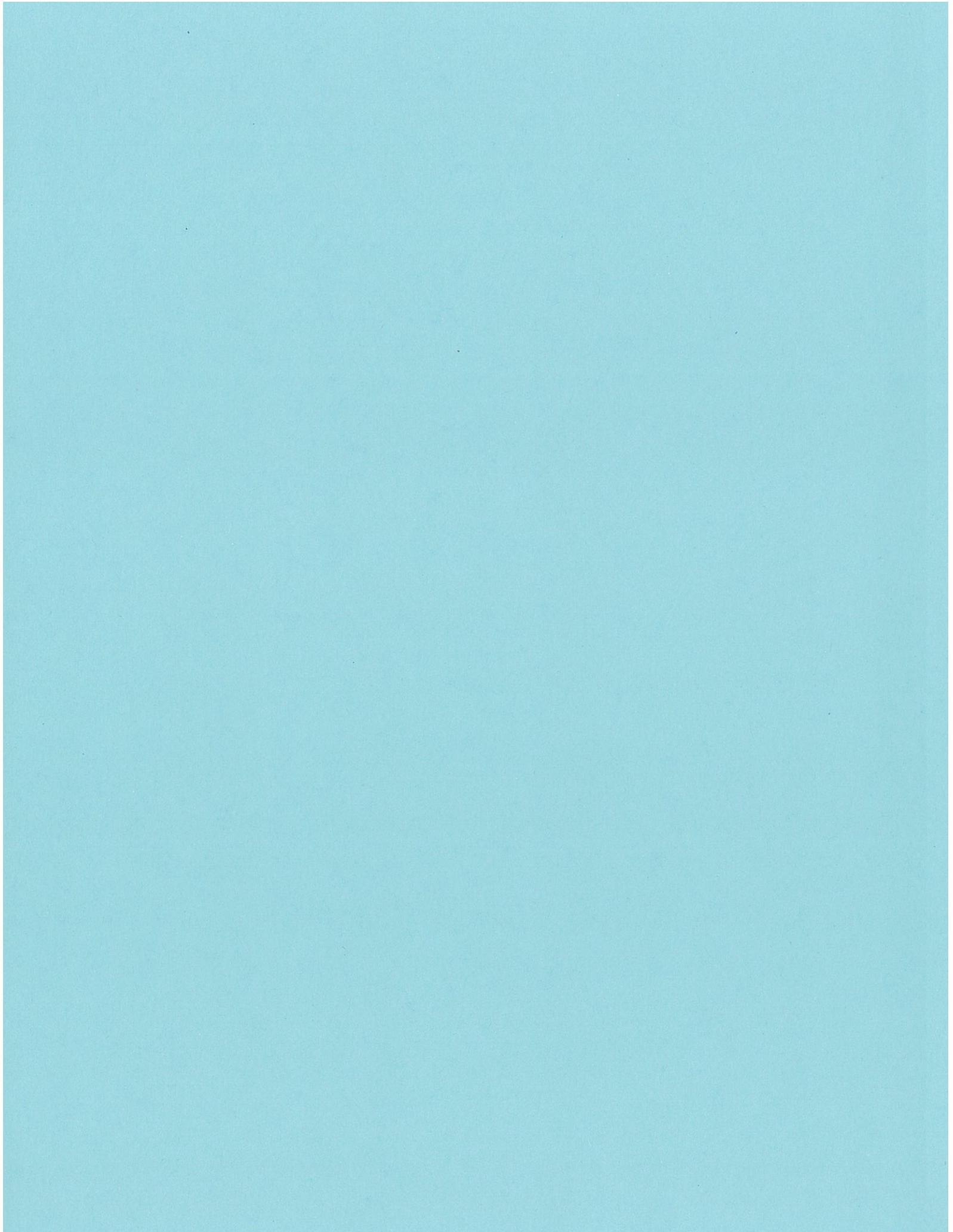
- All Neighboring Water Purveyors
- Environmental Caucus of The Water Forum
- Placer County Farm Bureau
- Placer County Agriculture Commissioner
- Placer County Planning Commission
- Developers, major landowners
- Environmental groups
 - The Nature Conservancy, Sierra Club, Foothill Water Network, Dry Creek Conservancy/American Basin Water shed group (Linda Creek, Coon Creek, Secret Ravine, Auburn Ravine, Dry Creek)

2.4.3: SUPPORTING ELEMENTS:

- GMP Workbook – MWH will develop a 16-page workbook for distribution at the GMP Workshop. The black and white workbook will be printed two-sides on 8.5x11 inch paper, folded once to form a 5.5x8.5 booklet. The document will serve two key functions: a vehicle to inform stakeholders of plan actions and measures; and as a stakeholder survey. The GMP Workbook will be divided into four chapters – Goals, Basin Management Objectives, Plan Components and Management Actions. Participants will be provided opportunities to rate elements on a sliding scale and provide written revisions. The document may be collected at the meeting or returned by U.S. Mail. Survey results will be compiled and utilized for completion of the GMP.
- GMP Website – MWH will develop a five-page project website. This site will support the Stakeholder Workshop and serve as a vehicle to distribute draft documents for public comment. The recommended URL is www.wpcgmp.org. Written to a layperson, the site will include:
 - Home – To contain names of each partner agency, synopsis of the program.
 - Background – Historical account of the groundwater basin and the chronology of project proponent participation.
 - About – Brief review of project purpose and key elements as required by state regulation
 - Documents – A repository for posting the GMP Fact Sheets, GMP Workbook, PowerPoint presentations, and other materials.
 - Contact Us – To include project proponents and the consultant team.
- Public Notices – MWH will prepare public notices for publication in local newspapers by project proponents, as necessary, in support of the Stakeholder Workshop.

- Stakeholder Database – MWH, in collaboration with project proponent staff, will compile a database of key stakeholders. This list will include mail, email, phone and fax. It will also incorporate contact information collected via stakeholder interest cards collected at board/council presentations.

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APPENDIX C

Standard Operation Procedures for Groundwater Elevation Monitoring

STANDARD OPERATING PROCEDURE

For

MANUAL WATER LEVEL MEASUREMENTS

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1.0 SCOPE AND APPLICATION

The purpose of this Standard Operating Procedure (SOP) is to set guidelines for the determination of the depth to water and separate phase chemical product (i.e., gasoline or oil) in a water supply well, monitoring well, or piezometer. These standard operating procedures may be varied or changed as required, dependent on site conditions, and equipment limitations. In all instances, the actual procedures employed will be documented and described on the field form. Mention of trade names or commercial products does not constitute endorsement or recommendation for use.

Generally, water-level measurements taken in piezometers, or wells are used to construct water table or potentiometric surface maps and to determine flow direction as well as other aquifer characteristics. Therefore, all water level measurements in a given district should preferably be collected within a 24-hour period and the WPCGMP area within one week. However, certain situations may produce rapidly changing groundwater levels that necessitate taking measurements as close in time as possible. Large changes in water levels among wells may be indicative of such a condition. Rapid groundwater level changes may occur due to:

- Atmospheric pressure changes
- Changes in river stage, impoundments levels, or flow in unlined ditches
- Pumping of nearby wells
- Precipitation
- Tidal influences

2.0 METHOD SUMMARY

A survey mark should be placed on the top of the riser pipe or casing as a reference point for groundwater level measurements. If the lip of the riser pipe is not flat, the reference point may be located on the grout apron or the top of the outer protective casing (if present). The measurement reference point should be documented on the groundwater level data form. All field personnel must be made aware of the measurement reference point being used in order to ensure the collection of comparable data. Before measurements are made, water levels in piezometers and monitor wells should be allowed to stabilize for a minimum of 24 hours after well construction and development. Measurements in water supply wells need to be noted as questionable if pumping has or is occurring. In low yield situations, recovery of water levels to equilibrium may take longer. All measurements should be made as accurately as possible, with a minimum accuracy of 0.1 feet. Future measurements may have to be more accurate (measurements to the nearest 0.01 foot may be needed for conjunctive use projects, etc.). Ideally, the minimum measurement accuracy is 0.1 feet and the recommended accuracy is 0.01 feet.

If there is reason to suspect groundwater contamination, water level measuring equipment must be decontaminated and, in general, measurements should proceed from the least to the most contaminated wells. This SOP assumes an absence of contamination and no need for air monitoring or decontamination.

Open the well and monitor the headspace with the appropriate air-monitoring instrument if the presence of volatile organic compounds is suspected. For electrical sounders lower the device into the well until the water surface is reached as indicated by a tone or meter deflection. Record the distance from the water surface to the reference point. Measurement with a chalked tape will

necessitate lowering the tape below the water level and holding a convenient foot marker at the reference point. Record both the water level as indicated on the chalked tape section and the depth mark held at the reference point. The depth to water is the difference between the two readings. Remove measuring device, replace riser pipe cap, and decontaminate equipment as necessary. Note that if a separate phase is present, an oil/water indicator probe is required for measurement of product thickness and water level.

3.0 POTENTIAL PROBLEMS

1. Cascading water, particularly in open-hole or rock wells, may interfere with the measurement.
2. Some older types of electric sounders are only marked at five-foot intervals. A surveyor's tape is necessary to extrapolate between the 5-foot marks.
3. Oil or other product floating on the water column can insulate the contacts of the probe on an electric sounder and give false readings. For accurate level measurements in wells containing floating product, a special oil/water level indicator is required, and the corrected water level must be calculated.
4. Tapes (electrical or surveyor's) may have damaged or missing sections, or may be spliced inaccurately.
5. An airline may be the only available means to make measurements in sealed production wells but the method is generally accurate only to approximately 0.2 foot.
6. When using a steel tape, it is necessary to lower the tape below the water level in order to make a measurement. This assumes knowledge of the approximate groundwater level.

4.0 EQUIPMENT

The electric water level indicator and the chalked steel tape are the devices commonly used to measure water levels. Both have an accuracy of 0.01 feet. Other field equipment may include:

- Air monitoring instrumentation
- Well depth measurement device (sounder)
- Chalk
- Ruler
- Site logbook
- Paper towels and trash bags
- Decontamination supplies (assumed unnecessary)
- Groundwater level data forms

5.0 PROCEDURES

5.1 Preparation

1. Determine the number of measurements needed, the methods to be employed, and the equipment and supplies needed.
2. Decontaminate or pre-clean equipment, and ensure that it is in working order.
3. Coordinate schedule with staff and regulatory agency, if appropriate.

4. If this is an initial visit, perform a general site survey prior to site entry in accordance with a current approved site specific Health and Safety Plan (if applicable).
5. Identify measurement locations.

5.2 Procedures

Procedures for determining water levels are as follows:

1. If possible, and when applicable, start at those wells that are least contaminated and proceed to those wells that are most contaminated.
2. Rinse all the equipment entering the well.
3. Remove locking well cap, note well ID, time of day, and date on the groundwater level data form.
4. Remove well cap.
5. If required by site-specific condition, monitor headspace of well with a photoionization detector (PID) or flame ionization detector (FID) to determine presence of volatile organic compounds, and record results in logbook.
6. Lower water-level measuring device into the well. Electrical tapes are lowered to the water surface whereas chalked steel tapes are lowered generally a foot or more below the water surface. Steel tapes are generally chalked so that a 1-to 5-foot long section will fall below the expected water level.
7. For electrical tapes record the distance from the water surface, as determined by the audio signal or meter, to the reference measuring point and record. For chalked tapes, an even foot mark is held at the reference point, once the chalked section of the tape is below the water level. Both the water level on the tape and the foot mark held at the reference point is recorded. The depth to the water is then the difference between the two readings. In addition, note the reference point used (top of the outer casing, top of the riser pipe, ground surface, or some other reproducible position on the well head). Repeat the measurement.
8. Remove all downhole equipment, replace well cap and locking steel caps.
9. Rinse all downhole equipment and store for transport to the next well.
10. Note any physical changes, such as erosion or cracks in protective concrete pad or
11. Note any physical changes, such as erosion or cracks in protective concrete pad or variation in total depth of well on groundwater level data form.

6.0 CALCULATIONS

To determine groundwater elevation above mean sea level, use the following equation:

$$E_w = E - D$$

where:

- | | | |
|-------|---|---|
| E_w | = | Elevation of water above mean sea level (feet) or local datum |
| E | = | Elevation above sea level or local datum at point of measurement (feet) |
| D | = | Depth to water (feet) |

7.0 QUALITY ASSURANCE/QUALITY CONTROL

The following general quality assurance/quality control (QA/QC) procedures apply:

1. All data must be documented on the groundwater level data forms.
2. All instrumentation must be operated in accordance with operating instructions as supplied by the manufacturer, unless otherwise specified.
3. Each well should be tested at least twice in order to compare results. If results do not agree to within 0.02 feet, a third measurement should be taken and the readings averaged. Consistent failure of consecutive readings to agree suggests that levels are changing because of one or more conditions as indicated in Section 1, and should be noted on the field form.
4. Results should be compared to historical measurements while in the field and significant discrepancies noted and resolved if possible.
5. Wells for which no or questionable measurements are obtained need to have the codes entered on the field form as follows:

No Measurement		Questionable Measurement	
0	Discontinued	0	Caved or deepened
1	Pumping	1	Pumping
2	Pumphouse locked	2	Nearby pump operating
3	Tape hung up	3	Casing leaking or wet
4	Can't get tape in casing	4	Pumped recently
5	Unable to locate well	5	Air or pressure gauge measurement
6	Well destroyed	6	Other
7	Special	7	Recharge operation at nearby well
8	Casing leaking or wet	8	Oil in casing
9	Temporarily inaccessible		
D.	Dry well		
F.	Flowing well		

6. The surveyor(s) must complete all fields on the field form and initial. Upon return from the field, appropriate corrective actions need to be communicated and completed prior to the next survey event.
7. All data entered into electronic spreadsheet or database should be double-keyed or hard copy printed and proofed by a second person.
8. Questionable wells or measurements noted during data compilation need to result in corrective actions if applicable.

8.0 HEALTH AND SAFETY

Western Placer County Groundwater Management Plan
Standard Operating Procedure for Manual Water Level Measurements - Appendix C

This SOP assumes that only uncontaminated wells are being measured. If not, a current approved site Health and Safety Plan should be consulted..

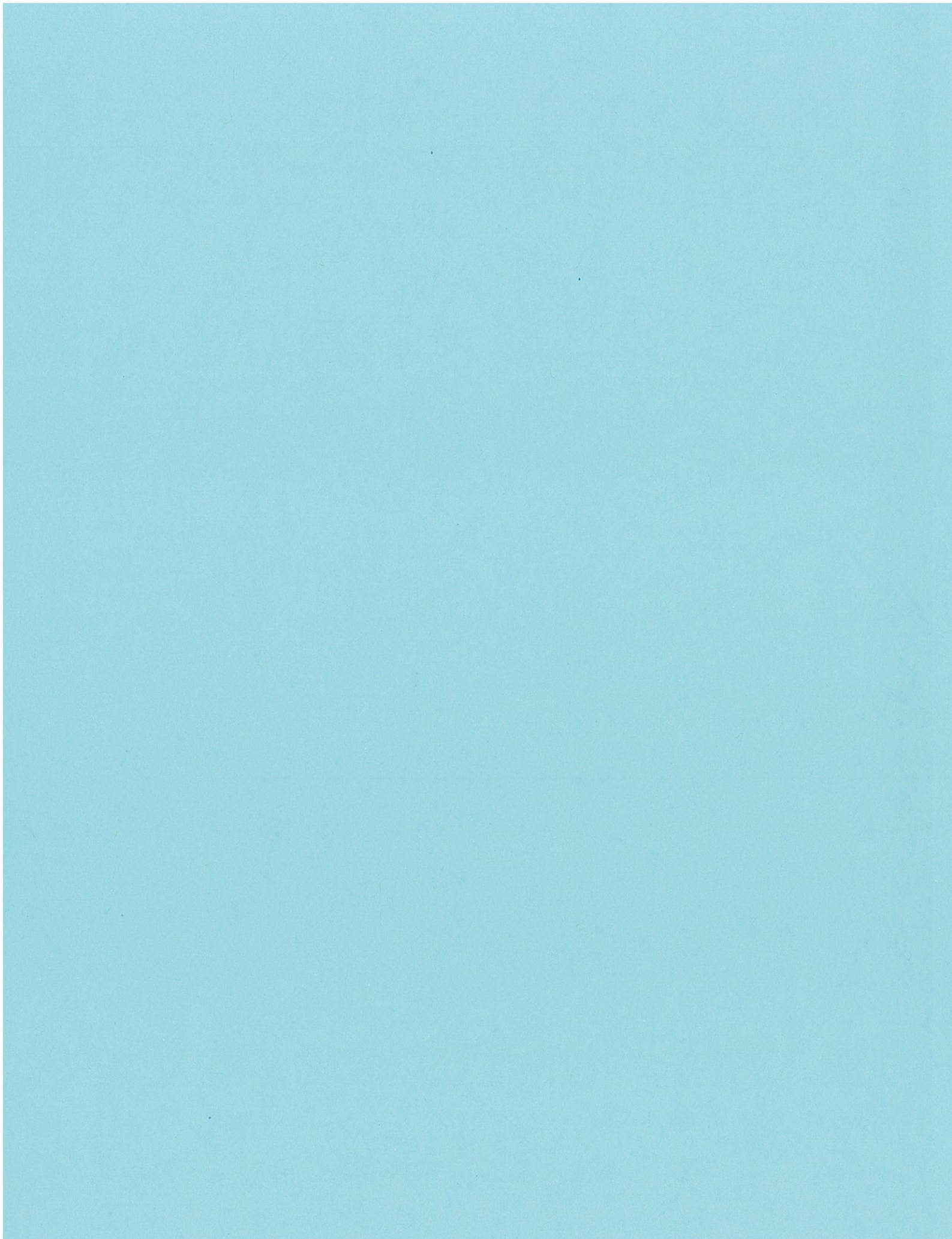
9.0 REFERENCES

Driscoll, F.G. 1986. Groundwater and Wells. Second Edition. Chapter 16. *Collection and Analysis of Pumping Test Data*. pp 534-579. Johnson Filtration Systems Inc. St. Paul, Minnesota.

U.S. Environmental Protection Agency (USEPA), 1986. RCRA Groundwater Monitoring Technical Enforcement Guidance Document, pp. 207.

USEPA, 1987, A Compendium of Superfund Field Operations Methods. EPA/540/p-87/001 Office of Emergency and Remedial Response Washington, D.C. 20460.

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APPENDIX D

AGENCIES - RESOLUTIONS OF ADOPTION

RESOLUTION NO. 2007- 198

**A RESOLUTION OF THE LINCOLN CITY COUNCIL TO
(1) ADOPT THE WESTERN PLACER COUNTY GROUNDWATER
MANAGEMENT PLAN, AND
(2) APPROVE THE MEMORANDUM OF AGREEMENT FOR
IMPLEMENTATION OF THE WESTERN PLACER COUNTY
GROUNDWATER MANAGEMENT PLAN**

WHEREAS, pursuant to the Groundwater Management Act (Water Code, §§ 10750 et seq.) the City of Lincoln (City) adopted a Groundwater Management Plan (GMP) in November of 2003; and

WHEREAS, the adopted City of Lincoln GMP addressed the monitoring and management associated with the portion of the basin directly underlying the City; and

WHEREAS, the City has been actively implementing management actions included in the adopted GMP; and

WHEREAS, the Groundwater Management Act encourages the periodic review and update of adopted GMPs; and

WHEREAS, the City of Lincoln, City of Roseville, Placer County Water Agency and California-American Water Company have jointly prepared the Western Placer County Groundwater Management Plan (WPCGMP) to join together in a regional plan; and

WHEREAS, the City of Lincoln, following required public noticing, held a Public Hearing on the WPCGMP on October 23, 2007; and

WHEREAS, the City of Lincoln is a local agency authorized to adopt a groundwater management plan, and

WHEREAS, the City of Lincoln, City of Roseville, Placer County Water Agency and California-American Water Company have also drafted a Memorandum of Agreement for Implementation of the WPCGMP (Implementation MOA), and

WHEREAS, the Implementation MOA addresses how the Parties intend: (1) to coordinate their efforts in implementing the WPCGMP; (2) to memorialize the Parties' express understanding relating to such efforts; and (3) to allocate costs to be expended in administering the WPCGMP's implementation, and

WHEREAS, after considering the public comment and other information presented at the hearing, the Lincoln City Council determined that it is in the best interest of the City to (1) adopt the WPCGMP, and (2) approve the Implementation MOA.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF LINCOLN DOES HEREBY RESOLVE AS FOLLOWS:

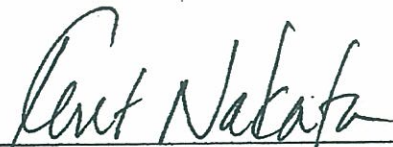
1. The Lincoln City Council deems it advisable and in the best interest of the City to (1) adopt the Western Placer County Groundwater Management Plan, and (2) approve the Memorandum of Agreement for the Implementation of the Western Placer County Groundwater Management Plan.
2. The City hereby agrees to (1) adopt the Western Placer County Groundwater Management Plan, and (2) approve the Memorandum of Agreement for the Implementation of the Western Placer County Groundwater Management Plan.
3. The Director of Public Works is directed to take any additional action necessary and appropriate to implement this resolution.

PASSED and ADOPTED this 27th day of November, 2007, by the following roll call vote:

AYES: COUNCILMEMBERS: Stackpoole, Cosgrove, Short, Santini, Nakata

NOES: COUNCILMEMBERS: None

ABSENT: COUNCILMEMBERS: None



Kent Nakata, Mayor

ATTEST:



Patricia Avila, City Clerk

APPROVED AS TO FORM:

City Attorney

9/7/07 PC. Tony
file
E6
PCWA
P5

RESOLUTION NO. 07- 25 OF THE BOARD OF DIRECTORS OF THE PLACER COUNTY WATER
AGENCY ADOPTING THE UPDATED WEST PLACER COUNTY GROUNDWATER
MANAGEMENT PLAN

WHEREAS, On November 2, 2006 the Board of Directors passed Resolution 06-45 declaring its intent to
update its West Placer County Groundwater Management Plan and adopt a statement of public
participation; and

WHEREAS, the Agency prepared an updated plan in partnership with the City of Roseville, City of
Lincoln, and California-American Water Company in order to promote regionally consistent and
cooperative goals and objectives; and

WHEREAS, the updated West Placer County Groundwater Management Plan was prepared in accordance
with the California Groundwater Management Act, Assembly Bill 3030, and Senate Bill 1938; and

NOW, THEREFORE, BE IT RESOLVED that the Board of Directors of the Placer County Water
Agency hereby adopts the updated West Placer County Groundwater Management Plan.

The foregoing resolution was duly passed at meeting of the Board of Directors of the Placer County Water
Agency held on September 6, 2007, by the following on roll call:

AYES DIRECTORS: Gray Allen, Alex Ferrreira, Mike Lee, Otis Wollan,
and Chairman Lowell Jarvis

NOES DIRECTORS: None

ABSENT DIRECTORS: None

Signed and approved by me after its passage this 6th day of September, 2007.



Chair, Board of Directors
Placer County Water Agency

ATTEST:



Clerk, Board of Directors
Placer County Water Agency

Roseville

RG

RESOLUTION NO. 07-426

ADOPTING THE WESTERN PLACER COUNTY GROUNDWATER
MANAGEMENT PLAN

WHEREAS, on August 3, 2005, the City Council authorized staff to prepare a groundwater management plan; and

WHEREAS, in order to promote regionally consistent and cooperative groundwater management goals and objectives, staff proposed development of a joint plan with Placer County Water Agency; and

WHEREAS, the Ground Water Management Plan was prepared in accordance with the California Groundwater Management Act, AB3030 and SB 1938; and

WHEREAS, the City Council has reviewed the proposed Western Placer County Groundwater Management Plan;

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of Roseville hereby adopts the Western Placer County Groundwater Management Plan, pursuant to California Water Code Section 10753.

PASSED AND ADOPTED by the Council of the City of Roseville this 1st day of August, 2007, by the following vote on roll call:

AYES COUNCILMEMBERS: Allard, Roccucci, Garcia, Garbolino, Gray

NOES COUNCILMEMBERS: None

ABSENT COUNCILMEMBERS: None


MAYOR

ATTEST:


for City Clerk



WESTERN PLACER COUNTY GROUNDWATER MANAGEMENT PLAN