
# Sacramento Central Groundwater Authority

## Basin Management Report

## 2009 -2010

SCGA

# Table of Contents

## List of Tables



## List of Figures

# CHAPTER 1 INTRODUCTION

This Biennial Basin Management Report documents the management activities of the Sacramento Central Groundwater Authority (Authority) and its member agencies during the 2009 and 2010 calendar years. The intent of this report is to document basin wide hydrologic conditions and management activities that help ensure the long-term sustainability of the region's vital groundwater resources. This report is organized into the following chapters:

Chapter 1 – Introduction

Chapter 2 – Basin Conditions

Chapter 3 – Basin Management Activities

Chapter 4 – Conclusions and Recommendations

## BACKGROUND

The Authority was formed on August 29, 2006 through a Joint Powers Agreement (JPA) signed by the Cities of Elk Grove, Folsom, Rancho Cordova, and Sacramento and the County of Sacramento for the following purposes:

- to maintain the long-term sustainable yield of the Sacramento Central Groundwater Basin (Central Basin);
- to ensure implementation of the Basin Management Objectives (BMO) that are prescribed by the Central Sacramento County Groundwater Management Plan (GMP);
- to oversee the implementation of any Well Protection Program (WPP) that may be prescribed by the GMP;
- to manage the use of groundwater in the Central Basin and facilitate implementation of an appropriate conjunctive use program by water purveyors;
- to coordinate efforts among those entities represented on the governing body of the joint powers authority to devise and implement strategies to safeguard groundwater quality; and
- to work collaboratively with other entities, including the Sacramento Groundwater Authority (SGA), the Southeast Sacramento County Agriculture Water Authority (SSCAWA) and other groundwater management authorities that may be formed in the County of Sacramento and adjacent political jurisdictions, in order to promote coordination of policies and activities throughout the region.

The Central Basin encompasses the area bounded by the American River on the north, north of the southern boundary the Omochumne-Hartnell Water District and the Cosumnes and Mokelumne rivers on the south, the Sacramento River on the west, and Sierra Foothills on the

east (see Figure 1). The Authority is recognized as an essential part in implementing the groundwater management element of the Water Forum Agreement (WFA[1]).

Currently, the Authority consists of sixteen members[2] representing stakeholder interest groups that include agriculture, agriculture/residential users, business, environmental/community organizations, local governments/public agencies and water purveyors (see Figure 2).

1 The two co-equal objectives of the WFA are: 1) to provide a reliable water supply for planned development to the year 2030, and 2) to preserve the Sacramento region's environmental crown jewel, the lower American River. For more information, please visit its website: http://www.waterforum.org/.

[2] California-American Water Company, City of Elk Grove, City of Folsom, City of Rancho Cordova, City of Sacramento, County of Sacramento, Florin Resource Conservation District/Elk Grove Water District, Golden State Water Company, Omochumne-Hartnell Water District, Rancho Murieta Community Services District, Sacramento Regional County Sanitation District, Agricultural Representative, Agricultural-Residential Representative, Commercial/Industrial Representative, Conservation Landowners, Public Agencies/Self-Supplied Representative

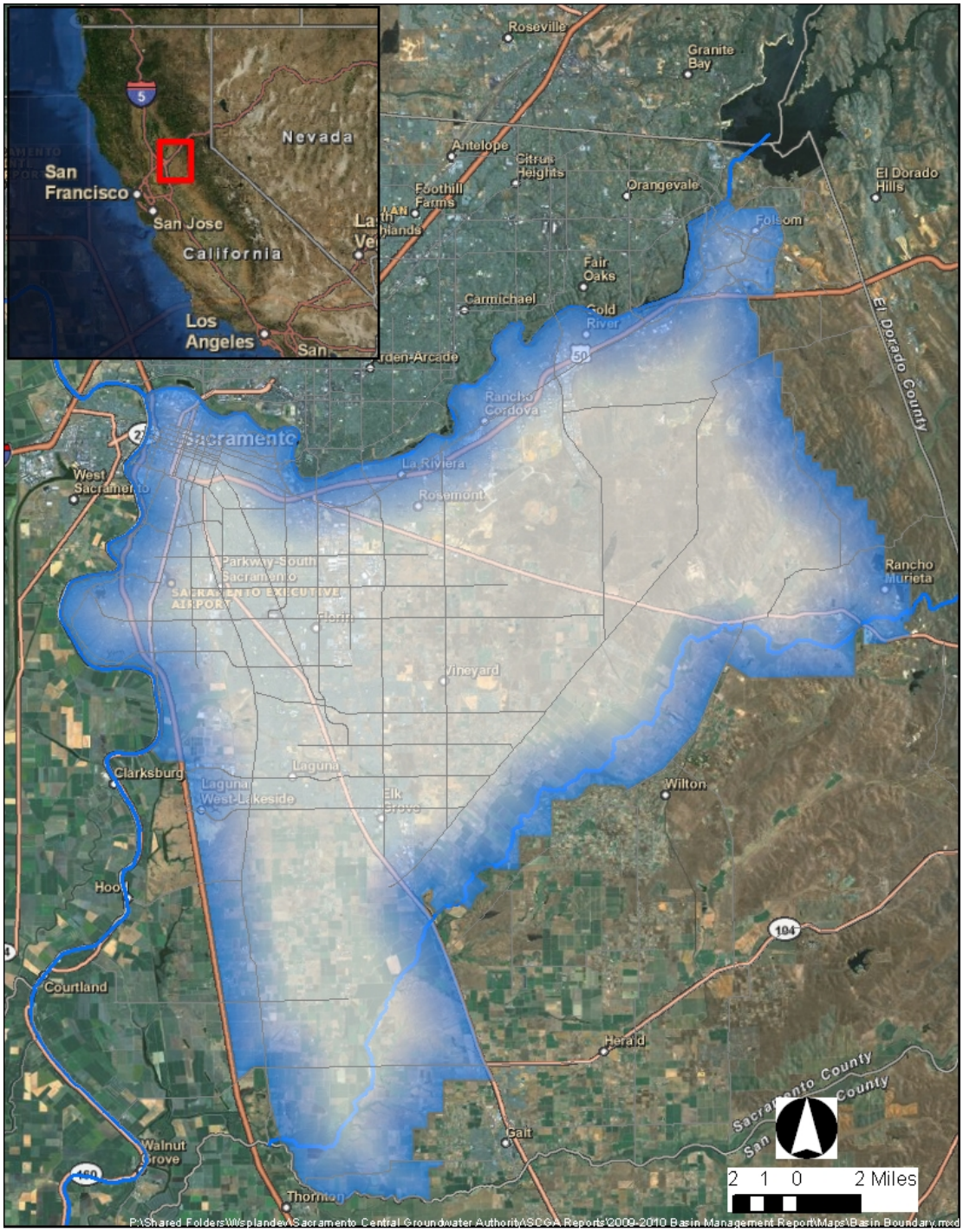



**Figure 1 Sacramento Central Groundwater Basin**

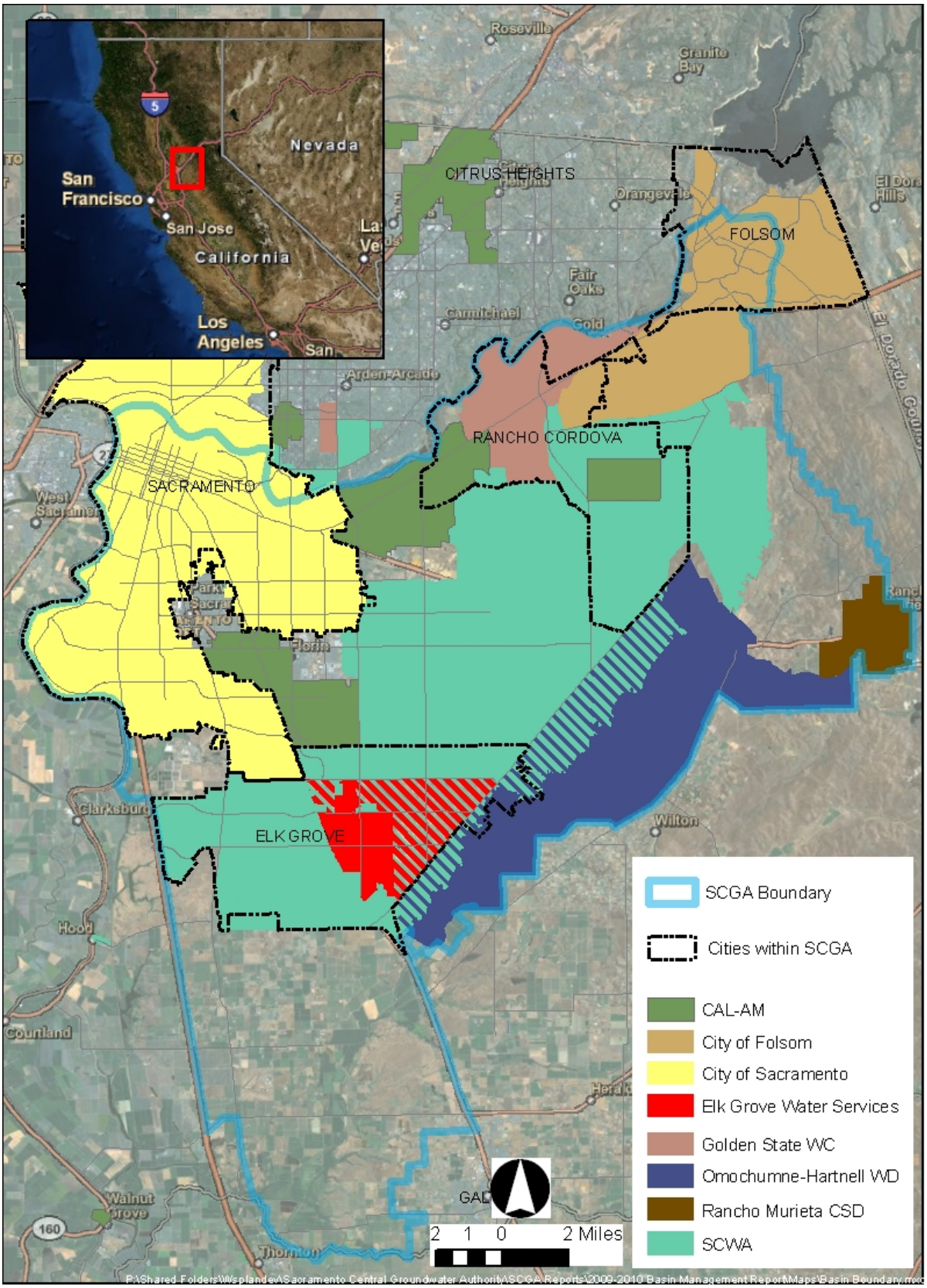



**Figure 2 Cities and Public Water Purveyors in SCGA**

## CENTRAL SACRAMENTO COUNTY GROUNDWATER MANAGEMENT PLAN

In February 2006, the GMP was accepted by the Central Sacramento County Groundwater Forum and the Water Forum Successor Effort. This document was the result of six years of negotiation and agreements between various stakeholders in the region. The GMP is a planning tool that assists basin stakeholders in maintaining a safe, sustainable and high quality resource for all groundwater users within the Central Basin.

The GMP provides for the review of current and future water supply and demands and contains BMOs. Each BMO focuses on managing and monitoring the basin to benefit all groundwater users within the Basin. The GMP also contains "trigger points" and remedies to ensure full implementation of the individual BMOs. The five BMOs are described below:

- Maintain the long-term average groundwater extraction rate at or below 273,000 acre-feet/year (Section 3.1.1);
- Maintain specific groundwater elevations within all areas of the basin consistent with the Water Forum "solution" (Section 3.1.2);
- Protect against any potential inelastic land surface subsidence by limiting subsidence to no more than 0.007 feet per one foot of drawdown in the groundwater basin (Section 3.1.3);
- Protect against any adverse impacts to surface water flows in the American, Cosumnes, and Sacramento Rivers (Section 3.1.4); and
- Meet water quality objectives (Section 3.1.5) including:
    - Total Dissolved Solids (TDS) concentration of less than 1,000 mg/l,
    - Nitrate concentration of less than 45 mg/l, and
    - Volatile Organic Compounds (VOC).

The GMP also describes the development and implementation of the Central Basin WPP (Section 4.3). The Central Basin WPP is designed to protect existing private domestic well and agricultural well owners from declining groundwater levels resulting from new development in the Basin.

Lastly, the GMP describes the development and implementation of the Groundwater Contamination Monitoring and Collaboration Program (Section 4.4) to proactively address the groundwater contamination and remediation issues in the Central Basin. The program consists of three components:

- Use of Remediated Groundwater in Urbanized Areas;
- Survey Private Wells for Potential Contamination; and
- Assistance of the Sacramento County Environmental Management Department (EMD).

# CHAPTER 2 BASIN CONDITIONS

This chapter describes current Basin conditions including hydrologic conditions, groundwater pumping, groundwater elevation, and groundwater quality relative to the individual BMOs.

## BMO NO.1 – MAINTAIN THE LONG-TERM AVERAGE EXTRACTION RATE AT OR BELOW 273,000 Acre-Feet/Year

## HYDROLOGIC CONDITIONS

Typically, three indicators are widely used to describe hydrologic conditions in the Sacramento region: 1) Sacramento Valley Water Year Type, 2) Water Forum Agreement Year Type, and 3) Precipitation Data. Each of these is described in more detail below.

### Sacramento Valley Water Year Type

The Sacramento Valley Water Year Type is determined by the California Department of Water Resources (DWR) based on Sacramento River and tributary runoff necessary to meet Delta outflow criteria and Sacramento River system requirements (Water Year Index). Year Type classifications are based on the Index and include wet, above normal, below normal, dry, and critical. Table 1 summarizes the water year type over the past five years (2006 to 2010). Overall, the region is experiencing a dry period with four of the last five years classified as below normal or critical.

**Table 1 Sacramento Valley Water Year Type, 2006-2010**

| Water Year[1] | Sacramento Valley Water Year Index | Sacramento Valley Water Year Type[2] |
|---|---|---|
| 2006 | 13.0 | Wet |
| 2007 | 6.2 | Dry |
| 2008 | 5.1 | Critical |
| 2009 | 5.8 | Dry |
| 2010 | 7.1 | Below Normal |

Notes:

1. For a complete view of the data for the past one hundred plus years as well as the methodology used to determine the Sacramento River Water Year Index Value, please visit the website: http://cdec.water.ca.gov/cgi-progs/iodir/WSIHIST.

2. Sacramento River Water Year Hydrologic Classifications and determination criteria:

| Year Type | Water Year Index |
|---|---|
| Wet | Equal to or greater than 9.2 |
| Above Normal | Greater than 7.8, and less than 9.2 |
| Below Normal | Greater than 6.5, and equal to or less than 7.8 |
| Dry | Greater than 5.4, and equal to or less than 6.5 |
| Critical | Equal to or less than 5.4 |

## Water Forum Agreement Year Type

The WFA year type is determined based on March-through-November total unimpaired inflow into Folsom Lake. This data dictates the amount of water that a purveyor may divert from Folsom Lake and the Lower American River as specified in their WFA purveyor specific agreement. The WFA water year classifications include wet, average, drier, and driest. Table 2 shows the water year type for the past five years (2006 to 2010).

**Table 2 Water Forum Agreement Year Type, 2006-2010**

| Water Year | Unimpaired Inflow to Folsom Lake, March-November (Thousand Acre-Feet) | Water Forum Agreement Year Type[1] |
|---|---|---|
| 2006 | 3,242 | Wet |
| 2007 | 1,121 | Average |
| 2008 | 914 | Drier |
| 2009 | 1,455 | Average |
| 2010 | 1,700 | Wet |

Notes:

1. WFA water year classifications and determination criteria:

| WFA Water Year Type | Unimpaired Inflow into Folsom Lake, March through November (Thousand Acre-Feet) |
|---|---|
| Wet | Greater than 1,600 |
| Average | Greater than 950, and less than 1,600 |
| Drier | Greater than 400, and less than 950 |
| Driest | Less than 400 |

## Precipitation Data

DWR maintains precipitation data for seven stations on the California Data Exchange Center (CDEC) within and adjacent to the Central Basin area. These six stations represent different areas within the Basin. These stations are shown in Figure 3 which includes:

- Correctional Center (CRT)
- California State University, Sacramento (CSU)
- Cosumnes River at Eagles Nest Road (EGN)
- Elk Grove Fish Hatchery (ELG)
- Prairie City (PRC)
- Sacramento WB City (SCR)

The precipitation data for 2006 – 2010 recorded at these stations was retrieved from CDEC's website http://cdec.water.ca.gov.

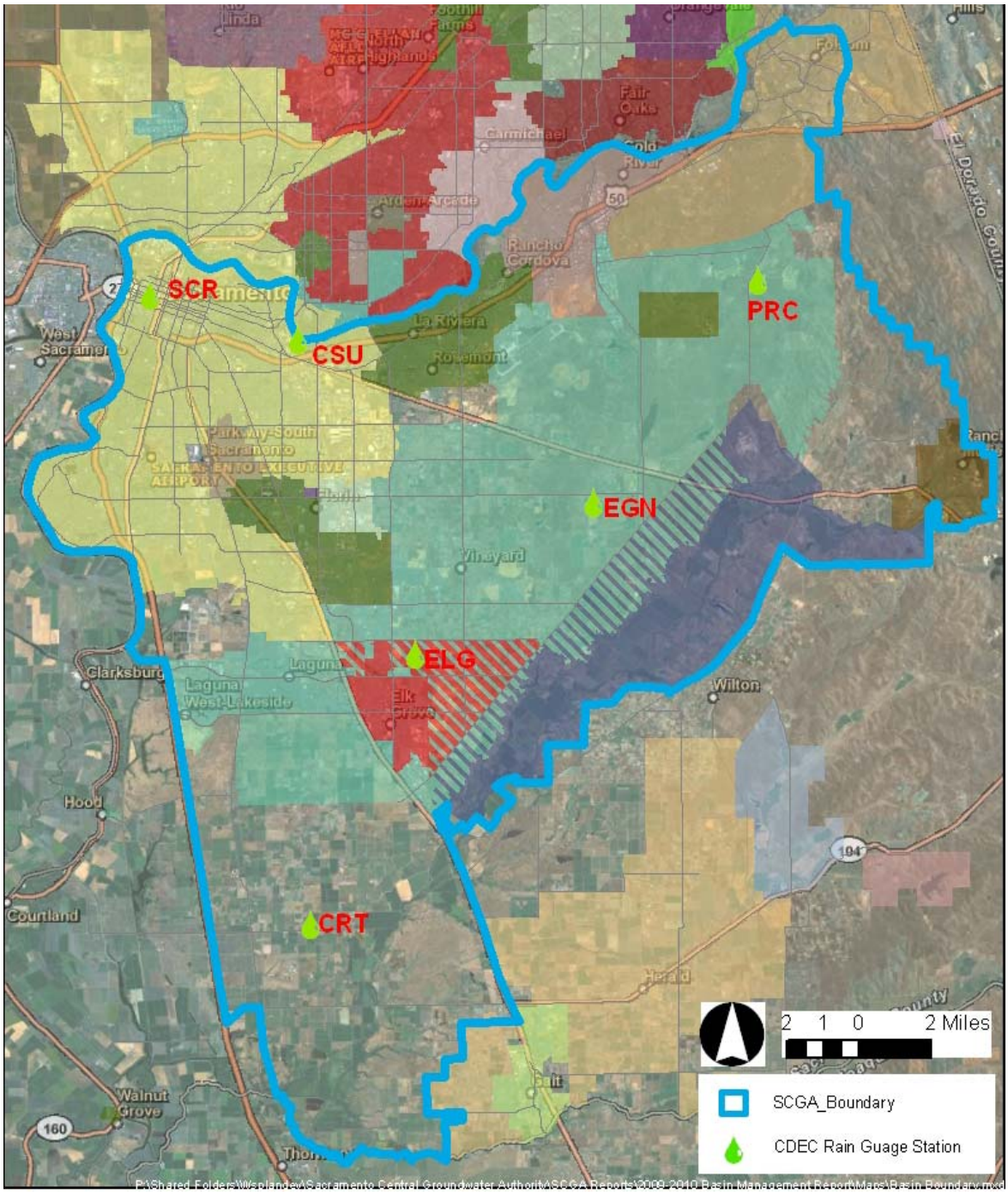



**Figure 3 CDEC Rain Gauge Stations in SCGA**

**Table 3** shows that the annual precipitation for CRT, CSU, EGN, ELG, PRC, and SCR from water year 2006 to 2010.

**Table 3 Annual Precipitation in SCGA Vicinity, 2006-2010**

| Water Year | CDEC Rainfall Stations | | | | | | Average |
|---|---|---|---|---|---|---|---|
| | CRT | CSU | EGN | ELG | PRC | SCR | |
| **2006** | 25.67 | 25.49 | 26.71 | 23.77 | 31.18 | 25.53 | 26.39 |
| **2007** | 12.05 | 12.07 | 12.32 | 11.6 | 14.53 | 12.04 | 12.44 |
| **2008** | 12.13 | 14.73 | 13.54 | 13.03 | 15.20 | 14.68 | 13.89 |
| **2009** | 14.29 | 16.79 | 14.84 | 14.17 | 17.60 | 16.66 | 15.73 |
| **2010** | 19.06 | 19.35 | 18.7 | 17.87 | 20.47 | 20.37 | 19.30 |

The long term average annual rainfall in the Sacramento Region is approximately 18.31 inches. The data shown in Table 3 indicates that rainfall within the Authority's boundaries was higher than the long-term average in 2006 with 26.39 inches. In the subsequent three years from 2007-2009, the SCGA area experienced rainfall below the long-term average with 12.44 inches in 2007, 13.89 inches in 2008, and 15.76 inches 15.73 in 2009. The amount of rainfall in 2010 was close to the long-term average level at 19.30 inches.

## Groundwater Pumping

Not all water users in the Central Basin rely on groundwater to meet their water supply needs. Some purveyors rely on a combination of groundwater and surface water called conjunctive use; these include California-American Water Company (Cal-Am), Golden State Water Company (GSWC), and Sacramento County Water Agency (SCWA). The City of Sacramento relies solely on surface water to serve its customers within the Central Basin, however, the City has indicated that it plans to develop a limited amount of groundwater capacity within the Central Basin in near future.

Table 4 indicates groundwater pumping in the Central Basin for the 2006-2010 timeframe. Remediated groundwater pumping is included for the purpose of showing total groundwater pumping, although remediated groundwater is currently not put to beneficial use. Overall, groundwater pumping was relatively stable from 2006 – 2009 with pumping ranging from 243,000 acre-feet to 247,000 acre-feet. Groundwater pumping decreased in 2010 with pumping at approximately 235,000 acre-feet.

The amount of groundwater pumped for agricultural and agricultural-residential groundwater users was estimated from two bookend land use information sources: 1) year 2000 land use conditions based on DWR's 2000 land use survey for Sacramento County; and 2) projected year

2030 land use information[3]. Any updates to estimated agricultural or agricultural-residential groundwater pumping would rely on an update of these two data sources.

DWR typically conducts land use surveys every 5 to 10 years, with the last survey taken in Sacramento County in 2000. Updated land use information for the County was not available at the time this report was published. In order to estimate groundwater usage for agricultural and agricultural-residential properties an interpolation process was used on the agricultural and agricultural-residential groundwater pumping for 2000 and 2030.

The average groundwater pumping rate (including pumping for groundwater remediation) within the Central Basin over the past five years (2006-2010) was approximately 259,900 acre-feet/year, which is below the 273,000 acre-feet/year identified in BMO NO.1.

**Table 4 Water Use in the Central Basin, 2006-2010**

| **Groundwater Usage (Acre-Feet)** | | | | | |
|---|---|---|---|---|---|
| Water Purveyors[1] | **2006** | **2007** | **2008** | **2009** | **2010** |
| Elk Grove Water District | 6,365 | 6,963 | 6,460 | 5,407 | 3,784 |
| Cal-Am | 22,775 | 23,651 | 24,769 | 23,659 | 21,525 |
| GSWC | 13,129 | 9,754 | 9,162 | 8,197 | 6,650 |
| SCWA | 29,019 | 30,450 | 34,220 | 34,248 | 32,171 |
| Agricultural [2] | 166,148 | 165,234 | 164,320 | 163,406 | 162,492 |
| Agricultural – Residential [2] | 7,946 | 8,041 | 8,136 | 8,231 | 8,326 |
| **SUBTOTAL** | **245,382** | **244,093** | **247,067** | **243,148** | **234,948** |
| **Remediated Groundwater Pumping (Acre-Feet)** | | | | | |
| Aerojet[3] | 17,000 | 17,000 | 17,000 | 17,000 | 17,000 |
| Mather Field[4] | - | - | - | - | - |
| Kiefer Landfill[5] | - | - | - | - | - |
| **SUBTOTAL** | **17,000** | **17,000** | **17,000** | **17,000** | **17,000** |
| **TOTAL** | **262,382** | **261,093** | **264,067** | **260,148** | **251,948** |

Notes:
1. Annual urban groundwater pumping data was provided to the Authority by the individual water purveyors.
2. Annual groundwater pumping for Agricultural and Agricultural Residential groundwater users were estimated for year 2000 and 2030 based on land use data in the WRIME 2005 Groundwater Impact Analysis. The pumping rate for each individual year in this table was obtained through linear interpretation.

[3] Based on 2000 DWR land use survey for Sacramento County, DWR Detailed Analysis Unit (DAU) crop acreage estimates, and Sacramento County General Plan land use mapping, and 2002 Zone 40 Water Supply Master Plan EIR.

3. The numbers represent the approximate net average groundwater pumping (total groundwater pumping volume less the amount infiltrates back into the basin) based on the data from 2006 to2008 provided by the State Water Quality Control Board. The same level of groundwater pumping is assumed for this reporting period.
4. Based on a presentation made by Mather/Air Force staff to the SCGA Board in May 2011 regarding the groundwater cleanup progress at Mather Field. Meeting minutes are available online at www.scgah2o.org. The average pumping rate is approximately 1,600 gpm with 100 gpm injected directly back into the basin and 1,500 gpm discharged into Morrison Creek which is assumed to infiltrate back into the basin as well.
5. The remediated groundwater pumping rate at Kiefer Landfill was approximately 1,100 gpm and discharged directly to Deer Creek. The assumption is that all remediated groundwater infiltrates back into the basin. The table shows the net groundwater pumping.

## BMO NO.2 – MAINTAIN SPECIFIC GROUNDWATER ELEVATIONS WITHIN ALL AREAS OF THE BASIN CONSISTENT WITH THE WATER FORUM "SOLUTION"

This section describes the groundwater elevation condition in the Central Basin.

## GROUNDWATER ELEVATION

Regional groundwater elevations are measured through a network of 316 public and private wells throughout Sacramento County. Collected data is submitted to and maintained by DWR in their Water Data Library (WDL). This groundwater elevation data is the primary source of groundwater level data for the Authority's Hydro DMS. Data from the entire County is included in the HydroDMS so that and accurate detained groundwater level analysis can be conducted. The HydroDMS currently incorporates WDL data from 1930 to 2008.

### Groundwater Elevation Contour Map

Groundwater elevation contour maps that estimate groundwater elevation conditions in the Basin are generated based on data from the HydroDMS and the year 2010 measurements for SCWA monitoring wells that will be incorporated into HydroDMS in the future. Two sets of groundwater elevation maps were selected to illustrate both seasonal and time related changes in groundwater elevations. The first set maps is for Spring 2000 and 2010, see Figure 4 and 5; the other set is for Fall 2000 and 2010, see Figure 56 and Figure 7.

From the earliest times when groundwater began to be used for agricultural irrigation, groundwater extraction was concentrated in the Elk Grove area of the Central Basin. This activity resulted in the development of a regionally extensive cone of depression. Urbanization has maintained the existence of this cone which can be seen in each of the contour maps.

By comparing the contour maps for 2000 and 2010, the change in shape and location of the cone of depression can be seen over the last ten years. The elevation at the base of the cone has risen from approximately 60 to 70 feet below mean sea level (MSL) in 2000 to approximately 40 to 50 feet below MSL in 2010.

## Groundwater Level Trends

Groundwater hydrographs are developed from groundwater elevation data that has been collected over time. The graphic depiction of these hydrographs delineates groundwater level trends in various locations throughout the basin. Figure 8 through Figure 10 show the location of groundwater hydrographs with the most complete record. Groundwater data to develop these hydrographs was obtained from the HydroDMS.

The hydrographs shown indicate a consistent decline in groundwater levels of approximately 20 to 30 feet beginning in the 1950s and 1960s until about 1980. From 1980 through 1983, water levels recovered by about 10 feet and remained relatively stable until the beginning of the 1987 - 1992 drought. During this period, water levels declined about 15 feet. Between 1995 and 2003, most water levels recovered to levels generally higher than those prior to 1987 - 1992 drought. In some locations, this recovery has continued through 2008.

For the purpose of further discussion, the wells are grouped by their geographic locations as described below:

**Western Area.** The western portion of the basin is generally the area between Interstate 5 and Highway 99. Groundwater level trends in this area are illustrated in the hydrographs shown in Figure 8 (SWP-170, SWP-107, SWP-004, SWP-063, SWP-115, and SWP-058). These hydrographs show groundwater levels varying between 10 and 90 feet below MSL during the period of record. From 2003 to 2008, groundwater levels in these wells remained fairly stable or continued to recover from the 1987 - 1992 drought. Some of this recovery can be attributed to the increased use of surface water in the area, and the fallowing of previously irrigated agricultural lands that are transitioning to urban development areas.

**Central Area.** The central portion of the basin is the area between Highway 99 and Highway 16 (Jackson Highway). Groundwater level trends in this area are illustrated in the hydrographs shown in Figure 9 (SWP-177, SWP-149, SWP-154, SWP-121, SWP-124, SWP-128, SWP-188, and SWP-054). These hydrographs show groundwater levels varying between 40 feet above to 40 feet below MSL during the period of record. Groundwater levels in wells located furthest from the Cosumnes River appear to be relatively stable in recent years and continued to recover from the 1987-1992 drought. Groundwater levels in wells located close to the Cosumnes River have shown relative stability in recent years, but it appears that the general trend continues to show a decline (see hydrographs SWP-128 and SWP-149).

**Eastern Area.** The eastern portion of the basin is the area north of Highway 16 (Jackson Highway). Groundwater level trends in this area are illustrated in the hydrographs shown in Figure 10 (SWP-185, SWP-250, SWP-244, SWP-255, SWP-202, and SWP-209). These hydrographs show declines in groundwater levels of up to 40 feet since 1960. In recent years,

groundwater levels have been relatively stable (see hydrographs SWP-202 and SWP-185). For locations close to Aerojet's Groundwater Extraction Treatment (GET) facilities, it appears that the decline in groundwater levels is a result of Aerojet's remediation activities (see hydrographs SWP-244, SWP-255 and SWP-250). Groundwater levels in the well close to the Cosumnes River continues to trend downward (see hydrograph SWP-209).

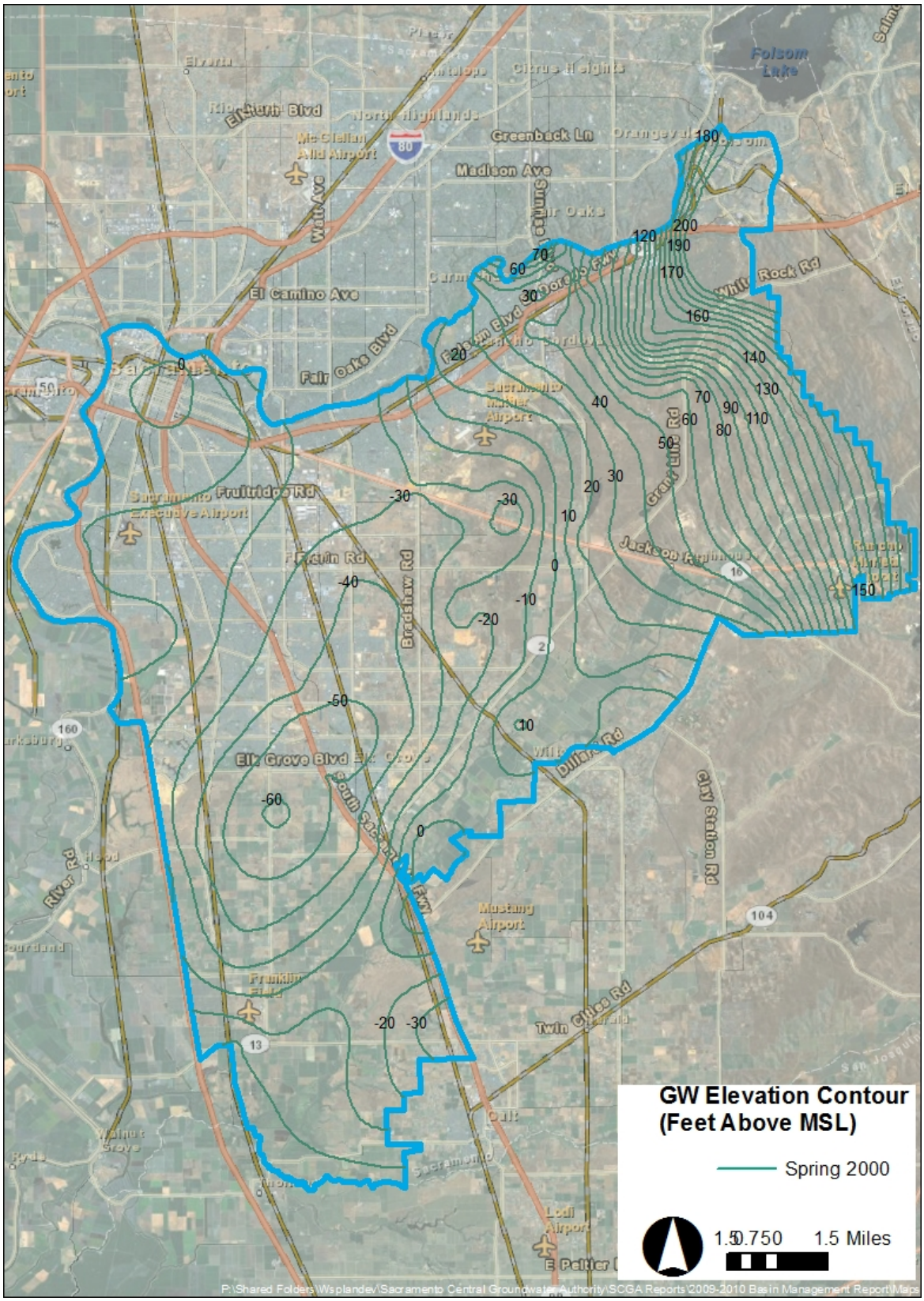



**Figure 4 Spring 2000 Groundwater Elevation Contour Map**

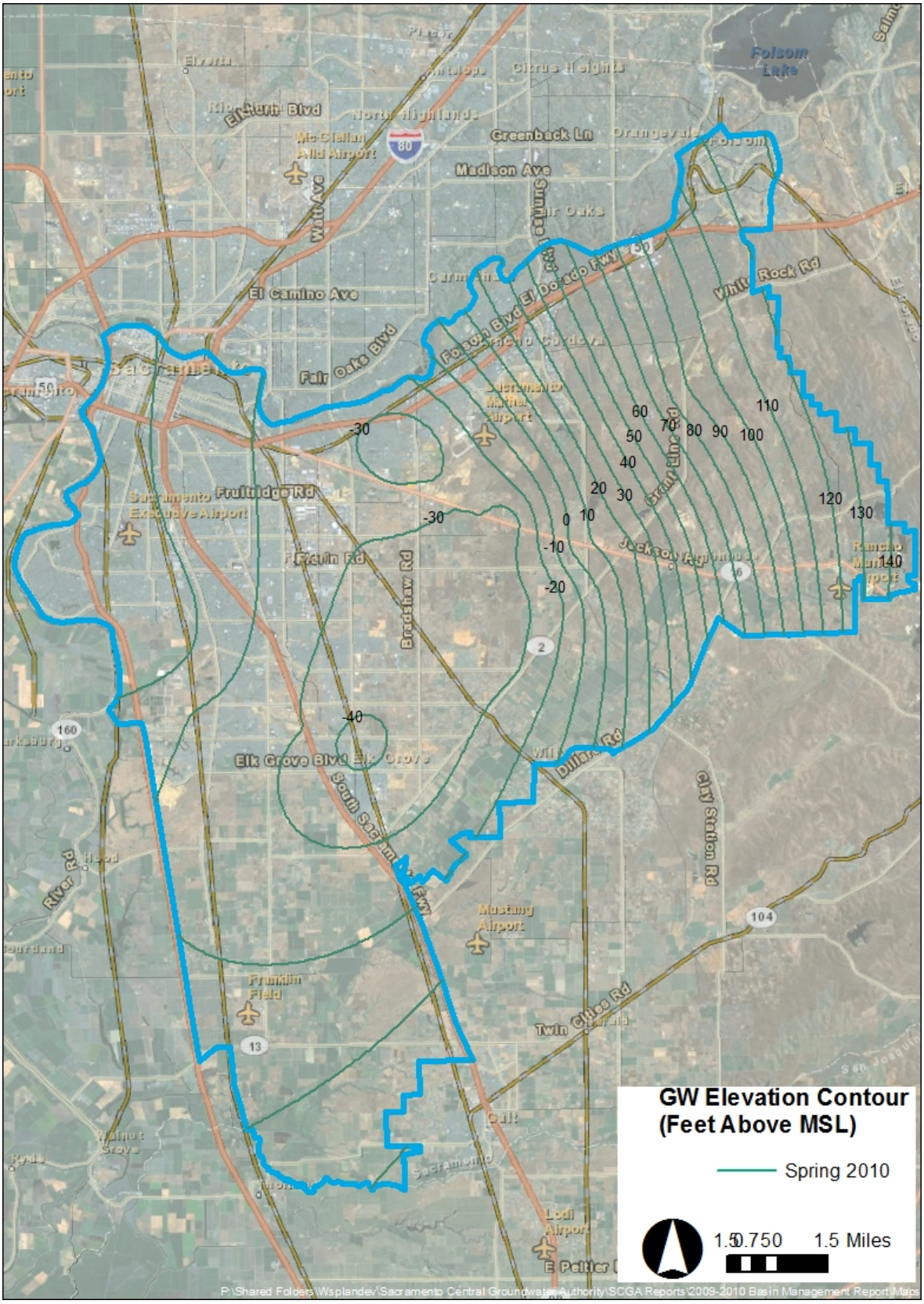



**Figure 5 Spring 2010 Groundwater Elevation Contour Map**

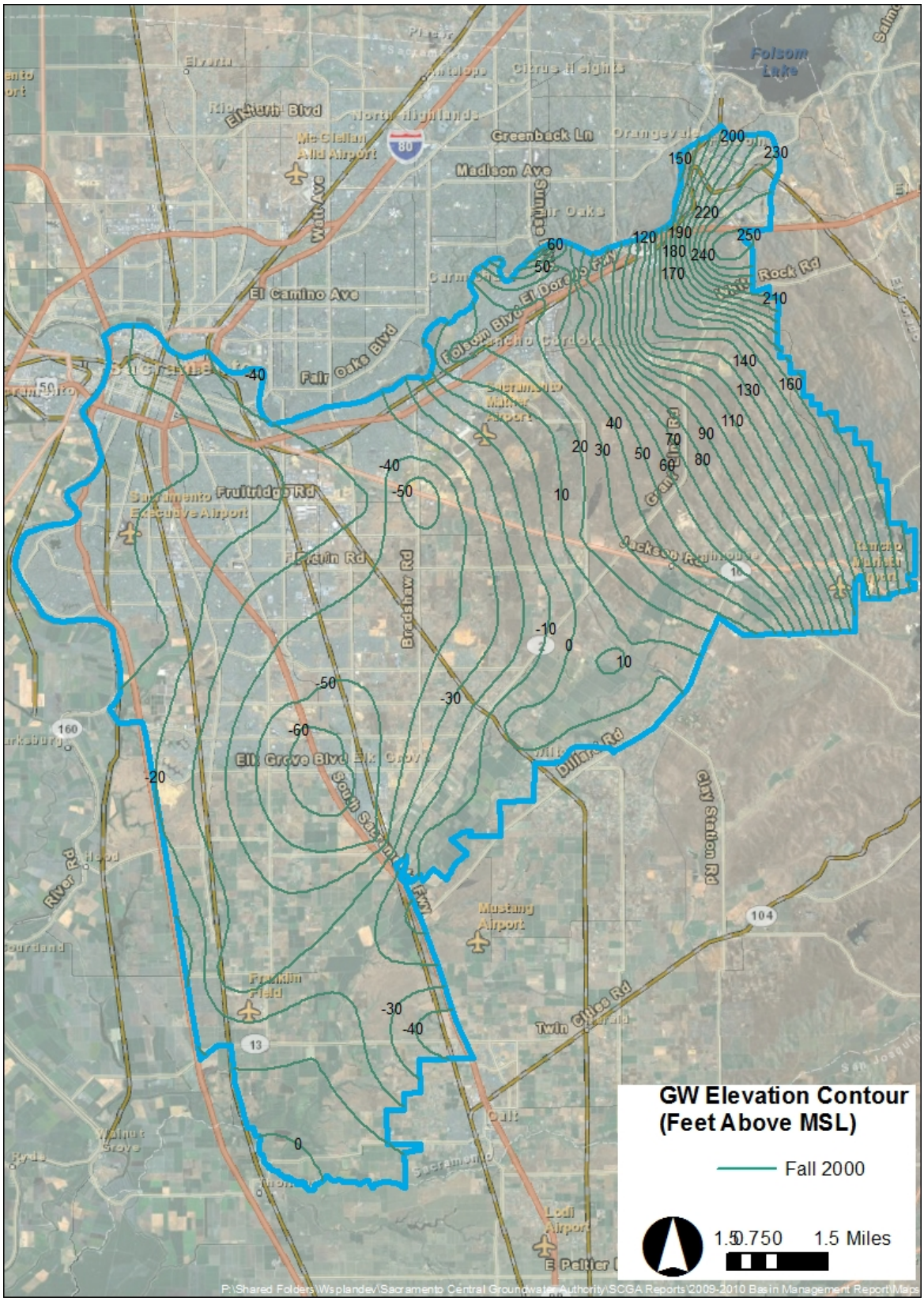



**Figure 6 Fall 2000 Groundwater Elevation Contour Map**

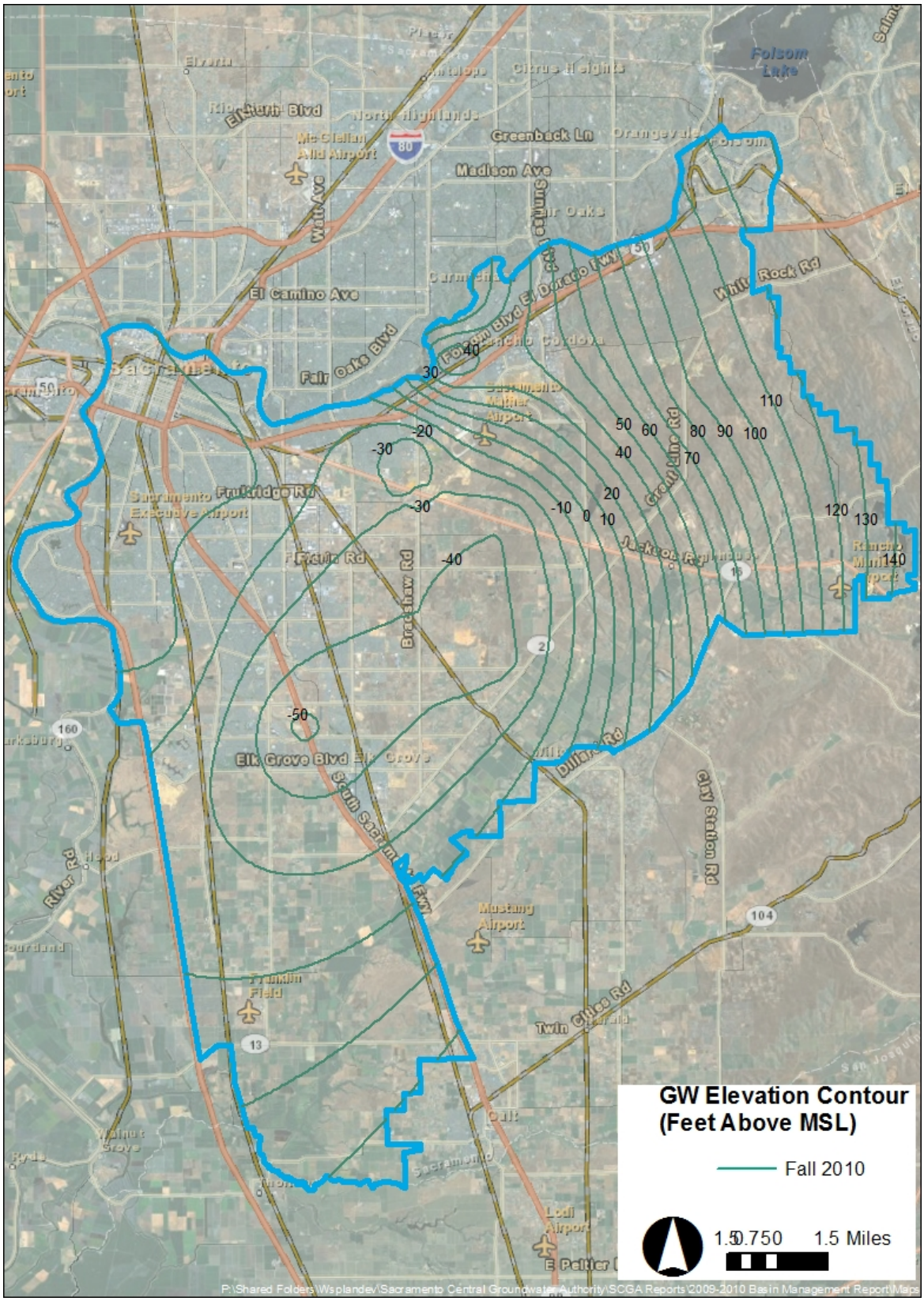



**Figure 7 Fall 2010 Groundwater Elevation Contour Map**

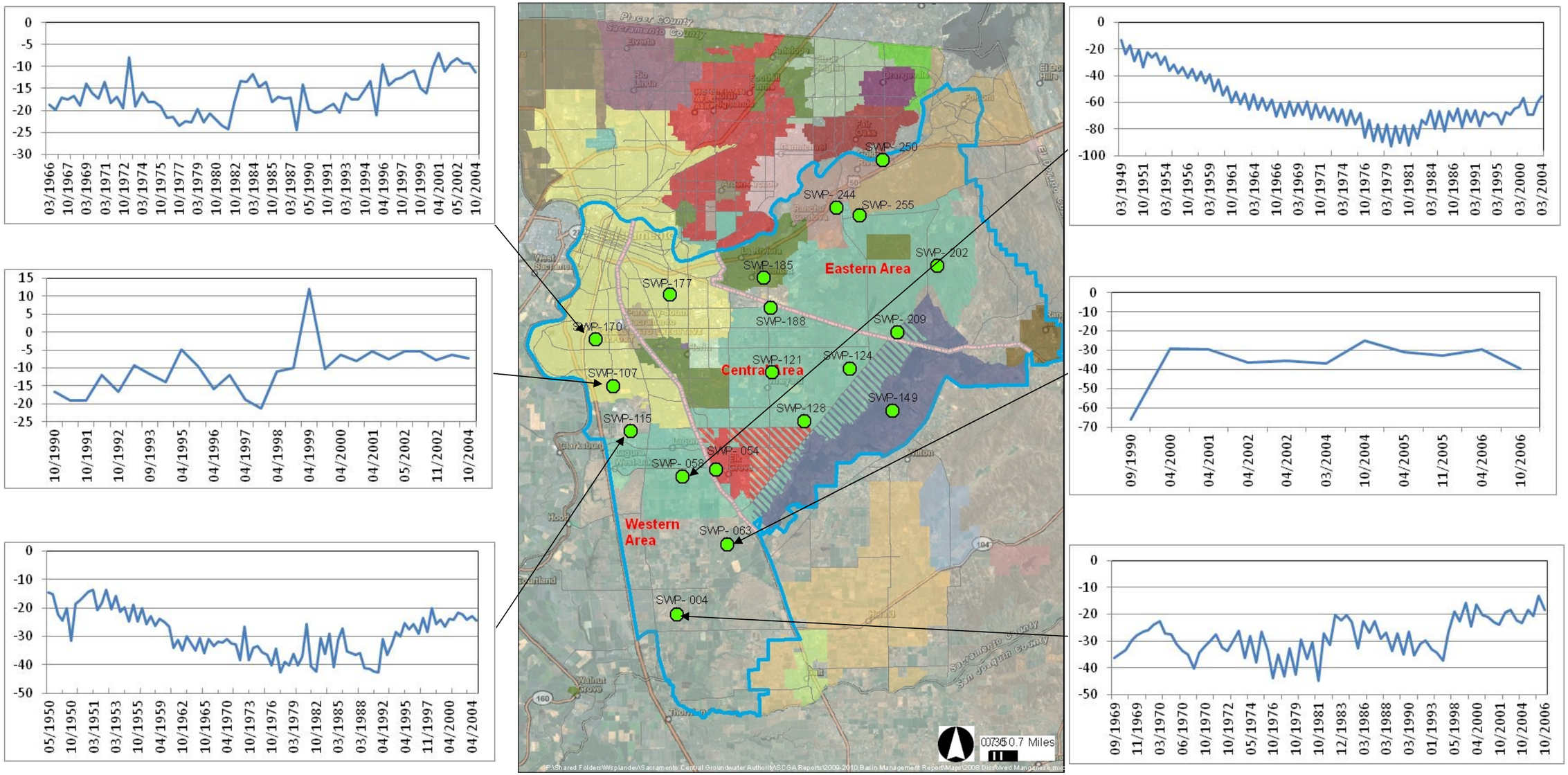
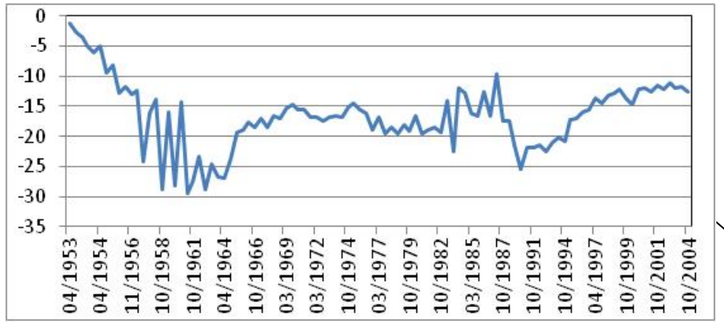
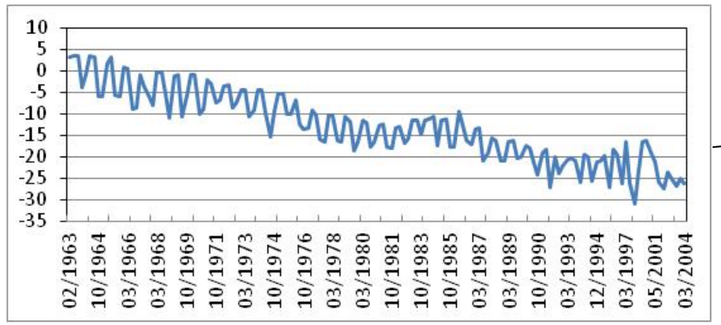
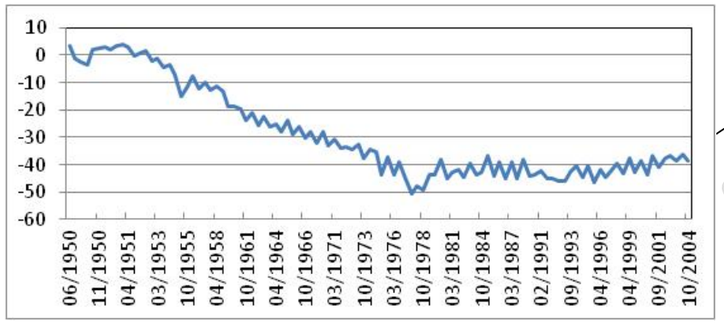
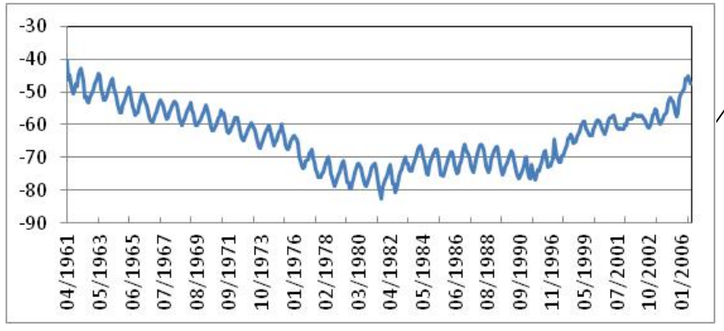


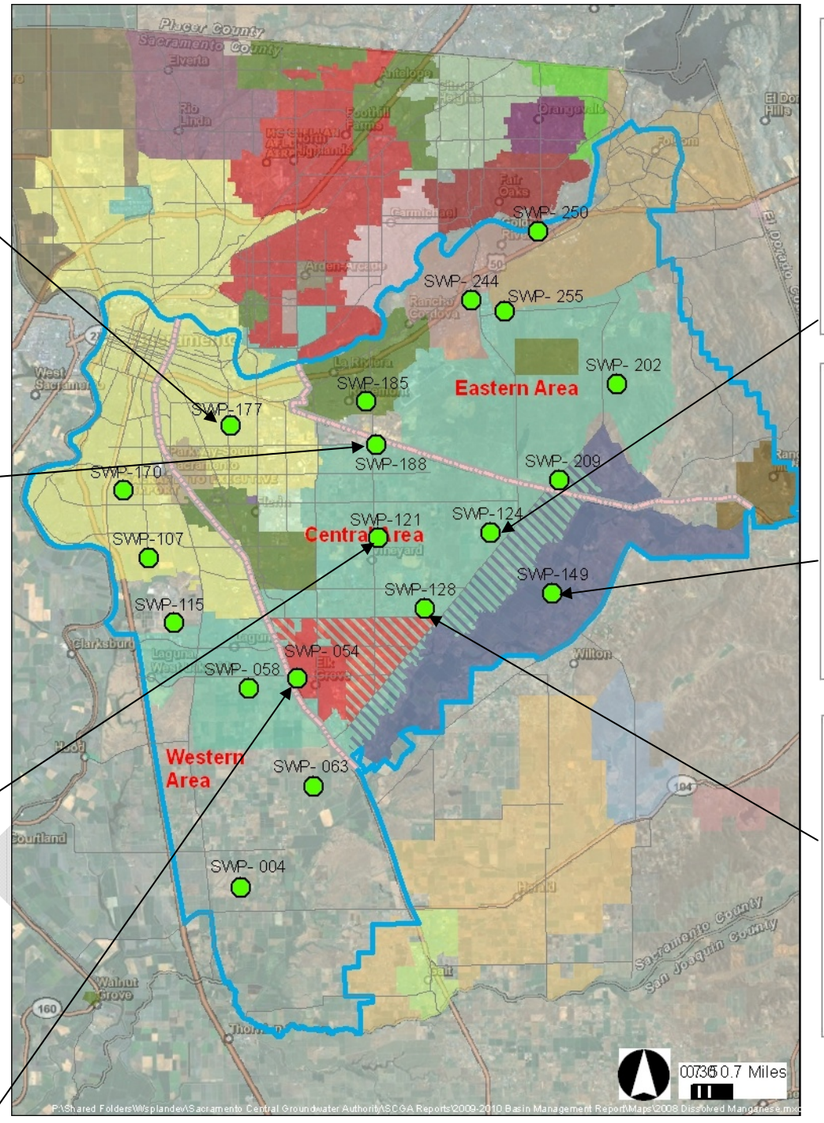

**Figure 8 Central Basin Groundwater Hydrographs – Western Area (Feet, above MSL)**

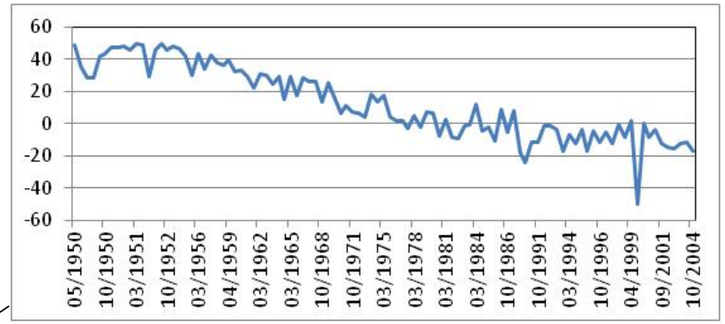


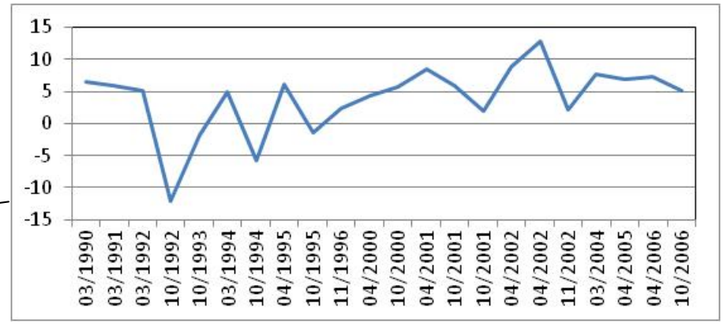



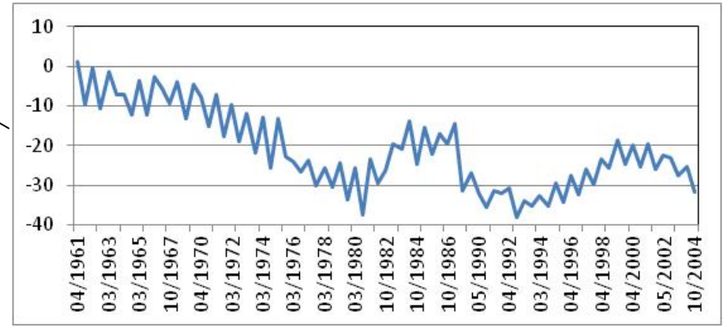




**Figure 9** **Central Basin Groundwater Hydrographs – Central Area (Feet, above MSL)**

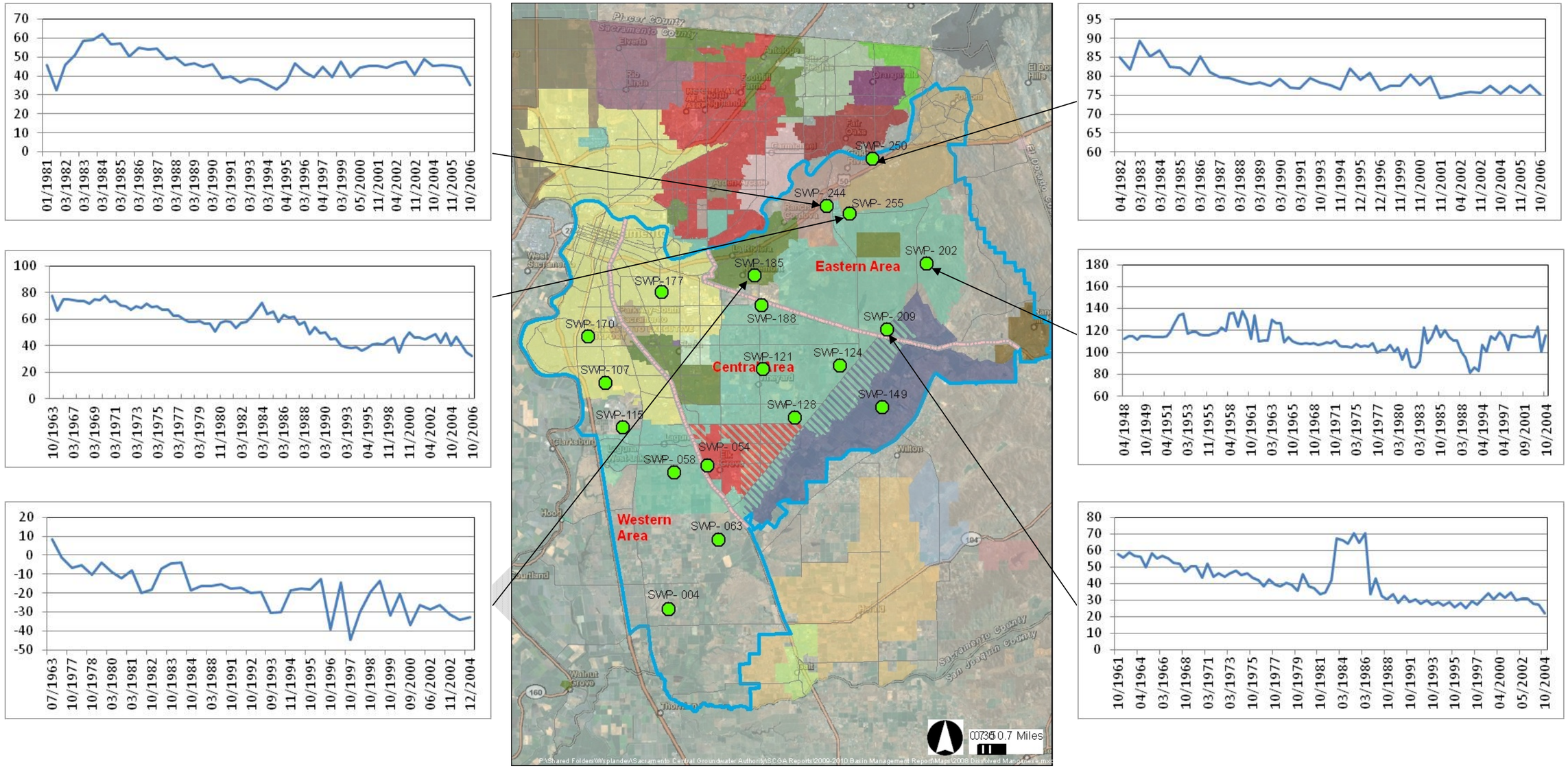



**Figure 10 Central Basin Groundwater Hydrographs – Eastern Area (Feet, above MSL)**

## BMO NO.3 - PROTECT AGAINST ANY POTENTIAL INELASTIC LAND SURFACE SUBSIDENCE BY LIMITING SUBSIDENCE TO NO MORE THAN 0.007 FEET PER 1 FOOT OF DRAWDOWN IN THE GROUNDWATER BASIN.

Land subsidence can cause significant damage to essential infrastructure. Historic land surface subsidence within the Central Basin has been minimal, with no known significant impacts to existing infrastructure. Given historical trends, the potential for land surface subsidence from groundwater extraction in the Central Basin appears to be remote.

While no land subsidence study has been conducted in the Central Basin, there were some studies conducted in SGA area that could potentially benefit SCGA. Sacramento Suburban Water District (SSWD) was awarded an AB 303 grant in 2006 to fund the construction of a multi-zone groundwater monitoring well, a subsidence survey to measure elevation changes at well sites (including re-surveying the wells in the Arden Arcade area that were last measured in 1991), and installing of new monitoring equipment at existing monitoring wells. Authority staff is interested in the outcome of this resurvey and intends to cooperate with SSWD and SGA in the evaluation of this data once it becomes available.

## BMO NO. 4 – PROTECT AGAINST ANY ADVERSE IMPACTS TO SURFACE WATER FLOWS IN THE AMERICAN, COSUMNES, AND SACRAMENTO RIVERS.

Refer to Table A-2, Component 2, Task 4 – Surface Water Groundwater Interaction Monitoring, of Appendix A for details of activities related to this BMO.

## BMO. NO. 5 – WATER QUALITY OBJECTIVES

Generally, groundwater quality in the basin makes it suitable for nearly all uses, with the exception of documented areas of contamination and localized quality issues discussed later in this section.

### Water Quality in Public Supply Wells

Available groundwater quality data in the Central Basin is primarily from municipal wells operated by the various water purveyors in the basin; this data has been imported into the HydroDMS. Water quality data for total dissolved solids (TDS), iron and manganese, arsenic, and nitrate are presented below.

- ***Total Dissolved Solids***

TDS is a measure of all dissolved constitutes in water resulting primarily from rocks and sediments with which the water comes in contact. TDS concentration is a secondary standard

which was established primarily for aesthetic concerns (e.g., staining of laundry and porcelain fixtures). The maximum contaminant level (MCL) for TDS is 500 milligrams per liter (mg/l). According to sampling data from 2008 (Figure 11), all municipal wells in the basin meet secondary drinking water standards for TDS.

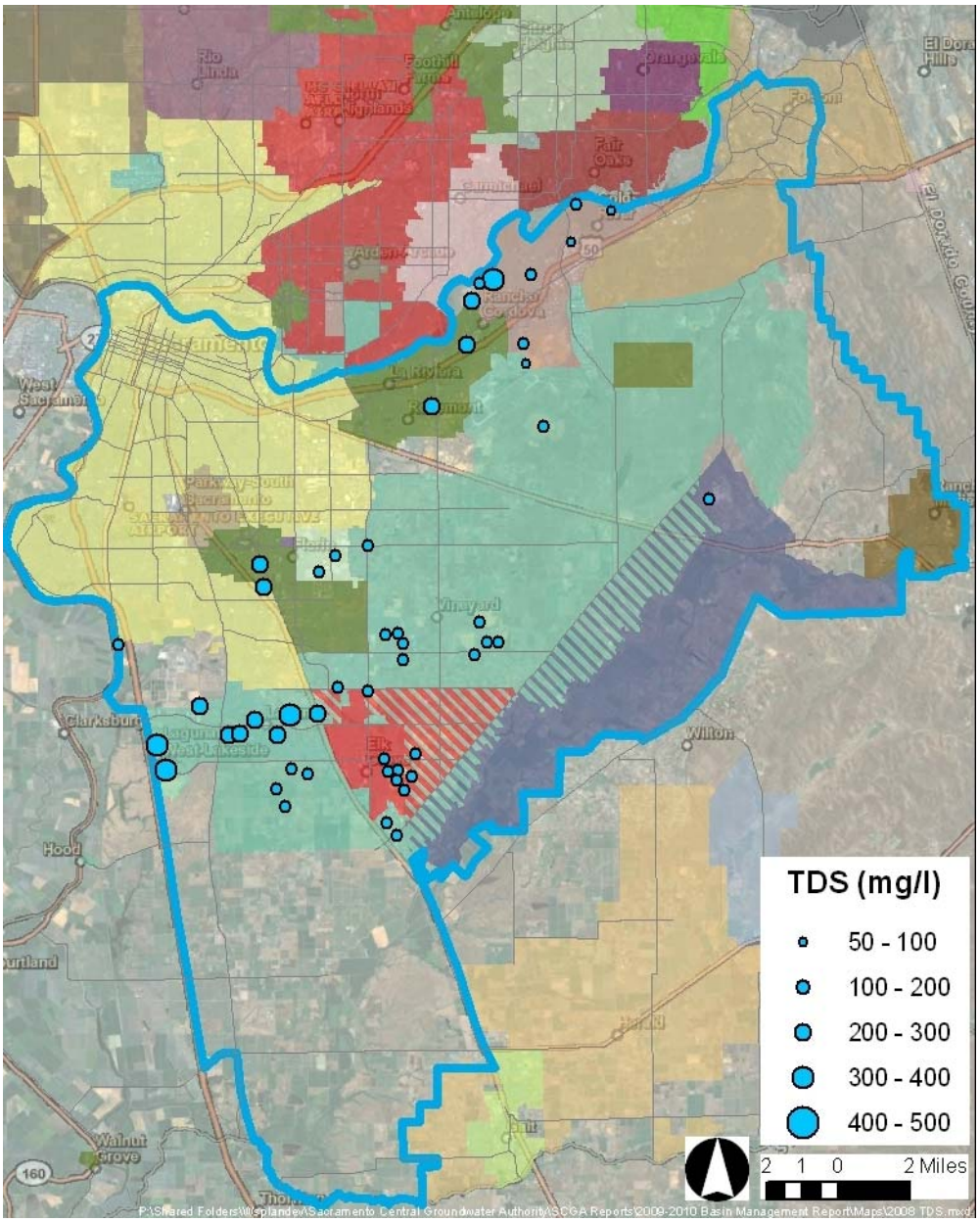



**Figure 11 TDS Concentration in Public Supply Wells in the Central Basin (2008)**

- ***Iron and Manganese***

Iron and manganese are naturally occurring elements in the earth's crust and are found in groundwater as a metallic ion. Iron and manganese are found in deeper municipal wells and treatment is required by the California Department of Public Health (DPH) when a new well is constructed. Both iron and manganese concentration is a secondary standard with an MCL of

300 microgram per liter (µg/L) and 50 µg/L, respectively. There are 14 municipal wells that have dissolved iron data for 2008. Iron concentrations in these wells range from 0 µg/L to 250 µg/L, see Figure 12. Data for manganese is available for 16 municipal wells for 2008. Manganese concentrations range from less than 0 µg/L to 500 µg/L. see Figure 13. Additional data is needed to better characterize the presence of iron and manganese throughout the Basin.

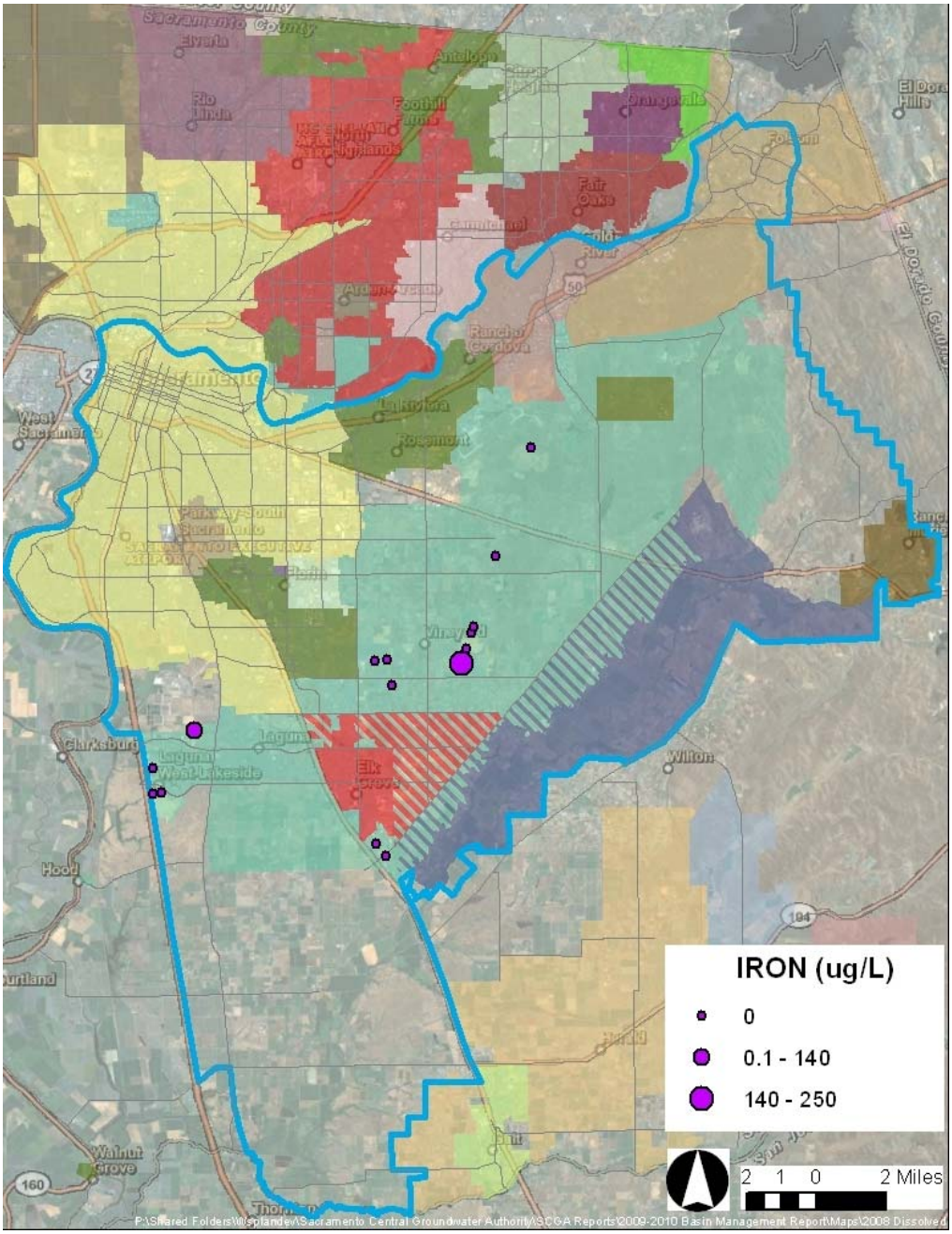



**Figure 12 Iron Concentration in Public Supply Wells in the Central Basin (2008)**

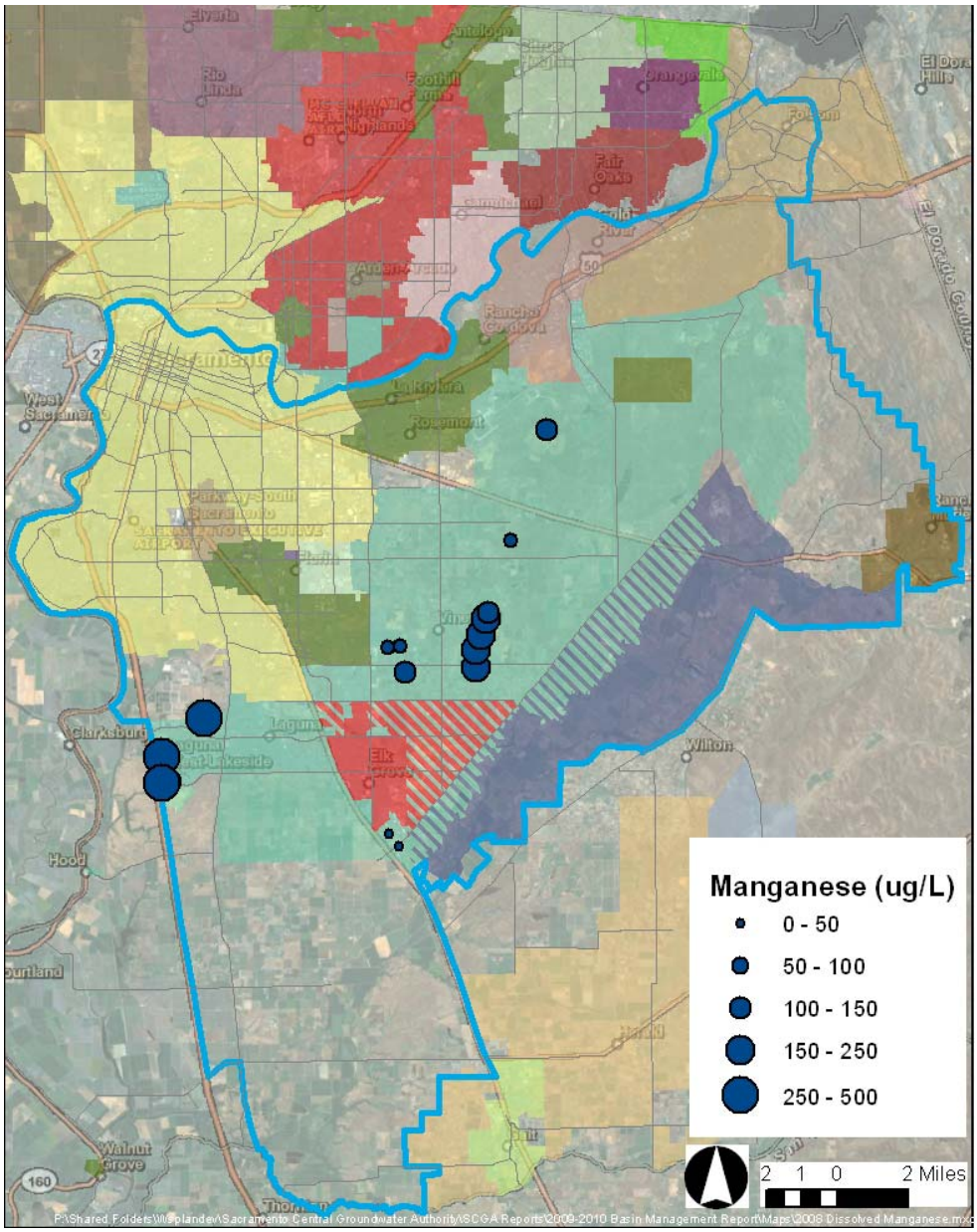



**Figure 13 Manganese Concentration in Public Supply Wells in the Central Basin (2008)**

- ***Arsenic***

Arsenic is a naturally occurring element in the earth's crust. In 2004, the U.S. Environmental Protection Agency (EPA) adopted a revised MCL for arsenic (10 µg/L), along with monitoring requirements, arsenic health effects language, and best available technologies for arsenic mitigation in public drinking water systems. DPH initiated implementation of the new federal requirements in January 2006. In general, elevated arsenic concentrations in the Sacramento region is not a significant problem. Figure 14 shows that most of the public water supply wells sampled in 2008 have arsenic concentrations below 10 µg/L. Several SCWA wells located west

of Highway 99 have been phased out of production because arsenic concentrations are higher than 10 µg/L. These have been shallower wells developed in the Laguna Formation.

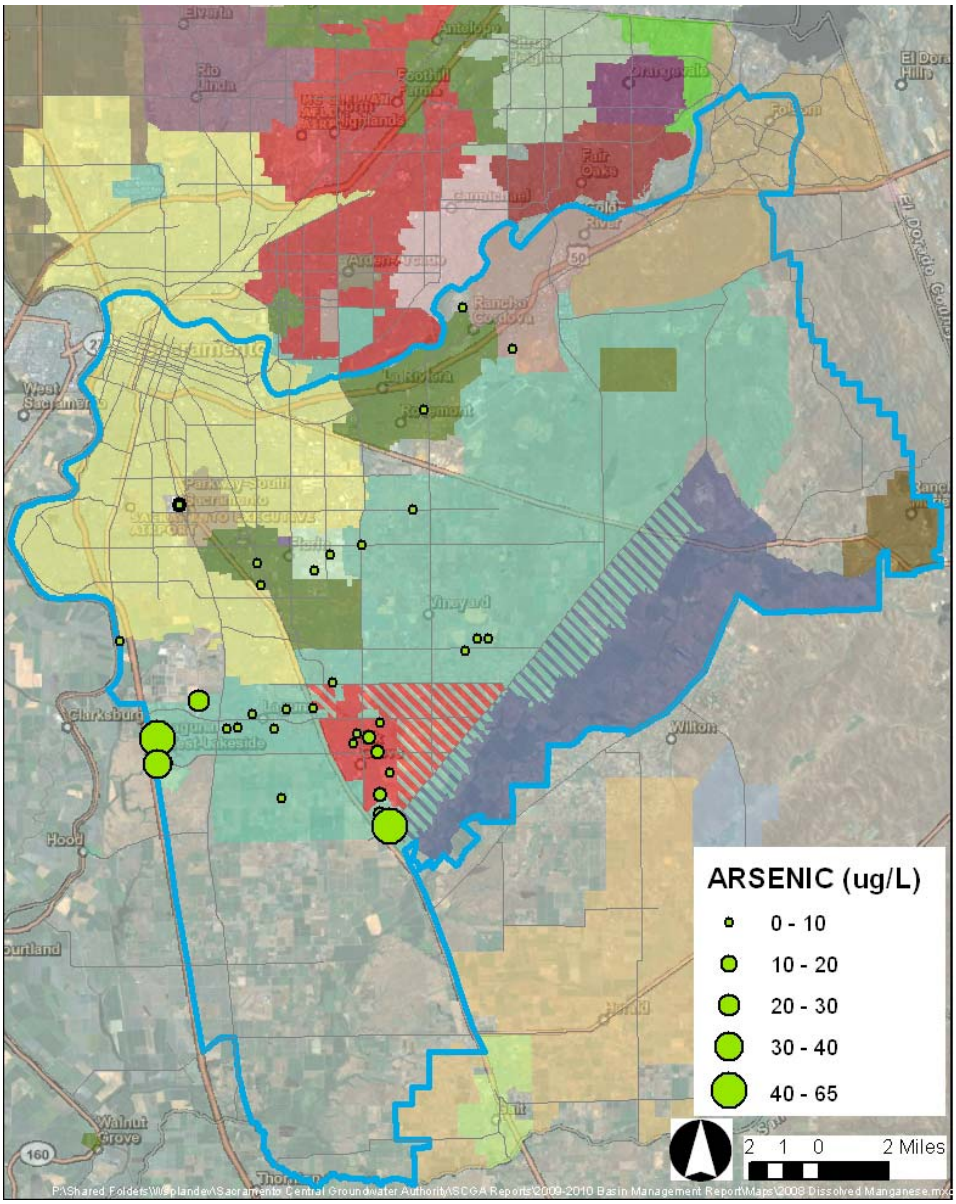



**Figure 14 Arsenic Concentration in Public Supply Wells in the Central Basin (2008)**

- ***Volatile Organic Compounds (VOC)***

Several sources of VOCs currently exist within the basin; these include old landfills, wrecking yards, military bases, and research and development facilities. Significant concern exists regarding the movement of these compounds from the vadose or unsaturated zone of the soil matrix to the saturated zone or aquifer. Once these compounds are mobilized in groundwater, their movement is influenced by many different factors; one of which could be management activities within the basin. The GMP identified the need to monitor VOC migration within the

basin for the protection of public and private wells. Groundwater quality data for numerous constituents that are grouped under the VOC category have been collected and stored in the HydroDMS. Constituents of primary concern include tetrachloroethylene (TCE), perchloroethylene (PCE), carbon tetrachloride, n-nitrosodiumethylamine (NDMA), and perchlorate. Any measurable trace of VOCs in a private or public well is considered significant and actions should be taken in accordance with programs identified in the GMP and by the regulatory agencies having jurisdiction in addressing the VOC contamination.

Within the reporting period there have been no reports of new sources of VOC contamination or of the migration of previously identified plumes. Data in the HydroDMS shows that the concentration of these constituents is either not detected or below the applicable MCL in municipal production wells in the Central Basin.

**Water Quality in Private Wells**

The Central Basin has many land use types, including agricultural-residential and agricultural. These areas typically utilize on-site sewage disposal systems and in the case of agricultural areas, apply fertilizer to crops. Both of these activities could cause nitrate to be introduced into the groundwater.

- ***Nitrate (NO3)***

During the development of the GMP the stakeholders expressed a concern regarding the possible presence of nitrate in groundwater, particularly in private wells. The use of on-site disposal systems and agricultural fertilizer application are two possible routes for nitrate to be introduced into groundwater. DPH has set a Primary Drinking Water MCL for nitrate at 45 mg/l for public water systems. This standard should also be considered for private wells that are used as a source of potable water. Figure 15 shows the nitrate concentration sampled in 2009 for public water supply wells in the Central Basin. While there are no instances where groundwater exceeds

the present standard, there are areas with elevated concentrations.

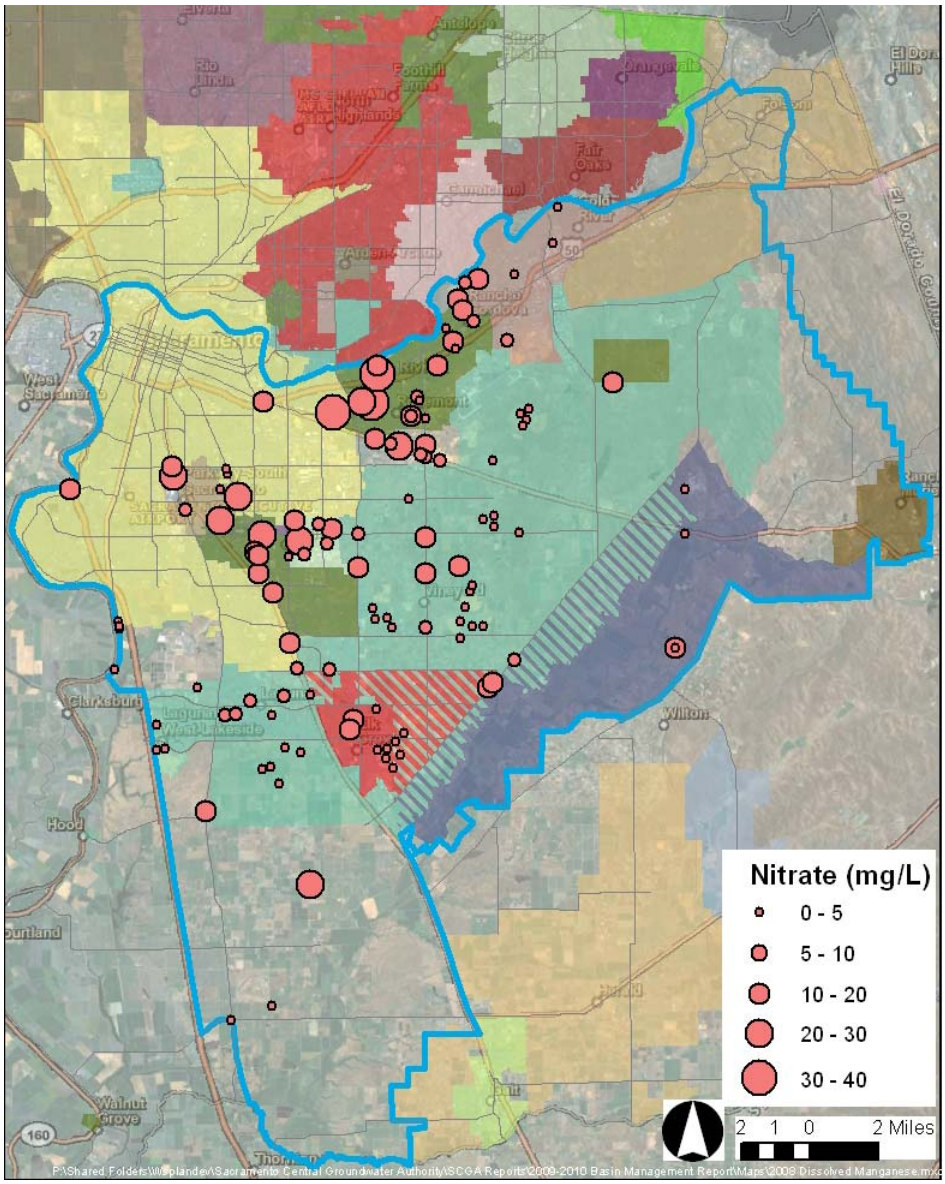



**Figure 15 Nitrate Concentration in Public Supply Wells in the Central Basin** (2009)

## Known "Principal" Contaminant Plumes

Principal groundwater contaminant plumes within or near the Central Basin are known to exist from source areas such as Mather Field, Aerojet, Boeing (the Inactive Rancho Cordova Test Site or IRCTS), the former Army Depot, the former Southern Pacific and Union Pacific rail yards, as well as various landfills. The plumes of primary concern are those involving historical activities at Mather Field, Aerojet/Boeing, and Keifer Landfill. These plumes are shown on Figure 16, based on best available data. The presence of contaminant plumes is of great concern to SCGA

members. To date, several municipal production wells have been removed from service because of groundwater contamination. Additionally, groundwater contamination impacts the availability of future groundwater supply and the basin's ability to fully develop conjunctive use programs.

On November 10, 2010, Alex MacDonald from the Regional Water Quality Control Board provided an update to the Board on Aerojet/Boeing's groundwater clean-up activities in the Central Basin. Mr. Mac Donald reported that Aerojet/Boeing's Groundwater Extraction and Treatment (GET) facilities currently have a maximum daily pumping capacity of 19,600 gpm with an ability to increase that amount to 22,000 gpm. To date 106 billion gallons of groundwater have been treated with an estimated 840,000 pounds of chemicals removed. Updates on remediation activities at Mather Field and the Keifer Landfill will be provided in 2011.

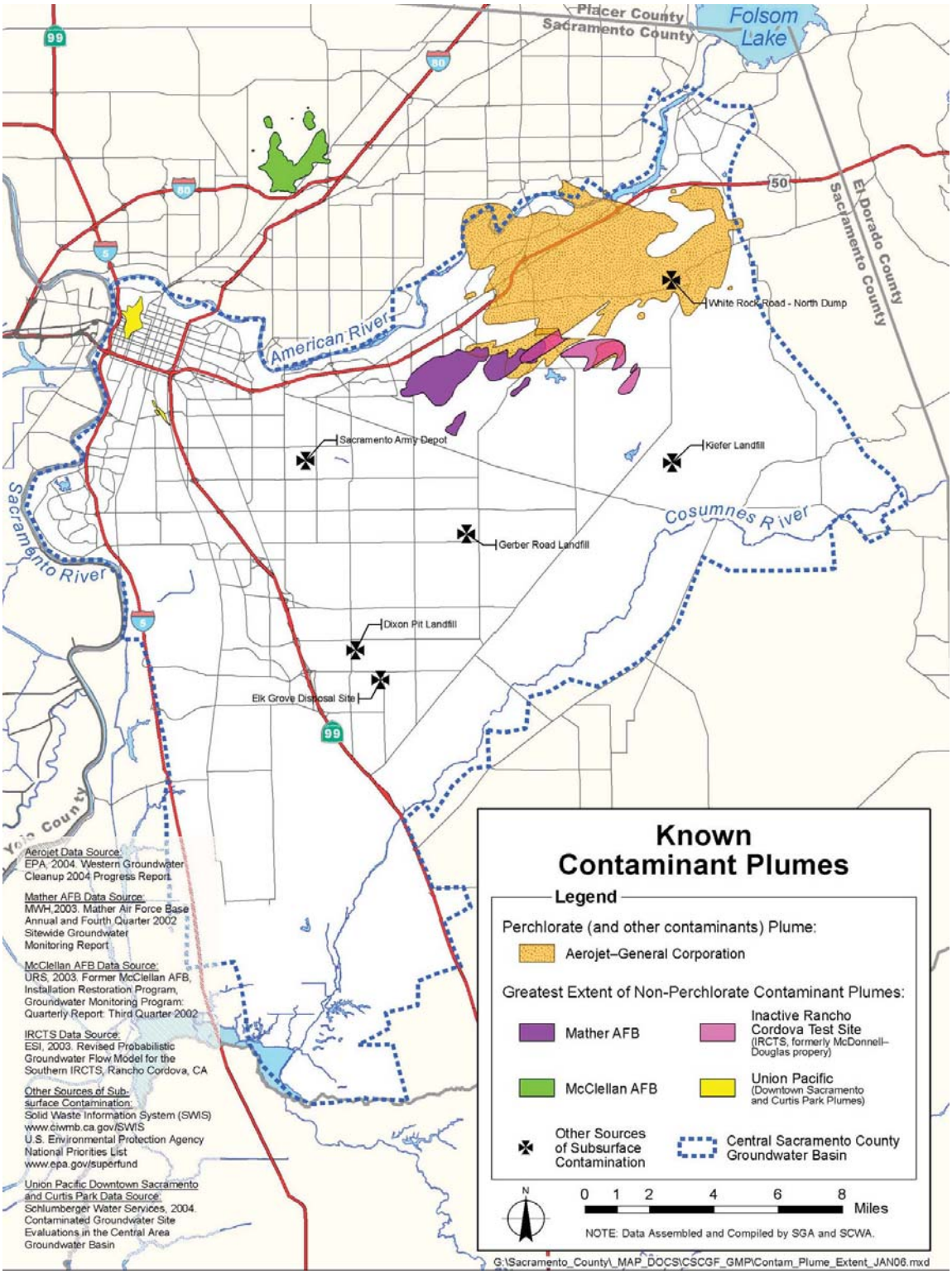



**Figure 16 Known Principal Contaminant Plumes in Central Basin and Vicinity**

# CHAPTER 3 BASIN MANAGEMENT ACTIVITIES

Basin management activities during 2009 and 2010 are described in three general categories. These include: implementation of the GMP; specific management activities that warrant more detailed discussion; and activities by other entities that are relevant to the Authority.

## IMPLEMENTATION OF THE CENTRAL BASIN GMP

The GMP identified 69 specific management actions for the groundwater basin. Significant progress has been made in implementing these actions. While many of the actions are considered on-going, there are many others that have been completed. Table A-2 in Appendix A provides a detailed status of each of the actions.

Several key management actions identified in the GMP warrant move detailed discussion. These actions are focused in the following areas: 1) Public Outreach, 2) Completion of HydroDMS, 3) Well Protection Plan, 4) Agricultural/Agriculture Residential Water Conservation, 5) Control of the Mitigation and Remediation of Contaminated Groundwater, and 6) CASGEM.

### 1) Public Outreach

The Authority has made significant progress in implementing their public outreach program. Activities include:

- On-going implementation of the Public Outreach Plan (POP) (see Table A-3, Appendix A**)**.
- Holding regular noticed Board meetings.
- Posting meeting agendas, notes, Board items, presentation slides, as well as other related information to the Authority's website (*www.scgah2o.org*).
- Continue to develop relationships with adjacent groundwater management entities, federal, state, and local regulatory agencies, and responsible parties for groundwater cleanup programs.
- Staff meets on a regular basis with the Sacramento Groundwater Authority (North Basin) and the South Area Water Council (South Basin).

### 2) Completion of HydroDMS

In 2010, the Authority completed work on the "Comprehensive Update of Sacramento Central Groundwater Authority's Data Management System". The updated Data Management System, or HydroDMS, will serve as a tool to assist the Authority in managing collected groundwater data and in assessing groundwater conditions in the Basin. The project was funded through a $249,964 grant (AB303 Local Groundwater Assistance grant) from the California Department of Water Resources (DWR).

The work performed for HydroDMS development included:

- Evaluation and interpretation of lithologic data;
- Acquisition, evaluation, and interpretation of groundwater quality data, groundwater pumping data, and groundwater elevation data;
- Update of the Data Management System;
- Development of interfaces and tools; and
- Reporting tools.

The HydroDMS meets a direct and immediate need to manage and evaluate collected groundwater data and will provide long-term benefits in the implementation of the BMO's found in the GMP. BMOs are specific, measurable criteria that can be scientifically collected and established. The success of BMO implementation requires defined, scientific monitoring upon which decisions can be made using the BMO "trigger points" defined in the GMP. The critical intermediary between data collection and decision-making is the HydroDMS, which provides a system for centralization and integration of water related data collected by partner agencies. It also provides an easily accessible website for technical people and decision-makers to access and perform analysis on the data. The HydroDMS saves time and money by avoiding multiple non-standardized data systems and increases trust and transparency in the system by making data easily available. The HydroDMS will also streamline reporting and coordination, including:

- Integration of data from other agencies for analysis purposes, and
- Preparing tables and figures for use in the biennial Basin Management Report.

Over the long-term, Basin management will benefit from better decision-making due to the availability of more data. Additionally, statewide and regional benefits will result from more available data allowing for better coordination on regional and/or statewide projects.

The project report entitled *Comprehensive Update of Sacramento Central Groundwater Authority's Data Management System – An AB303 Project Report* contains detailed descriptions of the HydroDMS functionality and data. Access to the interface and the data contained in the database are provided to the Authority, its various stakeholders, and DWR through access credentials to the online HydroDMS at http://hydrodms.wrime.com/scga

### 3) Well Protection Plan

As defined in the GMP, the Central Basin WPP is a program designed to protect private domestic and agricultural well owners from being damaged as a result of increased groundwater pumping necessary to support future growth in the Basin.

In accordance with the provisions of the JPA, the Authority began development of the WPP in November 2006. At the March 11, 2009 Board meeting a recommendation was made that work on the WPP be put on hold until the housing market turned around. The Board concurred with this recommendation and directed staff to complete work with Counsel on their comments regarding a model ordinance and the draft Nexus Study. At the September 9, 2009 meeting the Board directed staff to prepare a package for review and presentation to the land use agencies to adopt the WPP ordinance based on an agreed upon trigger. In January 2010 the Board directed the representatives of the signatories to the JPA to consult with their staff, management, and governing bodies regarding the WPP and the Review and Authorization to Proceed package and take the necessary steps to adopt a resolution that commits them to a process of developing a WPP in coordination with the Authority. In conjunction with this effort, the Executive Director and Chair of the Authority Board met with the Building Industry Association (BIA) on May 25, 2010 to discuss establishment of a well protection fee that would be charged with the issuance of a building permit for new construction. During this meeting the BIA acknowledged their previous support for this fee but indicated that they could not support it at this time given the condition of the real estate market. Table A-1 in Appendix A documents major activities and Board actions associated with this process. A more complete description of these activities/actions can be found in the corresponding monthly Board meeting minutes posted on the Authority's website at www.scgah2o.org.

Because of the significant challenges associated with establishing a well protection fee during the current housing market downturn, the Board decided at their January 12, 2011 meeting to postpone work on the WPP "until such time as it is practical to proceed."

### 4) Agricultural/Agriculture Residential Water Conservation

To ensure long-term viability of the Basin's groundwater supply, the Authority proactively seeks ways to maintain its long-term sustainable yield of 273,000 AF/year. One measure is through water demand reduction. The Authority's GMP documents a number of action items to explore ways to reduce water demands in the basin. Section 3.2.4.1 of the GMP, Demand Reduction, states, "The basin governance body shall develop BMPs for self-served agricultural and agricultural-residential water users."

A sub-committee was established on September 8, 2010 to study, evaluate, and make recommendations to the Board on appropriate water conservation best management practices for agricultural and agricultural-residential water users and to determine how to best to inform those who would benefit from these BMPs. The sub-committee held its first meeting on December 17, 2010 to brainstorm and review ideas and strategies for the BMPs. This effort is ongoing and final recommendations will be made in the future.

## 5) Control of the Mitigation and Remediation of Contaminated Groundwater

Major sources of contamination identified within the Central Basin are Mather Field, Aerojet/Boeing, and the Keifer Landfill. Other sites of interest include the former Sacramento County Army Depot, Gerber Road Landfill (inactive), Dixon Pit Landfill (inactive), and the Elk Grove Disposal Site (inactive). The extent of the groundwater contaminant plumes emanating from Mather Field and Aerojet/Boeing are shown in Figure 16. While the Authority does not have the power or responsibility for remediation of contaminated groundwater, it is committed to coordinating with responsible parties and regulatory agencies to stay informed on the status and disposition of known contamination as well as planned and on-going remediation activities.

- **Coordination with responsible parties and regulatory agencies**

Various responsible parties and regulatory agencies for groundwater cleanup efforts in the basin were invited to SCGA regular meetings to update on their respective cleanup activities.

On November 10, 2010, Alex MacDonald (RWQCB staff) provided an update on groundwater remediation efforts at the Aerojet/Boeing site. The presentation consisted of a historical review, description of contaminant type, location and movement of contaminants, and current remediation efforts. According to Mr. MacDonald, the maximum daily pumping capacity of all remediation facilities is currently 19,600 gallons per minute, with an estimate of 22,000 gpm planned for the future. Approximately 106 billion gallons of groundwater have been treated to date with an estimated 150 pounds of chemicals removed per day for a total 840,000 pounds over the current life of the project.

The Authority plans on updates from representatives of Sacramento County's Department of Waste Management and Recycling (Keifer Landfill) and the US Air Force (Mather Field) on their individual remediation efforts in 2011.

- **Regional Groundwater Contamination Particle Tracking Modeling**

In September 2010 the Authority joined with SGA in an effort to examine the effectiveness of remediation activities in the region. The original study was initiated by SGA in 2008 and was funded through a Local Groundwater Assistance (LGA) grant authorized by State DWR

To accomplish this task, a modeling simulation will be performed using the Sacramento Area Integrated Water Resource Model (SacIRWM), formerly known as the SacIGSM. Because of the nature of the model, the simulation will not attempt to characterize contaminant transport of known plumes; rather, it provides a conservative estimate as to the potential pathway of contaminant particles under current and future planned pumping patterns in the aquifer system over a long period of time. The simulation will not take into consideration the

effects of dilution, dispersion, or soil absorption. Additionally, the simulation does not consider future potential modifications to remediation efforts that may be required in the event the present system is deemed ineffective.

The findings of this analysis will be provided in the 2011-2012 Biennial Report.

### 6) CASGEM

On November 4, 2009 the State Legislature amended the Water Code with SBx7-6, which mandates a statewide groundwater elevation monitoring program to track seasonal and long-term trends in groundwater elevations in California's groundwater basins. To achieve that goal, the amendment requires collaboration between local monitoring entities and State DWR to collect and report groundwater elevation data.

In accordance with this legislation, DWR developed the California Statewide Groundwater Elevation Monitoring (CASGEM) program. The intent of the CASGEM program is to establish a permanent, locally-managed program of regular and systematic monitoring in all of California's alluvial groundwater basins. The CASGEM program will rely and build on the many, established local long-term groundwater monitoring and management programs. DWR's role is to coordinate the CASGEM program, to work cooperatively with local entities, and to maintain the collected elevation data in a readily and widely available public database. DWR will also continue to monitor its current network of groundwater monitoring as funding allows.

In December 2010 the Authority notified DWR of its intent to be the groundwater monitoring entity for the Central Basin.

# CHAPTER 4 CONCLUSIONS AND RECOMMENDATIONS

This section summarizes the state of the basin and provides recommendations for basin management activities for the 2011/2012 reporting period.

## CONCLUSIONS

Average groundwater pumping (including pumping for groundwater remediation) over the last five years was approximately 259,900 acre-feet per year (see Table 4). This average is below the Basin's long term sustainable yield of 273,000 acre-feet/year; measurement of this average is consistent with the Monitoring Action identified for BMO No.1 as described in Table 4-1 of the GMP.

The completion of the HydroDMS update project is an important step for the Authority in developing a useful tool for groundwater basin management. The HydroDMS provides the

necessary data and modules to better evaluate and report basin conditions, and to ensure the implementation of the GMP. Further enhancement of the Hydro DMS will include features that will enable the Authority to implement the Monitoring Action for BMO No.2.

Based on data collected, groundwater quality in the Basin is good and suitable for public water supply needs. In accordance with the Groundwater Contamination Monitoring and Collaboration Program (Section 4.4), the Authority has taken a proactive approach to improve and protect the basin's groundwater quality by working with appropriate regulatory agencies and responsible parties. The Authority plans to continue developing this working relationship to ensure groundwater water quality is maintained or improved by their groundwater clean-up activities.

During the reporting period, the Authority worked through several technical, political, and potential legal issues related to the development of the Central Basin WPP. A solid foundation has been laid and a strategy developed that should guarantee the success of the program should the housing market improve sufficiently to warrant implementation.

## RECOMMENDATIONS

During 2011/2012 the Authority will review and prioritize activities related to the various action items described in the GMP. The Authority will also continue to seek funding opportunities for projects, including projects which may be incorporated into the American River Basin Integrated Regional Water Management Plan (ARB IRWMP). On-going/potential projects include:

- **Develop a water accounting framework**. Several preliminary discussions have occurred amongst interested parties regarding the prospects of groundwater banking in the Central Basin. These include the Sacramento County Water Agency, the City of Folsom, and the East Bay Municipal Utility District. While these discussions are no guarantee that these agencies will move forward with a groundwater banking proposal in the near future it is in the best interest of the Authority to begin investigating how groundwater banking could be accommodated in the Basin. Ultimately, groundwater banking would require the development of a water accounting framework. As discussed at previous Board meetings, a water accounting framework is used to not only track the volume of stored groundwater but can also be used to track changes in the volume of groundwater stored, estimated volumes of basin losses and rejected recharge, the volume of groundwater recovered, and the volume of surface water forbearance. The framework will be used to manage the use of groundwater in the basin to further facilitate implementation of conjunctive use programs in the basin. SGA has completed work on a water accounting framework for the North Basin and has adopted and implemented the program. As the Authority moves with their own program, SGA's

activities and experience will be used as a guide in developing a program that is tailored specifically to the Central Basin.

- **Measuring and Monitoring Program.** The GMP discusses the need to expand groundwater monitoring efforts in the basin. To achieve this goal, the Authority will need to examine existing monitoring programs and determine how these programs can be folded into a broader more comprehensive measuring and monitoring program for the Basin. If necessary, expanding the measuring and monitoring program would include the identification and/or installation of additional monitoring wells in strategic locations throughout the Central Basin. This process will be supported by the updated HydroDMS.

- **Maintain and Update HydroDMS.** The Authority's HydroDMS is an integral component in managing the groundwater basin. Regular updates of the data files are critical to maintaining the viability of the HydroDMS. As the Authority relies on the water purveyor stakeholders to provide much of this data it is important that this information be provided in a timely manner in order to continue to maintain the Hydro DMS at a high level of reliability and credibility. Future enhancements to the HydroDMS identified at the November 10, 2010 Board meeting include: SBX7 6 tools, BMO threshold development, well log images, reconciliation of overlap areas (SCGA/SGA boundaries), surface water data, and climatological data. Additionally, regular maintenance issues include: on-going user support, hosting, and software updates..

- **Update the GMP.** The current version of the GMP represents a critical first step in establishing a framework for maintaining a sustainable groundwater resource and represents a starting point for overall basin management. As more information about the basin is acquired and as groundwater demands and/or basin operations change, there will be a need to revise and update the GMP. Staff will closely monitor activities that may necessitate an amendment or update to the GMP.

- **Sacramento Area Integrated Water Resource Model (SacIRWM) Hydrologic Model.** The SacIRWM model has been widely used in the region for water supply planning and groundwater impact analysis. Several discussions have occurred over the reporting period as to whether the SacIRWM is the best tool for these applications while others believe that it will continue to be a useful tool in evaluating basin behavior/response for potential groundwater banking/conjunctive use projects. Given these questions and the investment the region has made in the SacIRWM tool, it would be necessary to complete a comprehensive evaluation of the applicability and strengths of other tools before initiating any change. Whatever decision is made relative to a regional modeling tool, the issue of long term maintenance of that tool still remains. As has been proposed previously, in order to ensure the viability of the model the various regional water entities (RWA, SAWC, SCGA, and

SGA) and other interested parties will need to establish ownership of the model, establish a means for its continued usefulness into the future, and determine access criteria.

- **SCGA Contaminant Committee.** The goals of the Contaminant Committee are to 1) raise the level of awareness of the regulatory agencies to the Authority's concerns; 2) insist that the responsible parties fully delineate and contain all contaminant plumes; 3) ensure that the responsible parties expeditiously proceed with cleanup efforts and develop a plan for alternative water supplies in advance of contamination being detected in public water supply wells.

- **Agricultural-Residential Water Conservation.** The sub-committee will continue to study, evaluate, and make recommendations to the Board on appropriate water conservation BMPs for agricultural and agricultural-residential water users and to determine how to best to inform those who would benefit from these BMPs.

# APPENDIX A

## Basin Management Activities

## Table A-1 Chronology of Basin Management Activities Related to the Well Protection Plan

| Date | Actions |
|---|---|
| November 2006 | In accordance with the JPA, Staff provides a Draft WPP Ordinance to the Board. |
| December 2006 | The Draft WPP Ordinance was submitted to the signatories for review and comment. |
| January 2007 | Staff met with the City of Elk Grove regarding concerns over the financial administration and fee collection components of the WPP and program. |
| February 2007 | Staff met with a community interest group at the request of Don Nottoli to discuss provisions of the WPP. |
| March 2007 | A WPP workshop was held to discuss the City of Elk Grove's concerns with the Draft WPP ordinance. |
| June 2007 | The Board discussed a draft schedule for completion of the ordinance, agreements with land use agencies, and well registration process. |
| July 2007 | • Staff continued to work with the Cities and County to identify and address areas of concern regarding the WPP.<br>• Staff conducted parcel data analysis. |
| September 2007 | • Specific concerns of the Cities of Elk Grove and Rancho Cordova are discussed with Board, (i.e., acceptance of fee by BIA, fee nexus, and fee collection.<br>• Staff refined the parcel data analysis. |
| October 2007 | Continued work on Board member issues and concerns. |
| December 2007 | • Counsel recommends adoption of the WPP ordinance by the Authority and collection of the fee by the land use agencies.<br>• Staff proposed to conduct a refined groundwater impact study to delineate the parcels that potentially could be impacted.<br>• WPP Subcommittee was formed to assist staff in developing the WPP ordinance.<br>• WPP subcommittee met for the first time to discuss the development of the WPP: Trust fund shortfall language, costs, procedure for accounting for fee collection, nexus report, area of application, meeting with BIA, and ordinance adoption process. |
| January 2008 | • Developed a work plan for the completion the WPP.<br>• WPP workshop – Purpose and Definitions |
| February 2008 | • WPP workshop – Trust Fund, Well Protection Fee, and Sunset Provision, as well as requirements for fee exemption. |
| March 2008 | • WPP workshop – Eligibility and Benefits.<br>• WRIME completed a draft Refined Groundwater Impact Analysis. |
| April 2008 | • WPP workshop – well protection fee estimate<br>• The Board accepts the findings of the Refined Groundwater Impact Analysis by WRIME. |
| May 2008 | • WPP workshop – Qualifications.<br>• Staff revised the well protection fee estimate based on Board comments.<br>• Discussed the relationship between the Central Basin WPP and the North Vineyard WPP. |

| | |
|---|---|
| July 2008 | • Draft SCGA Ordinance sent to Counsel for review.<br>• The Board decided to keep the Central WPP and the North Vineyard WPP as two separate programs.<br>• Draft maps of the fee and benefit areas were developed based on the Refined Groundwater Impact Analysis. |
| August 2008 | • Counsel raises possibility of Prop 218 with ordinance adopted by the Authority because of the connection between the well protection fee and property.<br>• Met with County staff to discuss general requirements for setting up a fee collection mechanism in the unincorporated area.<br>• Staff met with County's EMD staff to discuss collection of the well protection fee with issuance of a well drilling permit. EMD staff indicated that there is no mechanism to collect the fee. |
| September 2008 | • The Board discussed Counsel's comments regarding the applicability of Prop 218.<br>• Conducted a data analysis on the number of domestic/ag wells in the past 10 years. Based on these findings, the Well Protection Subcommittee recommended that collecting a well impact fee on new well drilling be dropped.<br>• The Board discussed the appeal process for wells outside of the benefit area. |
| October 2008 | • Board provided a copy of Counsel's opinion on how Prop 218 relates to the proposed WPP ordinance. |
| December 2008 | • Board discussed Counsel's opinion and the alternatives to pursue to move the WPP forward.<br>• Based on Counsel's opinion and the aforementioned discussion, the Board decided that the land use agencies would adopt an ordinance and collect the fee. The fee would then be transferred to SCGA's trust fund for the implementation of the WPP. |
| February 2009 | • Based on and December 2008 direction from the Board staff drafted a document containing general provisions that the land use agencies could use to draft their individual ordinances. The Board directed staff to send this draft document to County Counsel for review along with the draft nexus study.<br>• The Board discussed and then decided to put the WPP on the "back burner" given the state of the economy. In the mean time, staff was directed to continue to work with County Counsel and the land use agencies on the draft ordinance and draft nexus study. |
| March 2009 | • Staff continued to work with County Counsel to finalize the draft ordinance and draft nexus study prior to submitting the documents to the land use agencies for their consideration. |
| May 2009 | • The draft ordinance and the draft nexus study documents were complete and forwarded to the land use agencies' for their consideration. |
| September 2009 | • The Board expressed concern that if the housing market downturn lasted too long, the land use agencies might not be willing to move forward in adopting the WPP. The Board felt that it was important to get a commitment from the land use agencies to adopt the WPP ordinance and collect the fee once housing market improved.<br>• The Board directed staff to prepare a package for review and presentation to the land use agencies to secure their commitment to adopt the WPP ordinance based on an agreed trigger. |
| November 2009 | • Staff provided a draft copy of the Review and Authorization to Proceed (RAP) document developed to secure a commitment from the land use agencies for adoption of the WPP.<br>• The Board determined that the trigger point to implement the WPP (land use agencies to adopt each respective ordinance for the WPP) be set at 800 building permits issued within the Central Basin in a year. |
| January 2010 | • The Board directed representatives of the signatories to the JPA to consult with their staff, management, and governing bodies regarding the WPP and the RAP package and take the necessary steps to adopt a resolution that |

| | |
|---|---|
| | commits them to a process of developing a WPP, in coordination with the Authority, within their jurisdictional boundary. It was recommended that the resolution process be completed by June 30, 2010. |
| May 2010 | • Staff met with the BIA to discuss progress on development of the WPP and the associated fee on building permits. |
| September 2010 | • Staff reported to the Board that the BIA had indicated that they would oppose the imposition of any new fee on new construction stating that both the current and future real estate market would be significantly impacted. Furthermore, the BIA representative indicated that there would be a whole different approach to fees going forward. At the conclusion of the meeting it did not appear there was any reasonable means for funding the WPP.<br>• Based on the BIA's comments and the land use agencies position that they would not increase fees without support from the BIA, staff recommended to the Board shelve work on the WPP until such a time as it is practical to proceed.<br>• The Board carried a motion to delay a decision regarding the status of the WPP pending a staff report on ground water levels adjacent to the Cosumnes River. |
| November 2010 | • Staff continued to collect information based on the Board's direction in the previous meeting to provide a thorough staff report. |

## Table A-2 Basin Management Activities Related to Program Component Action Items

| Description of Action | Status | Comments |
|---|---|---|
| **COMPONENT NO. 1: STAKEHOLDER INVOLVEMENT** | | |
| ***1. Involving the Public*** | | |
| I. Continue efforts to encourage public participation in the implementation process as opportunities arise. | On-going | Notification of upcoming Board meetings and committee meetings are posted at each of the member agencies and in some cases on their website. These notifications are also posted on SCGA's website. |
| II. Provide public notice and public comment periods on formal revisions to the GMP | On-going | The Authority has not encountered any issues that require revision to the current GMP. To date, the most effective way to notify the public has been through regular Board meetings and the Authority's website. The Authority's website includes a regularly updated announcement section on the main page where Board agendas, minutes, and items of interest can be viewed and downloaded. |
| III. Develop a Public Outreach Plan (POP) and periodically review the POP and take actions as appropriate while implementing the GMP | On-going | Staff developed a POP and presented it to the Board in May 2007, see **Table A-3**. Staff has reviewed the POP and taken actions as appropriate. |
| IV. Provide briefings to the Water Forum Successor Effort on the GMP implementation process | On-going | Authority staff is available to provide briefings upon request. |
| V. Maximize outreach on the GMP | On-going | The GMP and Board meeting minutes are posted on the Authority's website www.scgah2o.org. The GMP is also posted on the Water Forum's website www.waterforum.org. |
| ***2. Involving Other Agencies within and Adjacent to the Central Basin*** | | |
| I. Maintain a high level of involvement by stakeholders in implementing the GMP | On-going | Authority staff participates in regular meetings of the SGA and SAWC. |
| II. Provide copies of the adopted GMP and subsequent annual report to representatives of SGA, SSCAWA, TNC, San Joaquin County, and Water Forum Successor Effort, as needed | On-going | Copies of the GMP and biennial report were sent to the mentioned agencies and is accessible online at http://www.scgah2o.org. |
| III. Meet with representatives from the SGA, SSCAWA, TNC, and the Water Forum Successor Effort | On-going | Periodically attend meetings of the SGA, SAWC, and the Water Forum Successor Effort. Meet with TNC staff on an as needed basis. |
| IV. Coordinate meetings outside SCGA with agricultural and agricultural-residential self-supplied pumpers within the basin. | On-going | Authority staff in accordance with the POP and in conjunction with direction from the Board will coordinate meetings with agricultural and agricultural-residential self supplied pumpers to inform them of the management responsibilities and activities relative to the groundwater management plan. An agricultural and agricultural residential water conservation sub-committee was |

| | | |
|---|---|---|
| | | established on September 8, 2010 to study, evaluate, and make recommendations on appropriate water conservation best management practices for agricultural and agricultural-residential water users. |
| V. Coordinate meetings with commercial/industrial self-supplied pumpers within the basin to inform them of the management responsibilities and activities relative to the basin | Deferred | At this time, there is no representative for this group on the Board. Authority staff in accordance with the POP and in conjunction with direction from the Board will coordinate meetings with commercial/industrial self supplied pumpers to inform them of the management responsibilities and activities relative to the groundwater management plan. |
| VI. Coordinate GMP activities and work to the extent applicable with adjacent groundwater management entities, water interest groups, and state and federal regulatory agencies that have jurisdiction in areas related to the GMP activities | On-going | • The Authority continues to coordinate with EBMUD, SCWA, the City of Folsom, and private property owners in identifying/evaluating potential groundwater recharge opportunities in the Central Basin.<br>• The Authority invited RWQCB staff to provide an update on progress of their groundwater cleanup effort. |
| ***3. Using Advisory Committees*** | | |
| I. Following adoption of the GMP, the basin government body will discuss the continuation and composition of advisory committees that will provide guidance in the implementation of the GMP | Deferred | The Board has indicated a need to have an open discussion on the use and responsibility of advisory committees. No time has been set for this discussion. |
| ***4. Developing Relationship with Local, State and Federal Agencies*** | | |
| I. Continue to develop working relationship with local, state, and federal regulatory agencies. | On-going | • The Authority will continue to work with local agencies such as EMD on issues related to well drilling and well abandonment in the Basin and with Sacramento County Waste Management and Recycling on groundwater cleanup efforts at Kiefer Landfill.<br>• The Authority has worked with State DWR to complete the HydroDMS project. Staff will continue to develop a working relationship with State DWR regarding CASGEM and in pursuing any future grant opportunities.<br>• The Authority will continue to work with the RWQCB and the Air Force on issues related to groundwater contamination at both Aerojet and Mather Field. |
| ***5. Pursuing Partnership Opportunities*** | | |
| I. Continue to promote partnerships that accomplish both local supply reliability and broader regional and statewide benefits. | On-going | Authority staff will promote partnerships that accomplish both local water supply reliability and broader regional and statewide benefits. For example, groundwater recharge, recycled water use, etc. . An example of this is the Authority's support of and participation in the Sacramento Water Recycling Coalition. |
| II. Continue to track grant opportunities to fund groundwater management activities and local water infrastructure projects. | On-going | • The Authority was awarded $250k AB303 grant in October 2008 to update the HydroDMS.<br>• The DWR is to release the proposal for the next round of AB303 grant application in early 2012. |

| COPONENT NO. 2: MONITORING PROGRAM | | |
|---|---|---|
| ***1. Groundwater Elevation Monitoring*** | | |
| I. Register to act as the reporting entity for the Central Basin in CASGEM | Complete | The Authority notified the State DWR in late 2010 that the Authority will act as the reporting entity for the Central Basin in CASGEM. |
| II. Prepare a groundwater elevation monitoring plan for CASGEM | On-going | The Authority is preparing a groundwater elevation monitoring plan as a requirement of CASGEM. The plan is anticipated to be submitted to DWR in late 2011. |
| III. Coordinate with DWR, SCWA, SGA to select monitoring wells to establish a long-term network for SCGA | On-going | The monitoring network will ultimately be part of the Authority's monitoring plan. |
| IV. Consider ways to fill gaps in the monitoring well network by identifying existing wells or identifying opportunities for constructing new monitoring wells. | On-going | • Coordinate with local water supply purveyors to convert abandoned municipal wells into groundwater monitoring wells for the Authority.<br>• Coordinate with USGS, SMUD to incorporate some of their wells into the Authority's monitoring network.<br>• Identify the need to construct new monitoring wells. |
| V. Assess annually groundwater elevation trends and conditions based on the monitoring well network | On-going | In conjunction with Biennial Basin Management Report, the HydroDMS will provide a tool for making this assessment. |
| VI. Assess annually the adequacy of the groundwater elevation monitoring network | On-going | In conjunction with Biennial Basin Management Report, the HydroDMS will provide a tool for making this assessment. |
| VII. Identify a subset of monitoring wells that will be monitored more frequently than twice annually to improve understanding of aquifer responses to pumping throughout the year | On-going | In conjunction with Biennial Basin Management Report, the HydroDMS will provide a tool for making this assessment. |
| ***2. Groundwater Quality Monitoring*** | | |
| I. Coordinate with cooperating agencies to verify that uniform protocols are used when collecting water quality data. | Complete | Each of the member agencies follow DPH protocols in the collection of water quality data. The primary source for water quality data in the HydroDMS is the California DPH database. |
| II. Coordinate with USGS to obtain historic water quality data for NAWQA wells, determine timing and frequency for monitoring under USGS program, and discuss the potential for integrating USGS monitoring resources with other portion of the Central Basin monitoring network | Complete | During the development of the HydroDMS water quality data from USGS NAWQA wells was collected, with 42 such wells identified. However, water quality data from these wells were not included in the HydroDMS because they lacked well identifiers that could be used to relate the wells to other wells in the HydroDMS. Additionally, the water quality constituent characteristics tables for each of these wells were in a different format than the DPH database, making it infeasible to combine the two databases in to one unified metadata table. |

| | | |
|---|---|---|
| III. 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 for those wells. | Complete | Water quality data from local water purveyors, primarily SCWA, was collected during the development of the HydroDMS. However, this data was found to be identical to the data provided from the DPH database. |
| IV. Assess annually the adequacy of the groundwater quality monitoring well network | On-going | To be assessed through the preparation of future Basin Management Reports. |
| V. Coordinate with DWR on the groundwater quality data they collect | Complete | In the development of the HydroDMS water quality data was collected from DWR's Water Data Library Water Quality Data Reports, which included 52 wells. However, water quality data from these wells was not included in the HydroDMS because they lacked well identifiers that could be used to relate the wells to other wells in the HydroDMS. Additionally, the water quality constituent characteristics tables for each of these wells were in a different format than the DPH database, making it infeasible to combine the two databases in to one unified metadata table. |
| **3. *Land Surface Elevation Monitoring*** | | |
| I. Coordinate with SGA to obtain pertinent information of well surveying in Sacramento Suburban Water District, which were last measured in 1991. | On-going | Sacramento Suburban Water District was awarded an AB303 grant to conduct additional surveying of these and other locations in 2006. Staff obtained the final project report from the DWR's website, but no well surveying information was found. Staff will continue to coordinate with SGA to obtain this information. |
| II. Coordinate with USGS to ascertain the suitability of the use of Interferometric Synthetic Aperture Radar (InSAR) images of the Central Basin and the surrounding area. If the technology appears suitable, identify the costs of determining ground surface elevations and identify potential cost sharing partners. | Deferred | Survey data from benchmarks in Arden Arcade area indicate that subsidence is not a significant concern at this time. Additionally, the uncertainties associated with InSAR in rapidly growing urban and agricultural areas makes this a low priority at this time |
| III. Coordinate with other agencies, particularly the City and County of Sacramento and the NGS to determine if there are other suitable benchmark locations exist in the area to aid in analysis of potential land surface subsidence. | Deferred | Surveys data from benchmarks in Arden Arcade area indicate that subsidence is not a significant concern at this time. Because of limited staff time this task is being deferred. |
| **4. *Surface Water Groundwater Interaction Monitoring*** | | |
| I. Work cooperatively with SGA, TNC, OHWD, and the Sacramento Valley Conservancy to compile available stream gage data and information on tributary inflows and diversions from the American, Cosumnes, and Sacramento rivers to quantify net groundwater recharge or discharge between gages in the Central Basin area. | On-going | A memorandum report on available data on the American River was prepared for SGA by MWH on September 22, 2004, which included a summary of known inputs and outputs to the stream budget of the American River. Authority staff will request the memorandum from SGA. No progress was made in this reporting period.<br><br>SCWA contracted with WRIME to update the Sacramento County IGSM model in 2008. The model should provide additional data on potential recharge in the |

| | | |
|---|---|---|
| | | Central Basin. This project was completed. |
| II. Coordinate with local, state, and federal agencies to identify available surface water quality data from the American, Cosumnes, and Sacramento rivers proximate to the Central Basin area.<br><br>Ensure that surface water flows in other natural and restored streams in the area are not adversely impacted as a result of implementation of the CSCGMP. | On-going | The Sacramento Coordinated Water Quality Management Program completes an annual monitoring report including water quality and flow data at several locations along the American and Sacramento rivers. The report can be downloaded from http://www.sacriver.org/aboutwatershed/reportcard. Authority staff will continue to research to find out if there is any available data for the Cosumnes River. The latest available data can be found on the following website: http://watershed.ucdavis.edu/research/cosumnes.html |
| III. Correlate groundwater level data from wells in the vicinity of river stage data to further establish whether the river and groundwater are in direct hydraulic connection, and if surface water is gaining or losing at those points. | On-going | In late 2003, the State Board considered stream aquifer interaction along the American River as part of a fully appropriated stream hearing. Consultant studies associated with the report indicate that the American River is a losing stream along nearly its entirety below Nimbus Dam and that the river is substantially disconnected from the groundwater basin. Because of the availability of this data, no studies of the American River are planned at this time. The focus will be to identify and review any data available for the Cosumnes and Sacramento Rivers. |
| IV. 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 American, Cosumnes, and Sacramento rivers. | On-going | As mentioned above, the result of the fully appropriated stream hearing on the American River in 2003 has made this item a low priority for the American River. Identify and review any data available for the Cosumnes and Sacramento Rivers. |
| V. Coordinate with SGA, to analyze data obtained from recently constructed monitoring wells on the CSUS campus to better understand the relationship between groundwater basin and surface water flows at that location. | On-going | Dr. Dave Evans of CSUS indicated that several wells on the south side of the American River at CSUS are equipped with pressure transducers, which collect continuous water elevation measurements. Data has been collected, but has not been processed to date. SCGA will contact SGA for the update of this effort. No progress was made during this reporting period. |
| **5. *Protocols for Collection of Groundwater Data*** | | |
| I. The governance body will develop within one year a Standard Operating Procedure (SOP) for collection of water level data | Complete | The water measurement protocol approved for use by SGA is the same used by SCWA and other agencies in the collection of water level data within the Central Basin. |
| II. … Provide cooperating agencies with guidelines developed by DPH for the collection, pretreatment, storage, and transportation of water quality samples (DPH, 1995). | Complete | Water purveyors within the Central Basin have been provided a copy of the guidelines developed by DPH for the collection, pretreatment, storage, and transport of water quality samples. |
| III. Provide training on implementing the SOPs. | Deferred | Authority staff will investigate to see if the training is necessary. If yes, who is responsible for collecting the data? This task is deferred. |

| | | |
|---|---|---|
| **6. *Data Management System*** | | |
| I. Continue to update the HydroDMS with current water purveyor data | Complete | The HydroDMS Update project was awarded an AB303 grant in December 2008. This project was completed in December 2010. |
| II. Make recommendations to RMC on utilities to add to the HydroDMS to increase its functionality | On-going | Will be coordinated as part of the HydroDMS maintenance. |
| **COMPONENT NO. 3: GROUNDWATER RESOURCE PROTECTION** | | |
| **1. *Well Construction Policies*** | | |
| I. Ensure that appropriate Sacramento County and Central Basin implementation staff and consultants are provided a copy of the County Well Ordinance and understand proper well construction procedures. | Complete | Dana Booth, from the Sacramento County's EMD gave a presentation on the County's Well Ordinance to the Board on October 10, 2007. A copy of the County's Well Ordinance was provided to the member agencies afterward. |
| II. Adhere to Sacramento County's Consultation Zone and provide a copy of the boundary of the prohibition zone to appropriate agencies within the central basin. | Deferred | Authority staff will contact RWQCB to obtain a copy of the latest version of the Sacramento County Special Consultation Zone Groundwater Plume Site report. This task is deferred. |
| III. Provide a copy of the most recently delineated plume extents at Mather Field and Aerojet/Boeing to EMD and appropriate staff for their review and possible use. | Deferred | After obtain the report mentioned above, Authority staff will provide a copy to EMD staff for their review and appropriate use. Authority staff will also check EMD to see if they are regularly updated on this by RWQCB. This task is deferred. |
| IV. Coordinate with other groundwater users in the Central Basin to provide guidance, as appropriate, on well construction. | Complete | Dana Booth, from the Sacramento County's EMD gave a presentation on the County's Well Ordinance to the Board on October 10, 2007. Representatives of the major water purveyors in the Central Basin were in attendance. |
| V. Where feasible and appropriate, use subsurface geophysical tools prior to construction of the well to assist in well design. | Complete | The design, construction, and development of municipal wells in the Central Basin take full advantage of available geophysical tools. |
| **2. *Well Abandonment and Destruction Policies*** | | |
| I. Complete a survey similar to one conducted in the North Basin of abandoned and/or destroyed wells in the Central Basin and populate DMS with data. | On-going | Authority staff will contact SGA to find out the details about the survey conducted in the North Basin, and coordinate with WRIME for HydroDMS population. No progress was made during this reporting period. |
| II. Ensure that all public and private agencies in the Central Basin are provided a copy of the County Well Ordinance and that they understand proper well destruction procedures, and support implementation of these procedures. | Complete | Dana Booth, from the Sacramento County's EMD gave a presentation on the County's Well Ordinance to the Board on October 10, 2007. As part of this discussion County well destruction policies and procedures were covered. A copy of the County's Well Ordinance was provided to the member agencies afterward. |

| | | |
|---|---|---|
| III. Follow up with cooperating agencies and EMD on reported abandoned and/or destroyed wells to confirm the information collected from DWR. | On-going | In August 2010, Sacramento County EMD started a well abandonment program. Authority staff will contact EMD to find out the progress of this program. |
| IV. Obtain copies of any information on abandoned and/or destroyed wells in the Central Basin from EMD or other regulatory agencies to fill any gaps in the governance body's records. | On-going | Authority staff will contact EMD to obtain the appropriate reports for the EMD's well abandonment program. |
| V. Meet with EMD to discuss ways to ensure that wells in the Central Basin are properly abandoned or destroyed. | On-going | Authority staff will meet EMD to discuss in the course of its well abandonment program. |
| VI. Obtain and review a copy of a "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 of contamination if not properly destroyed. It should be noted that EMD has no jurisdiction over gas wells. | Deferred | This item is deferred. |
| **3. *Well Protection Measures*** | | |
| I. Request that public water purveyor agencies within the Central Basin provide vulnerability summaries from the DWSAP to the basin governance body to be used for guiding management decisions in the basin. | Complete | The information is available online at: http://swap.ice.ucdavis.edu/TSinfo/TSsystemc.asp?myCounty=34 |
| II. Contact groundwater basin managers in other areas of the state for technical advice, effective management practices, and "lesson learned" regarding establishing well head protection areas. | Deferred | This item is deferred. |
| **4. *Protection of Recharge Areas*** | | |
| I. Continue to work with mining companies, TNC, and SSCAWA to explore the possibilities for enhancing recharge into the Central Basin. | Deferred | This item is deferred. |
| **5. *Control of the Migration and Remediation of Contaminated Groundwater*** | | |
| I. Coordinate with appropriate regulatory agencies (EMD, DTSC, EPA, RWQCB, and DPH) and known responsible parties (such as Aerojet, the Air Force, and Kiefer Landfill) to develop a network of monitoring wells to act as sentry wells for public supply wells. | On-going | • On November 10, 2010, RWQCB staff provided an update on groundwater remediation efforts at Aerojet.<br>• |
| II. If detections occur in these monitoring wells, meet with the appropriate regulatory agencies and responsible parties to develop strategies to minimize the further spread of contaminants. | Deferred | This item is deferred. |

| | | |
|---|---|---|
| III. Use the information on mapped contaminant plumes and LUST sites in developing groundwater extraction patterns and in locating future production or monitoring wells. | On-going | In 2010, SCGA, in conjunction with SGA, conducted a regional groundwater contamination particle tracking model. The objective of this study was to perform an assessment of the long-term sustainability of groundwater quality in the basin, specifically, to evaluate the potential movement of known contaminant plumes in the region. |
| IV. Meet with representatives of EMD and RWQCB to establish a mutual understanding about the basin governance body's groundwater management responsibilities. Identify ways to have open and expedited communication with EMD regarding any new occurrence of LUSTs, particularly when contamination is believed to have reached the groundwater. | Deferred | This item is deferred. |
| **6. *Control of Saline Water Intrusion*** | | |
| I. 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 program will serve as an early warning system for potential saline water intrusion from the Delta. | Deferred | This item is deferred. |
| II. Observe TDS concentrations in municipal wells that are routinely sampled under CCR Title 22. These data will be readily available as part of the DMS and will be reported on in the annual State of the Basin Report. | On-going | To be assessed in future Basin Management Reports as more temporal data becomes available. |
| III. Inform all stakeholders of the presence of the salinity interface and the approximate depth to the interface for their reference when locating potential wells. EMD, which issues well permits, is aware of the interface. SCWA will provide a map to EMD indicating the contour of the elevation of the base of fresh water in Sacramento County for its reference when issuing well permits. | On-going | No action on this item will be taken until after Authority staff has had an opportunity to discuss the TDS data from the Delta with DWR Central District staff. |

| COMPONENT NO. 4: GROUNDWATER SUSTAINABILITY | | |
|---|---|---|
| **1. *Conjunctive Management Activities*** | | |
| I. Continue to investigate conjunctive use opportunities within the Central Basin area. Groundwater users within the Central Basin will coordinate any recharge efforts. | On-going | The Authority will assist any member upon request. Currently, the American River Basin Integrated Regional Water Management Planning Program is an on-going program under the RWA umbrella. This program identifies opportunities and facilities for implementing expanded conjunctive use in the region.<br><br>Ultimately, the Authority will prepare a Water Accounting Framework for the Central Basin whereby participating members and others can establish groundwater banks to further promote conjunctive use.<br><br>Activities include:<br><br>1. On October 8, 2008, Larry Rodriguez with RBI Inc. and Michael Wackman with SSCAWA made a presentation to the Board on a groundwater banking project that would support the Cosumnes River Flow Augmentation Pilot Project.<br>2. On February 11, 2009, Curtis Hanford, who owns a parcel between the Cosumnes River and Deer Creek, made a presentation to the Board regarding his proposal to sell percolated flood water to municipal users.<br>3. EBMUD staff has approached the Authority, in conjunction with developing their 2040 Water Plan, and expressed an interest in investigating groundwater recharge opportunities in the Central Basin. |
| II. Continue to investigate opportunities for 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 riverbeds or streambeds) | On-going | As part of Sacramento County's General Plan Update SCWA is considering groundwater recharge as a way to meet projected water demands for new growth areas. |
| **2. *Demand Reduction*** | | |
| I. Participate in RWA's WEP to ensure that Central Basin purveyor conservation efforts are focused and effective. For those who receive wholesale water supplies, the governance body of the Central Basin will ensure that they are informed of the benefits and regional importance of participating in the WEP. | On-going | All water purveyor members of the Authority are also members of RWA. |
| II. The basin governance body shall develop BMPs for self-served agricultural and agricultural residential water users. | On-going | In accordance with the requirements of the GMP, a sub-committee was established on September 8, 2010 in order to study, evaluate, and make recommendations on appropriate water conservation best management practices for agricultural and agricultural-residential water users. Since then, the sub-committee has convened to brainstorm and review ideas and strategies for the |

| | | |
|---|---|---|
| | | BMPs. This effort is ongoing, with final recommendations being made in the future. |
| III. Coordinate with SRCSD to investigate further opportunities for expanded use of recycled water throughout the Central Basin. | On-going | SRCSD completed a Recycled Water Opportunity Study in 2006 to identify potential recycled water users in Sacramento County. One of the goals of this plan was to identify between 30 and 40 mgd of recycled water use throughout the County. A number of feasibility studies conducted after completion of the Study found that many of the proposed projects were infeasible. SRCSD continues to pursue expanded recycled water use opportunities in the Elk Grove area.<br><br>In September 2009, SRCSD provided the Board an update to its water recycling program. The Authority supports and participates in the Sacramento Water Recycling Coalition and its effort to gain local, state, and federal support from expanding its water recycling projects. |
| **COMPONENT NO. 5: PLANNING INTEGRATION** | | |
| **1. *Existing Integrated Planning Efforts*** | | |
| I. Integrated Groundwater and Surface Water Modeling | | |
| a. Prepare and adopt a formal integrated water management plan in accordance with CWC § 10540 et seq. The plan will include, but not limited to, the elements listed above. The Central Basin governance body will seek to form an ad hoc committee with SCWA, RWA, SSCAWA, and TNC to determine which agency would be most appropriate to prepare that plan and to update and make use of the IGSM model. | Deferred | This item is deferred. |
| b. Review the Water Forum Land Use procedures and make recommendations on the type of role, if any, the basin governance body should take with respect to land use decisions within the basin. | Deferred | This item is deferred. |

# Table A-3. SCGA Public Outreach Plan

**PROJECT GOAL: Implementation of the CSCGMP.**
**PUBLIC OUTREACH GOAL: Inform stakeholders and public regarding the CSCGMP implementation effort and solicit input.**

| Target Audience | Objectives | Messages | Strategies | Tactics |
|---|---|---|---|---|
| **Inter-SCGA** | | | | |
| • SCGA Board Members | ♦ Maintain a clear member awareness of CSCGMP BMO's, implementation schedule, and key political issues.<br><br>♦ Keep members apprised of any impending breach of BMO "trigger point" monitoring levels.<br><br>♦ *Maintain a high level of involvement by stakeholders*.<br><br>♦ Production of a "State of the Basin" report. | ♦ *Management actions taken by the basin governance body may impact a broad range of individuals and agencies that have a stake in the successful management of the basin. (3-8)*<br><br>♦ A GMP is designed to be equitable for large and small stakeholders.(L&C:25)<br>• Implementing a groundwater management program will help small stakeholders overcome the political and financial challenges of independent participation in ***(?)***.<br><br>♦ While SCGA believes in local control, there is a tremendous value in regional planning and participating in projects that also may benefit areas outside our region.(L&C:25)<br>• Funding will be more accessible if a GMP details a regional plan capable of producing broader, statewide benefits.<br>• A groundwater management program may help investor-owned utilities demonstrate the need for rate increases.<br><br>♦ The goal is to develop a cooperative program with the SCGA member agencies that is implemented within the framework established by the Water Forum Agreement. (L&C:25) | ♦ Ongoing internal information sharing to full SCGA membership.<br><br>♦ Formation of inter-board member advisory committees. | ♦ Hold regularly scheduled SCGA Board Member meetings.<br><br>♦ As needed, the basin governance body will discuss the formation of advisory committees that will provide guidance in the implementation of the Master Plan or in rectifying the breach of BMO monitoring trigger points.<br><br>♦ Create and utilize DMS.<br><br>♦ *Board to discuss continuation of advisory committees that will provide guidance in the implementation of the GMP. (3-10)* |
| | ♦ *Regional planning integration. (3.2.5)* | ♦ *With a large number of water purveyors that serve the greater Sacramento area, the need to integrate water management planning on a regional scale is a high priority. (3-21)* | | ♦ IRWMP participation.<br><br>♦ *The basin governance body will encourage that all retail purveyors submit Urban Management Plans to DWR. (3-21)* |

**PROJECT GOAL: Implementation of the CSCGMP.**
**PUBLIC OUTREACH GOAL: Inform stakeholders and public regarding the CSCGMP implementation effort and solicit input.**

| Target Audience | Objectives | Messages | Strategies | Tactics |
|---|---|---|---|---|
| **Political Partnerships** | | | | |
| ▪ Regional partners within and adjacent to the Centtral Basin:<br>▪ SGA<br>▪ SSCAWA<br>▪ TNC<br>▪ San Joaquin Co.<br>▪ RWA | ♦ *CSCGMP Program Component No. 1 - Stakeholder Involvement (3.2.1):*<br>▪ *Involving Other Agencies Within and Adjacent to the Central Basin (3.2.1.2)*<br>♦ *Expansion of a basin-wide conjunctive use program to achieve broader regional and statewide benefits. (3-10)* | ♦ *The basin governace body is committed to facilitating arragements at the local, state, and, federal levels. (3-10)*<br>♦ The goal is to develop a cooperative program with the SCGA member agencies that is implemented within the framework established by the Water Forum Agreement. (L&C:25)<br>♦ Groundwater management by the SCGA will significantly improve the reliability of water supply in the Sacramento region (Central Basin?), especially in times of drought. (L&C:26)<br>♦ While SCGA believes in local control, there is a tremendous value in regional planning and participating in projects that also may benefit areas outside our region. (L&C:25)<br>▪ Funding will be more accessible if a GMP details a regional plan capable of producing broader, statewide benefits. | ♦ *Meet with representatives of SGA, SSCAWA, TNC, San Joaquin Co., CSCGF, WFSE. (3-9)*<br>♦ *Pursue partnership opportunities. (3.2.1.5)*<br>♦ *WFSE briefing.*<br>♦ Participate in the implementation of the IRWMP.<br>♦ Utilize SCGA Website.<br>♦ Create and utilize DMS. | ♦ *Coordinate CSCGMP activities and work to the extent practicable with adjacent groundwater management entities, water interest groups, and state and federal regulatory agencies that have jurisdiction in areas related to CSCGMP activities. (3-9)*<br>♦ *Coordinate meetings with commercial/industrial self-supplied pumpers within the basin to inform them of the management responsibilities and activities relative to the CSCGMP. (3-9)*<br>♦ *Coordinate meetings outside of the CSCGF with agricultural and agricultural-residential self-supplied pumpers within the basin to inform them of the management responsibilities and activities relative to the CSCGMP. (3-9)*<br>♦ *Maintain a high level of involvement by stakeholders in implementing the CSCGMP by continued participation with the various stakeholders listed in section 3.2.1.3 of the CSCGMP. (3-9)*<br>♦ *Promote partnerships that accomplish both local supply reliability and broader regional and statewide benefits. (3-11)*<br>♦ *Track grant opportunities to fund groundwater management activities and local water infrastructure projects. (3-11)*<br>♦ *Provide copies of GMP and subsequent annual reports to SGA, SSCAWA, TNC, San Joaquin Co. (3-9)* |
| | ♦ *CSCGMP Program Component No. 5 - Regional planning integration. (3.2.5):*<br>▪ *Intergrated Groundwater and Suface Modeling (3.2.5.1.4)* | ♦ *By assuming custodial authority of the IGSM, the Basin Governance body will seek to increase its relevancy with respect to the regional planning efforts of the Bureau of Reclamation and DWR for projects such as ARWRI, CVPIA, and the CALFED process. (3-22)*<br>♦ *The IGSM forms the basis for the WFA and the Zone 40 WSMP environmental analyses. (3-22)*<br>♦ *The IGSM is a suitable tool to analyze the effects of local projects on regional groundwater conditions. (3-22)* | ♦ *Preparation and adoption of a formal integrated water management plan (IWMP) in accordance with CWC § 10540 et seq. (3-22)* | ♦ *The Central Basin governance body will seek to form an ad hoc committee with SCWA, RWA, SSCAWA, and the TNC to determine which agency would be most appropriate to prepare a IWMP and to update and make use of the IGSM. (3-22)* |

**PROJECT GOAL**: **Implementation of the CSCGMP.**
**PUBLIC OUTREACH GOAL: Inform stakeholders and public regarding the CSCGMP implementation effort and solicit input.**

| Target Audience | Objectives | Messages | Strategies | Tactics |
|---|---|---|---|---|
| **Technical Partnerships** | | | | |
| ▪ SGA<br>▪ SSCAWA<br>▪ TNC<br>▪ San Joaquin Co.<br>▪ RWA<br>▪ USGS<br>▪ SMUD | ♦ *CSCGMP Program Component No. 2 - Monitoring Program (3.2.2):*<br>▪ *Groundwater elevation monitoring. (3.2.2.1)*<br><br>♦ *BMO No. 2: Maintain specific groundwater elevations within all areas of the basin consistent with the Water Forum "solution". (3-23)* | ♦ *Determining and maintaining the health of the Central Basin is the governance body's foremost concern and is accomplished through data collection and evaluation, remedial and/or restorative actions if necessary, and reporting. (4-1)*<br><br>♦ *A monitoring methodology to meet specific objectives requires a systematic, repeatable, and scientific approach. (4-1)* | ♦ *Coordinate CSCGMP activities with adjacent groundwater management.*<br><br>♦ *Promote partnerships that accomplish both local supply reliability and broader regional and statewide benefits.*<br><br>♦ *Pursue partnership opportunities. (3.2.1.5)*<br><br>♦ *Involve other agencies within and adjacent to the Central Basin.(3.2.1.1)*<br><br>♦ *Develop a standard operating procedure for collecting water level data.* | ♦ *Coordinate with DWR and others to identify an appropriate group of wells for monitoring. (3-12)*<br><br>♦ *Coordinate with DWR and other to ensure that selected wells are maintained as part of a long-term monitoring network. (3-12)*<br><br>♦ *Coordinate with DWR to ensure that water level data collected by other agencies is collected within one month of DWR and SCWA data collection. (3-12)*<br><br>♦ *Coordinate with other agencies to ensure that needed water level elevations are collected and that uniform data collection protocols are used among the agencies. (3-12)*<br><br>♦ *Coordinate with USGS to determine the potential for integrating NAWQA wells into the SCWA and SGA monitoring network. (3-12)*<br><br>♦ *Track grant opportunities to fund groundwater management activities and local water infrastructure projects. (3-11)*<br><br>♦ Participate in the implementation of the IRWMP.<br><br>♦ Create and utilize DMS.<br><br>♦ Utilize SCGA Website.<br><br>♦ *Meet with representatives of SGA, SSCAWA, TNC, San Joaquin Co., CSCGF, WFSE.* |

**PROJECT GOAL: Implementation of the CSCGMP.**
**PUBLIC OUTREACH GOAL: Inform stakeholders and public regarding the CSCGMP implementation effort and solicit input.**

| Target Audience | Objectives | Messages | Strategies | Tactics |
|---|---|---|---|---|
| **Technical Partnerships** | | | | |
| ▪ SGA<br>▪ SSCAWA<br>▪ TNC<br>▪ San Joaquin Co.<br>▪ RWA<br>▪ USGS<br>▪ SMUD | ♦ *CSCGMP Program Component No. 2 - Monitoring Program (3.2.2):*<br>▪ *Land Surface Elevation Monitoring (3.2.2.3)*<br><br>♦ *BMO No. 3: Protect against any potential inelastic land surface subsidence by limiting subsidence to no more than 0.007 feet per 1 foot of draw down in the groundwater basin.* | ♦ *Land subsidence can cause significant damage to essential infrastructure. Historic land surface subsidence with the Central Basin has been minimal, with no known significant impacts to existing infrastructure. Given historical trends, the potential for land surface subsidence from groundwater extraction in the Central Basin appears to be remote. (3-3)*<br><br>♦ *While some measurements have been made to determine the level of subsidence in the Sacramento area, some concern exists regarding the accuracy of the measurements and the sufficiency of the data. (4-5)*<br><br>♦ *Subsidence should be measured and thought of as a long-term process. (4-5)*<br><br>♦ *The North and Central Basins should collaborate to gain a better understanding of subsidence. (4-5)* | ♦ *Pursue additional actions to continue to monitor potential land surface subsidence especially in the Central Basin. (3-13)* | ♦ *Coordinate with USGS to ascertain the suitability of the use of Interferometric Synthetic Aperture Radar images. If the technology appears suitable, identify the costs of determining ground surface elevations and identify potential cost-sharing partners. (3-14)*<br><br>♦ *Coordinate with other agencies, particularly the City and County of Sacramento and the National Geodetic Survey, to determine if there are other existing suitable benchmark locations in the area to aid in analysis of potential land surface subsidence. (3-14)* |

**PROJECT GOAL: Implementation of the CSCGMP.**
**PUBLIC OUTREACH GOAL: Inform stakeholders and public regarding the CSCGMP implementation effort and solicit input.**

| Target Audience | Objectives | Messages | Strategies | Tactics |
|---|---|---|---|---|
| **Technical Partnerships** | | | | |
| ▪ SGA<br>▪ SSCAWA<br>▪ TNC<br>▪ San Joaquin Co.<br>▪ RWA<br>▪USGS<br>▪SMUD | ♦ *CSCGMP Program Component No. 2 - Monitoring Program (3.2.2):*<br>▪ *Surface Water/Groundwater Interaction Monitoring (3.2.2.4)*<br><br>♦ *BMO No. 4: Protect against any adverse impacts to surface water flows in the American Consumnes, and Sacramento rivers.* | ♦ *The SCGA is committed to the objectives of the WFA, which include preserving the fishery, wildlife, recreational, and aesthetic values of the lower American River. The CSCGMP also includes goals to restore and preserve the fishery, wildlife, recreational, and aesthetic resources of the lower Consumnes River and to assure stable supply of water for agriculture in the lower Consumnes River floodplain area. (3-7)*<br><br>♦ *It is the intent of the CSCGMP that controllable operations of the groundwater system would not negatively impact the water quality of the area's rivers and streams. The basin governance body will seek to gain a netter understanding, in cooperation with SGA and others, of the potential impacts of discharging local area groundwater to major rivers adjacent to the Central Basin. (3-7)* | ♦ *The basin governance body shall coordinate with other responsible regional, county, and local agencies to ensure that surface water flows in the other natural and restored streams in the area are not adversely impacted as a result of implementation of the CSCGMP. (3-7)* | ♦ *Work cooperatively with SGA, TNC and OHWD to compile available stream gage data and information on tributary inflows and diversions from the American, Cosumnes and Sacramento rivers to quantify net groundwater recharge or discharge between gages in the Central Basin area. (3-14)*<br><br>♦ *Coordinate with local, state and federal agencies to identify available surface water quality data from the American, Cosumnes and Sacramento rivers proximate to the Central Basin. (3-14)*<br><br>♦ *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 American, Cosumnes and Sacramento rivers. (3-15)*<br><br>♦ *Coordinate with CSUS to analyze data obtained from recently constructed monitoring wells on the CSUS campus to better understand the relationship between the groundwater basin and surface water flows at that location. (3-15)* |

**PROJECT GOAL: Implementation of the CSCGMP.**
**PUBLIC OUTREACH GOAL: Inform stakeholders and public regarding the CSCGMP implementation effort and solicit input.**

| Target Audience | Objectives | Messages | Strategies | Tactics |
|---|---|---|---|---|
| **Technical Partnerships** | | | | |
| ▪ SGA<br>▪ SSCAWA<br>▪ TNC<br>▪ San Joaquin Co.<br>▪ RWA<br>▪USGS<br>▪SMUD | ♦ *CSCGMP Program Component No. 2 - Monitoring Program (3.2.2):*<br>▪ *Groundwater Quality Monitoring (3.2.2.2)*<br><br>♦ *BMO No. 5: Water Quality Objectives* | ♦ *Many of the wells in the Central Basin are used for public water supply and an extensive record of water quality data is available for most wells. Water purveyors 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 regulatory guidelines to ensure that the public is provided with a safe drinking water supply. (3-12)*<br><br>♦ *Ultimately, it may be advisable to have in place a network of shallow sentry wells to serve as an early warning system for contaminants that could make their way to greater depths in the basin where groundwater purveyors primarily extract groundwater. (3-12)*<br><br>♦ *CCR Title 22 water quality reporting is required by DHS for each public drinking water source with the Central Basin. The Central Basin monitoring network includes these wells. (3-12)* | ♦ *Identify appropriate set of water quality monitoring wells.* | ♦ *Coordinate with cooperating agencies to verify that uniform protocols are being used when collecting water quality data. (3-12)*<br><br>♦ *Coordinate with USGS to obtain historic water quality data for NAWQA wells, determine timing and frequency of monitoring under USGS program and discuss the potential for integrating USGS monitoring resources with other portions of the monitoring network. (3-12)*<br><br>♦ *Coordinate with other 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. (3-12)*<br><br>♦ *Coordinate with DWR on the groundwater quality data they collect. (3-12)* |

**PROJECT GOAL: Implementation of the CSCGMP.**
**PUBLIC OUTREACH GOAL: Inform stakeholders and public regarding the CSCGMP implementation effort and solicit input.**

| Target Audience | Objectives | Messages | Strategies | Tactics |
|---|---|---|---|---|
| **Technical Partnerships** | | | | |
| ▪ SGA<br>▪ SSCAWA<br>▪ TNC<br>▪ San Joaquin Co.<br>▪ RWA<br>▪ USGS<br>▪ SMUD<br>▪ Sacramento County Environmental Management Department (EMD) | ♦ *CSCGMP Program Component No. 3 - Groundwater resource protection:*<br>▪ *Well Construction Policies (3.2.3.1)* | ♦ *The basin governance body considers groundwater resource protection a critical component in maintaining a sustainable groundwater resource. (3-16)*<br><br>♦ *The Sacramento County Environmental Management Department (EMD) administers the well permitting program for Sacramento County. (3-16)*<br><br>♦ *In addition to general well construction standards, Sacramento County has a policy of special review by appropriate regulatory agencies before granting a well permit within 2,000 feet of a known contaminant plume (referred to as Consultation Zones). Prohibitions have been established by various State regulatory agencies for drilling new public supply wells at Mather Field or near the Aerojet or Boeing facilities. As part of the development of the DMS, the extent of contaminant plumes associated with MatherField, Aerojet, and Boeing were delineated for SGA and SCWA. (3-16)* | ♦ *Adhere to Sacramento County's Consultation Zone and provide a copy of the boundary of the prohibition zones to appropriate agencies within the Central Basin. (3-16)*<br><br>♦ *Ensure that appropriate Sacramento County and Central Basin implementation staff and consultants are provided a copy of the County Well Ordinance and understand proper well construction procedures. (3-16)* | ♦ *Provide a copy of the most recently delineated plume extents at Mather Field and Aerojet/Boeing to EMD and appropriate staff for their review and possible use. (3-16)*<br><br>♦ *Coordinate with other groundwater users in the Central Basin to provide guidance, as appropriate, on well construction. (3-16)* |
| | ♦ *CSCGMP Program Component No. 3 - Groundwater Resource Protection:*<br>▪ *Well Abandonment and Deconstruction Policies. (3.2.3.2)* | ♦ *EMD administers the well destruction program for Sacramento County. The standards for well destruction are identified in the County Well Ordinance. A concern of the basin governance body and EMD is that many abandoned supply wells have not been properly destroyed. As part of development of the DMS for SGA, DWR well records for all known wells in the North Basin were reviewed for reported destruction. Based on the information provided, each well was then rated based on the level of confidence that the well in question was actually destroyed properly. This information was then entered into the DMS. (3-16, 17)* | ♦ *Ensure that all public and private agencies in the Central Basin are provided a copy of the County Well Ordinance and that they understand proper well destruction procedures, and support implementation of these procedures. (3-17)* | ♦ *Follow up with cooperating agencies and EMD on reported abandoned and/or destroyed wells to confirm the information collected from DWR. (3-17)*<br><br>♦ *Obtain copies of any information on abandoned and/or destroyed wells in the Central Basin from EMD or other regulatory agencies to fill any gaps in the governance body's records. (3-17)*<br><br>♦ *Meet with EMD to discuss ways to ensure that wells in the Central Basin are properly abandoned or destroyed. (3-17)* |

**PROJECT GOAL: Implementation of the CSCGMP.**
**PUBLIC OUTREACH GOAL: Inform stakeholders and public regarding the CSCGMP implementation effort and solicit input.**

| Target Audience | Objectives | Messages | Strategies | Tactics |
|---|---|---|---|---|
| **Technical Partnerships** | | | | |
| ▪ DHS | ♦ *CSCGMP Program Component No. 3 - Groundwater Resource Protection:*<br>▪ *Wellhead Protection Measures (3.2.3.3)* | ♦ *Identification of wellhead protection areas is an element of the Drinking Water Source Assessment and Protection (DWSAP) program administered by DHS. (3-17)*<br><br>♦ *DHS set a goal for all water systems statewide to complete Drinking Water Source Assessments by mid-2003. Most water purveyors in the basin have completed their required assessments by performing the three major elements required by DHS (3-17):*<br>▪ *Delineation of capture zones around sources (wells).*<br>▪ *Inventory of PCAs within protection areas.*<br>▪ *Vulnerability analysis to identify the PCAs to which the source is most vulnerable.* | ♦ *PCA and capture zone information from the DWSAP will need to be added into the DMS. (3-17)* | ♦ *Request that public water purveyor agencies within the Central Basin provide vulnerability summaries from the DWSAP to the basin governance body to be used for guiding management decisions in the basin. (3-17, 18)*<br><br>♦ *Contact groundwater basin managers in other areas of the state for technical advice, effective management practices, and "lessons learned" regarding establishing wellhead protection areas. (3-18)* |
| ▪ TNC<br>▪ SSCAWA<br>▪Mining Companies | ♦ *CSCGMP Program Component No. 3 - Groundwater Resource Protection:*<br>▪ *Protection of Recharge Areas (3.2.3.4)* | ♦ *Surface geology within and directly adjacent to the Central Basin's boundary was investigated as part of the 1993 Sacramento County General Plan for the purpose of delineating areas of potentially high recharge. Much of the surface area considered to have the highest potential for recharge along the American River is developed. Other recharge areas identified in the Sacramento County General Plan include areas around and adjacent to the streams that flow along and across the Central Basin such as the Cosumnes River and Morrison stream group. (3-18)* | ♦ Track the progress and results of the pilot recharge program *(coordinated through the Water Forum, SCWA, TNC, and SSCAWA) that conveys American River water through the Folsom South Canal and then discharges it to the Cosumnes River at the canal crossing. (3-18)* | ♦ *Continue to work with mining companies, TNC, and SSCAWA to explore the possibilities for enhancing recharge into the Central Basin. (3-18)* |

**PROJECT GOAL: Implementation of the CSCGMP.**
**PUBLIC OUTREACH GOAL: Inform stakeholders and public regarding the CSCGMP implementation effort and solicit input.**

| Target Audience | Objectives | Messages | Strategies | Tactics |
|---|---|---|---|---|
| **Technical Partnerships** | | | | |
| ▪ EMD<br>▪ DHS<br>▪ DTSC<br>▪ EPA<br>▪ RWQCB | ♦ *CSCGMP Program Component No. 3 - Groundwater Resource Protection:*<br>▪ *Control of the Migration and Remediation of Contaminated Groundwater (3.2.3.5)* | ♦ *Major sources of contamination within the Central Basin are primarily from Mather Field, Aerojet, Boeing, and various active and inactive landfill sites. (3-18)*<br><br>♦ *Also of concern is localized contamination by industrial/commercial point sources such as dry cleaning facilities and numerous fuel stations throughout the basin. (3-18)*<br><br>♦ *While the basin governance body does not have the authority or responsibility for remediation of this contamination, it is committed to coordinating with responsible parties and regulatory agencies to stay informed on the status and disposition of known contamination in the basin. (3-18)* | ♦ *Coordinate with responsible parties and regulatory agencies to stay informed on the status and disposition of known contamination in the basin. (3-18)* | ♦ *Coordinate with appropriate regulatory agencies (EMD, DTSC, EPA, and DHS) and known responsible parties to develop a network of monitoring wells to act as sentry wells for public supply wells. (3-18)*<br><br>♦ *If detections occur in these monitoring wells, meet with the appropriate regulatory agencies and responsible parties to develop strategies to minimize the further spread of contaminants. (3-19)*<br><br>♦ *Meet with representatives of EMD and RWQCB to establish a mutual understanding about the basin governance body's groundwater management responsibilities. Identify ways to have open and expedited communication with EMD regarding any new occurrences of LUSTs, particularly when contamination is believed to have reached the groundwater. (3-19)* |
| ▪ DWR Central Office<br>▪ EMD<br>▪ All Central Basin Stakeholders | ♦ *CSCGMP Program Component No. 3 - Groundwater Resource Protection:*<br>▪ *Control of Saline Water Intrusion (3.2.3.6)* | ♦ *Saline water intrusion from the Sacramento/San Joaquin Delta (Delta) is not currently a problem in the Central Basin, 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 Sacramento 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 Central Basin. (3-19)* | ♦ *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 program will serve as an early warning system for potential saline water intrusion from the Delta. (3-19)* | ♦ *Inform all stakeholders of the presence of the salinity interface and the approximate depth to the interface for their reference when locating potential wells. EMD, which issues well permits, is aware of the interface. SCWA will provide a map to EMD indicating the contour of the elevation of the base of fresh water in Sacramento County for its reference when issuing well permits. (3-19)* |

**PROJECT GOAL: Implementation of the CSCGMP.**
**PUBLIC OUTREACH GOAL: Inform stakeholders and public regarding the CSCGMP implementation effort and solicit input.**

| Target Audience | Objectives | Messages | Strategies | Tactics |
|---|---|---|---|---|
| **Technical Partnerships** | | | | |
| ▪ Central Basin Stakeholders<br>▪ City of Roseville<br>▪ SCWA | ♦ *CSCGMP Program Component No. 4 - Groundwater Sustainability.* | ♦ *Conjunctive management is a program that includes both conjunctive use and the development of banking and exchange opportunities with local in-basin partners after local needs are met. (3-20)*<br><br>♦ *The SCGA and SCWA are also interested in direct recharge and propose to investigate a variety of ways to recharge water into available storage space in the basin. (3-20)*<br><br>♦ *Opportunities for direct recharge exist through the use of recharge basins (e.g., abandoned aggregate mining pits) or through a aquifer storage and recovery (ASR) program. The City of Roseville is currently implementing an ASR program where treated surface water is injected into the groundwater and then recovered in the summer months and dry years through groundwater wells. The success of this program will be monitored closely by the SCGA. (3-20)* | ♦ *Continue to investigate conjunctive use opportunities within the Central Basin area. Groundwater users within the Central Basin will coordinate any recharge efforts. (3-20)*<br><br>♦ *Continue to investigate opportunities for 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 riverbeds or streambeds). (3-20)* | ♦ Coordinate with SCWA and other Central Basin groundwater users to investigate and develop groundwater recharge opportunities.<br><br>♦ Coordinate with SCWA and other Central Basin groundwater users to investigate and develop conjunctive use opportunities.<br><br>♦ Establish contact with the City of Roseville for the purpose of tracking the success of their ASR program. |
| ▪ RWA<br>▪ DWR<br>▪ SRCD<br>▪ WFSE<br>▪ Bureau of Reclamation<br>▪ Self-served agricultural and agricultural-residential water users. | ♦ *CSCGMP Program Component No. 4 - Groundwater Sustainability:*<br>▪ *Demand Reduction (3.2.4.1)* | ♦ *An important factor in maintaining the sustainable yield of the basin is by reducing demand for potable water supplies through conservation and the use of recycled water for landscape irrigation. (3-20)*<br><br>♦ *RWA's efforts in developing and implementing a regional Water Efficiency Program (WEP) are well recognized by SCGA. (3-20)*<br><br>♦ *The SRCSD is developing a countywide Water Recycling Master Plan to provide up to 40 MGD of recycled water. (3-20)* | ♦ *The SCGA will work closely with the Water Forum Successor Effort and RWA to ensure that all applicable cost-effective BMPs are implemented in the Central Basin urban areas. (3-20)*<br><br>♦ *The SCGA shall develop BMPs for self-served agricultural and agricultural-residential water users. These BMPs will be based on applicable Reclamation and DWR data and recommendations. (3-20)* | ♦ *Participate in RWA's WEP to ensure that Central Basin purveyor conservation efforts are focused and effective. For those who receive wholesale water supplies, the governance body of the Central Basin will ensure that they are informed of the benefits and regional importance of participating in the WEP. (3-20)*<br><br>♦ *The SCGA shall develop BMPs for self-served agricultural and agricultural-residential water users. (3-21)*<br><br>♦ *Coordinate with SRCSD to investigate further opportunities for expanded use of recycled water throughout the Central Basin. (3-21)* |