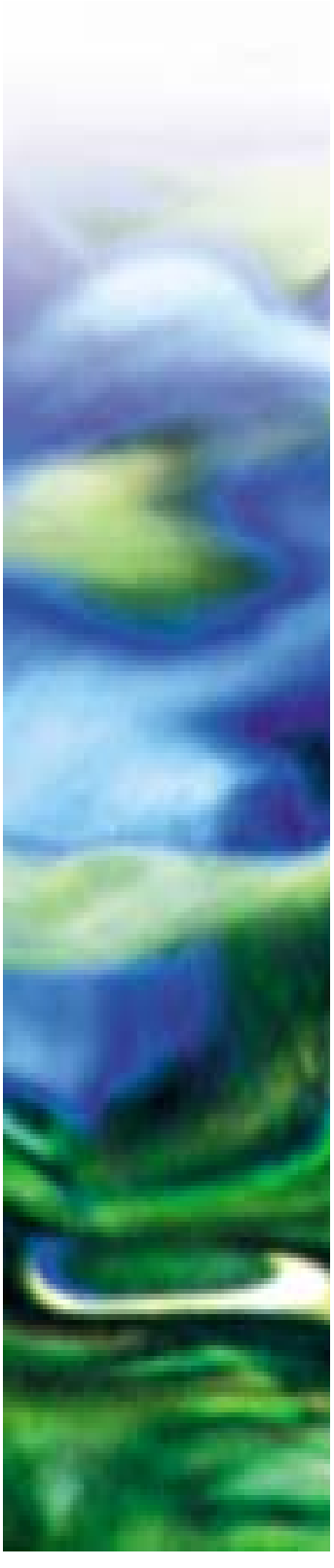
SOUTHEAST SACRAMENTO COUNTY AGRICULTURAL WATER AUTHORITY
GROUNDWATER MANAGEMENT PLAN



Prepared for:

Southeast Sacramento County Agricultural Water Authority

Prepared by:

ROBERTSON - BRYAN, INC.
Specializing in Water and Power Resources

December 3, 2002

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EXECUTIVE SUMMARY

The Southeast Sacramento County Agricultural Water Authority (Authority) is comprised of the Omochumne-Hartnell Water District (OHWD), Galt Irrigation District (GID), and Clay Water District (CWD). These three districts formed a Joint Powers Agreement that adopted a Coordinated Groundwater Management Plan in 1997. In June 2002, the districts modified their organization to a Joint Powers Authority and developed and adopted a new Groundwater Management Plan. The Authority developed this Groundwater Management Plan to ***ensure that groundwater resources are sustained and protected.*** This Groundwater Management Plan was adopted by the Authority on December 3, 2002 and reflects the following goals:

- Establish a contract for surface water
- Maintain local control of groundwater management
- Preserve agricultural activities in the area
- Maintain local control of water distribution, advocacy, and planning
- Maintain each District's independence in representing its respective voters and water users

The new Groundwater Management Plan includes the following elements that are considered pertinent to the Authority's groundwater management area:

- Groundwater Levels and Groundwater Volume in Storage
- Groundwater Quality
- Surface Water Contributions to Groundwater
- Water Conservation
- Conjunctive Use
- Identify, Protect, and Enhance Groundwater Recharge Areas
- Well Abandonment and Well Destruction
- Work With State, Federal and Local Agencies and Stakeholders
- Mediation Clause

Most of the elements described above include objectives that reflect management goals of the Authority. Where appropriate, monitoring protocols for measuring the success of the Authority's efforts have been developed. The new Groundwater Management Plan incorporates requirements recently adopted in California Senate Bill 1938 (SB 1938), authored by Senator Michael Machado. Additionally, this Plan includes protocols for dispute resolution, a component required for AB 303 grant application.

I INTRODUCTION

The Southeast Sacramento County Agricultural Water Authority (Authority) is located in the southeast portion of Sacramento County, and is almost entirely dependent on groundwater to meet water demands dominated by agricultural and agricultural/residential users. The Authority is made-up of three public agencies: Galt Irrigation District (GID), Omochumne-Hartnell Water District (OHWD), and Clay Water District (CWD). Figure 1 shows the locations and boundaries of these districts. In 2002, these districts formed a Joint Powers Authority to develop, implement, and manage the water resources available to them.

The three districts encompass approximately 70,980 acres, of which approximately 25,000 acres are devoted to irrigated agriculture. Residential development within the districts consists of rural residential developments, small ranchettes, and the communities of Herald, Sheldon, Sloughhouse, and Wilton. None of the districts have constructed distribution facilities to deliver water. All water demands are met from private wells, or riparian water from the perennial watercourses that flow through the districts' boundaries; however, riparian water rights satisfy only a small portion of the total water demand.

Purpose

The Authority developed this Groundwater Management Plan (GMP) to ***ensure that groundwater resources are sustained and protected***. This GMP is the Authority's first step toward developing a formal and integrated approach to groundwater management and identifies data collection activities that will be undertaken by the Authority and its member Districts. This data will be used to develop the following types of groundwater management programs:

- Groundwater monitoring programs that develop regular and consistent data to assist the Authority in evaluating and managing the groundwater basin.

- Groundwater supply management programs that replenish the groundwater basin, sustain the basin's water supplies, mitigate groundwater overdraft, and sustaining storage reserves for use in dry years.

- Groundwater quality management programs that identify and evaluate threats to groundwater quality and prevent or mitigate contamination associated with those threats.

Background

The Authority developed this GMP under the provisions of The Groundwater Management Act, Assembly Bill 3030 (AB 3030) signed into law in 1992, and as modified under Senate Bill 1938 (SB 1938), approved in September of 2002. AB 3030 and SB 1938 established provisions allowing local water agencies to develop and implement groundwater management plans. The provisions of AB 3030 and SB 1938 are contained in California Water Code Sections 10750 et seq.

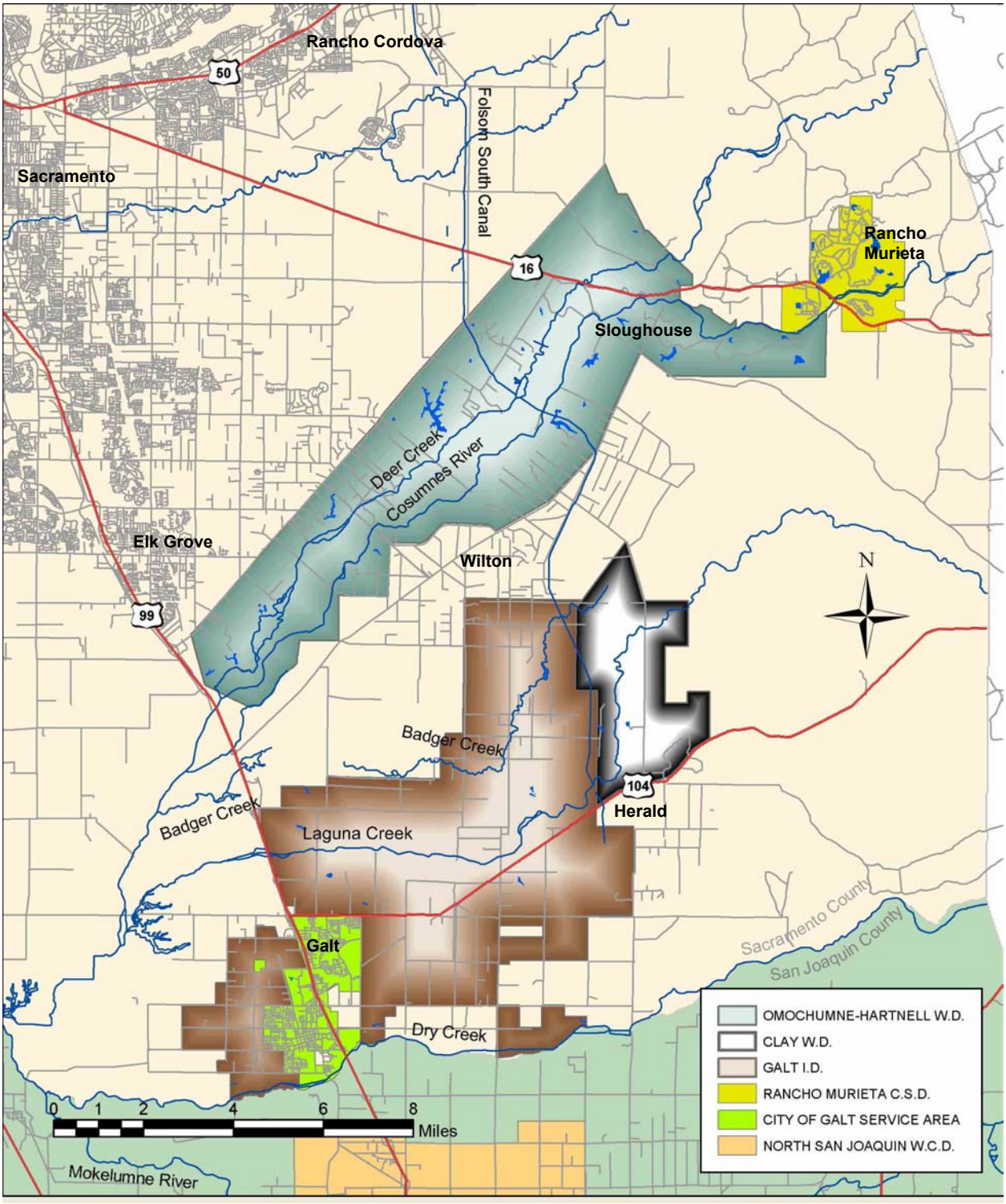


Figure 1. Southeast Sacramento County Agricultural Water Agency Member Districts Locations and Boundaries

Section 10753.7 of the Water Code identifies twelve elements that form a basic list of data collection activities and actions that may be included in a groundwater management plan. Requirements recently enacted in SB 1938 require local agencies that develop a groundwater management plan, to issue public notices describing how the public may participate in the development of a proposed plan. SB 1938 also requires that a groundwater management plan include certain basin management objectives and components, and adopt certain monitoring protocols to qualify for state funds administered by the California Department of Water Resources (DWR) for construction of groundwater projects or groundwater quality projects.

History of the Southeast Sacramento County Agricultural Water Authority

In 1997, the three member districts, OHWD, GID, and CWD, signed a Joint Powers Agreement to jointly fund and implement a Coordinated Groundwater Management Plan. That Joint Powers Agreement is the predecessor to the current Joint Powers Authority. The 1997 Joint Powers Agreement adopted a Coordinated Groundwater Management Plan that identified seven (7) elements considered pertinent to the groundwater management area encompassed by the member Districts. Under this Agreement, the member districts met bi-monthly to discuss common issues related to groundwater and surface water management. The districts also prepared several updates to the original Coordinated Groundwater Management Plan, which included the results of monitoring activities related to groundwater levels, and the activities of outside agencies or organizations that had the potential to affect groundwater or surface water resources within the groundwater management area.

The districts reformed their organization into a Joint Powers Authority (Authority) in 2002, and established the following goals:

- Establish a contract for surface water
- Maintain local control of groundwater resources
- Preserve agricultural activities in the area
- Maintain local control of water advocacy and planning
- Maintain each District's independence in representing its respective voters and water users
- Coordinate water management activities with local interest groups and stakeholders, to the extent practical

In order to maintain local control of groundwater resources, the Authority issued a Board of Directors' Resolution to update the Coordinated Groundwater Management Plan developed under the 1997 Joint Powers Agreement. See Appendix A for a copy of the Board of Directors' Resolution. The updated Coordinated Groundwater Management Plan serves as the Authority's GMP. The objective of the GMP is set in motion programs to collect information on the state of groundwater resources in the area enclosed by and adjacent to the Authority and to develop appropriate groundwater management programs that will meet the goals of the Authority.

As a precursor to developing this GMP, the Authority invited local stakeholders to a Groundwater Planning workshop. This workshop was held on September 19, 2002 in Elk Grove, CA. The purpose of the workshop was to review the concept of this GMP and to solicit input from local stakeholders on additional groundwater activities that could be implemented by the Authority. The table below contains a list of the workshop attendees.

Southeast Sacramento County Agricultural Water Authority
Groundwater Planning Workshop
List of Attendees
September 19, 2002
Elk Grove Farm Bureau Office

Name	Organization
Keith Whitener	Nature Conservancy – Cosumnes River Preserve
Jim B. Moore	Consultant – Galt Irrigation District
Ed Staffani	North San Joaquin Water Conservation District
Leo VanWarmerdam	Galt Irrigation District
Tom Young	Omochumne-Hartnell Water District
Leland Schneider	Omochumne-Hartnell Water District
Gonzalo Castillo	USFWS – AFRP
Tina Lunt	Cosumnes River Task Force
Jan Fleckenstein	UC Davis – Cosumnes Research Group
Derick Louie	DWR – Conjunctive Water Management Branch
Tanya Meeth	DWR – Central District Groundwater Division
Will Trowbridge	Clay Water District
Ken Whittemore	Clay Water District
Ron Lowry	Omochumne-Hartnell Water District
Stuart Robertson	Robertson-Bryan, Inc – OHWD/Authority
Larry Rodriguez	Robertson-Bryan, Inc – OHWD/Authority
Bob Mahon	Omochumne-Hartnell Water District
Denny Lewis	Sacramento Farm Bureau
Wendy Sparrowk	Secretary - Authority

The Authority and its member Districts are also involved with local planning organizations and agencies that can potentially affect water resources of the area or that are involved in the investigation or management of water resources in the area. Both OHWD and the Authority are active participants in Central Sacramento County Groundwater Forum (Groundwater Forum), which is a successor effort to the Sacramento Area Water Forum. The mission of the Groundwater Forum is to develop recommendations designed to protect the health and viability of the Central Sacramento County groundwater basin as a sustainable resources for both current users and future generations. Appendix B contains additional information about the Water Forum.

OHWD is also an active member of the Cosumnes River Task Force, whose goal is to develop a long-term strategy for encouraging restoration of watershed health, and improvement of flood management on the Cosumnes River. Appendix C contains additional information on the Cosumnes River Task Force.

On October 24, 2002, the Authority submitted an application for grant funds available through the local Groundwater Assistance Fund (administered by the DWR). The application identifies a study plan for evaluating potential groundwater management strategies for recharging depleted groundwater resources within the GMA. The first phase of the study will include a Basin Assessment designed to gain an understanding of surface water and groundwater hydrology, groundwater basin characteristics, and demands on the groundwater resources within the GMA. The second phase of the study will evaluate potential groundwater management strategies or projects that the Authority could undertake for replenishing the groundwater basin and mitigating groundwater overdraft. Appendix D contains a full copy of the grant application that was submitted to the DWR. The DWR is scheduled to announce grant awardees in June 2003. Funding for successful applications will be available July 2003.

II GROUNDWATER MANAGEMENT AREA AND AREA OF INFLUENCE

The groundwater management area (GMA) of the Authority has defined its groundwater management area (GMA) as the lands within the boundaries of the three member districts (see Figure 1). All projects, objectives, and monitoring programs that are to be implemented by the Authority will be done so within the GMA. The GMA lies within the Sacramento County Basin, located within both the Sacramento Hydrologic Study Area (HSA) and the San Joaquin HSA. GID and CWD are entirely within the San Joaquin HSA. The northern portion of OHWD is within the Sacramento HSA. The HSAs have been developed by the DWR in cooperation with the State Water Resources Control Board. These agencies have identified ten HSAs within California as shown in Figure 2. The HSAs are defined by geological and hydrological conditions, with consideration of political boundary lines whenever practical. The HSAs are further divided into separate subbasins for groundwater management purposes.

The area of influence for this GMP extends beyond the GMA to include the area lying between the member districts, central Sacramento County to the north, and northern San Joaquin County to the south. In addition, included in the area of influence are the watersheds of the Cosumnes River and Dry Creek, as well as the watersheds of the lesser creeks that transverse the GMA. Figure 3 shows the extent of the Authority's area of influence. To effectively manage groundwater within the GMA, the Authority needs to consider the effects of other management programs in the areas between and surrounding the Authority. While the Authority does have the authority to implement programs outside of its GMA it is prudent to be aware of surface water and groundwater programs that might affect groundwater within the GMA. For example, the City of Galt's service area, which is entirely surrounded by GID, is completely dependant on groundwater to meet the needs of its growing population. Existing and future groundwater management plans of the City of Galt will have an impact on groundwater levels within the Authority. To ensure that the Authority can develop an effective groundwater management program the Authority will need to stay aware of City's plans and engage the City in developing comprehensive regional groundwater management programs to protect the interests of both the Authority and the City.

Similarly, the Authority will stay abreast of water development plans in the watersheds of the waterways that transverse the GMA. Of particular interests is the Cosumnes River. The Cosumnes River, and to a lesser extend the other creeks that cross the GMA, are a major source of groundwater recharge in the GMA. Any plans to alter the existing hydrology of these waterways could impact groundwater levels or quality in the GMA. Additionally, water development projects upstream of the GMA could influence the effectiveness of any groundwater project that the Authority might implement.

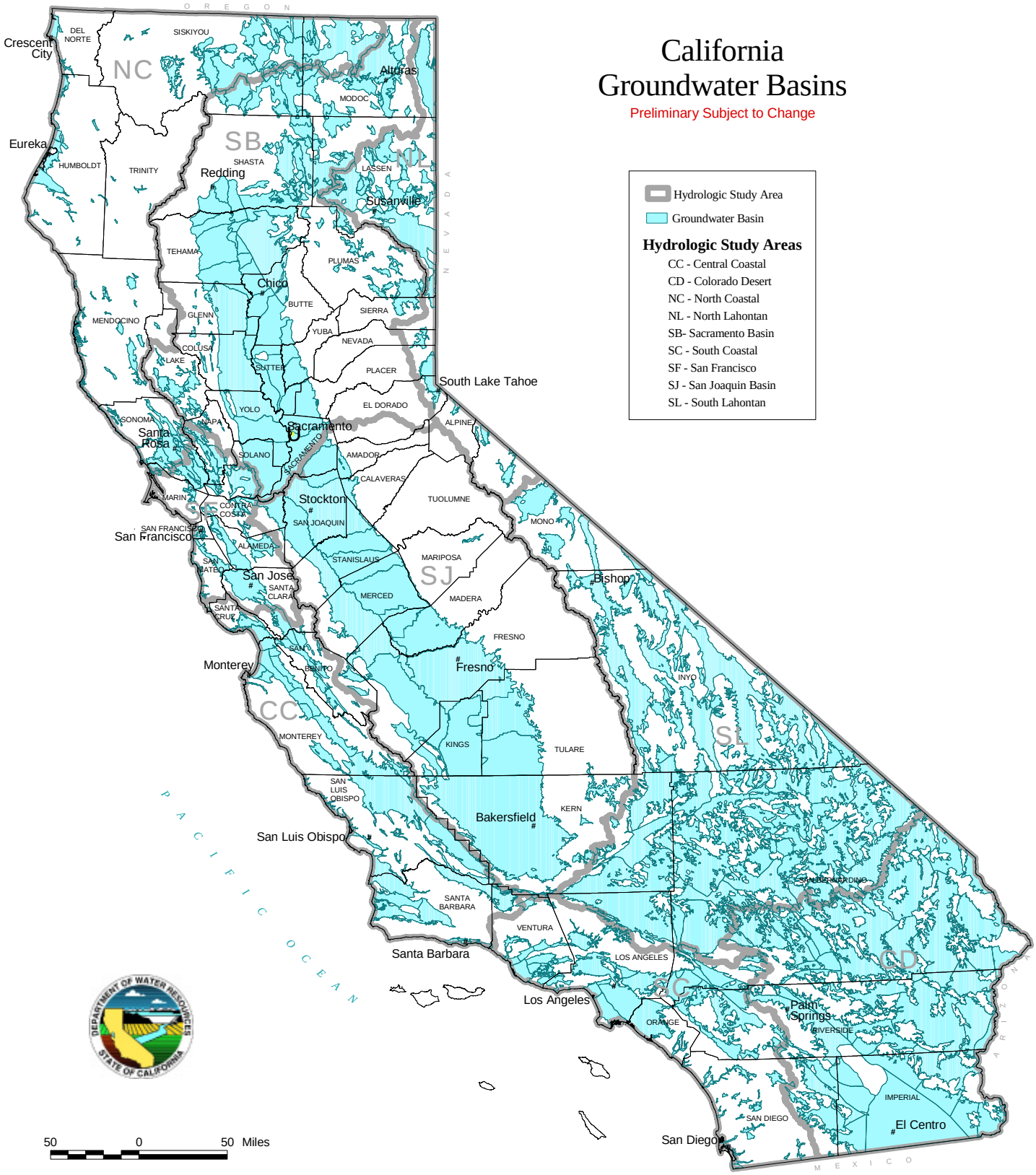


Figure 2. California Goundwater Basins. Preliminary map developed by the California Department of Water Resources.

Figure 2. HSAs

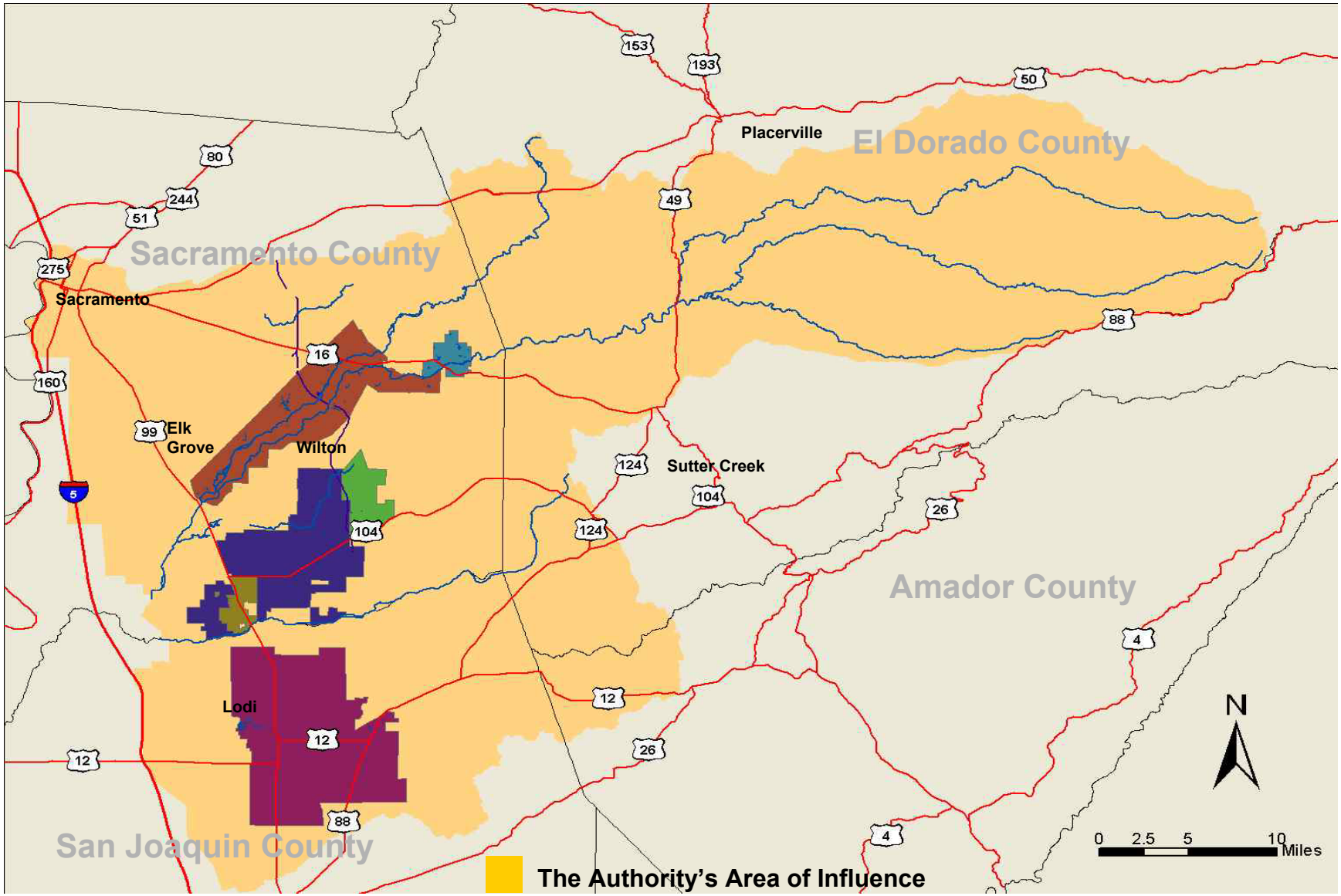


Figure 3. Area of Influences for the Southeast Sacramento County Agricultural Water Authority

Hydrogeologic Characteristics Of The GMA

The groundwater aquifer underlying the GMA consists of unconsolidated sediments of the Victor Formation, comprised of sands, silts, and clays; with sand and gravel along old stream courses. These deposits yield little to moderate amounts of water, but do not readily accept recharge due to layers of hardpan. Larger amounts of groundwater are yielded from old stream channels. The Laguna Formation (consisting of beds of silts, clays, and sands) underlies the Victor Formation. The Laguna Formation is exposed in the easterly and northerly portions of the study areas, characterized by low rolling foothills. Wells tapping sand layers in the Laguna Formation yield high amounts of groundwater. The Mehrten Formation of volcanic origin underlies the Laguna Formation and consists of beds of black volcanic sand, brown clay, and sand. The sands in the Mehrten Formation yield large to moderate amounts of water to wells. Figure 4 shows the areal extent of the various geologic formations comprising the GMA.

Recharge to the groundwater basin is derived from three (3) major components: 1) deep percolation of precipitation; 2) applied water; and 3) stream flow. The Victor Formation is underlain by soils containing hardpan or organic clay that inhibit infiltration. In the eastern areas, slopes are too steep causing runoff of precipitation in excess of evapotranspiration. It is only along active stream channels that sands and gravels occur of sufficient areal extent and depth that sufficient amounts of surface water may infiltrate to recharge the groundwater body.

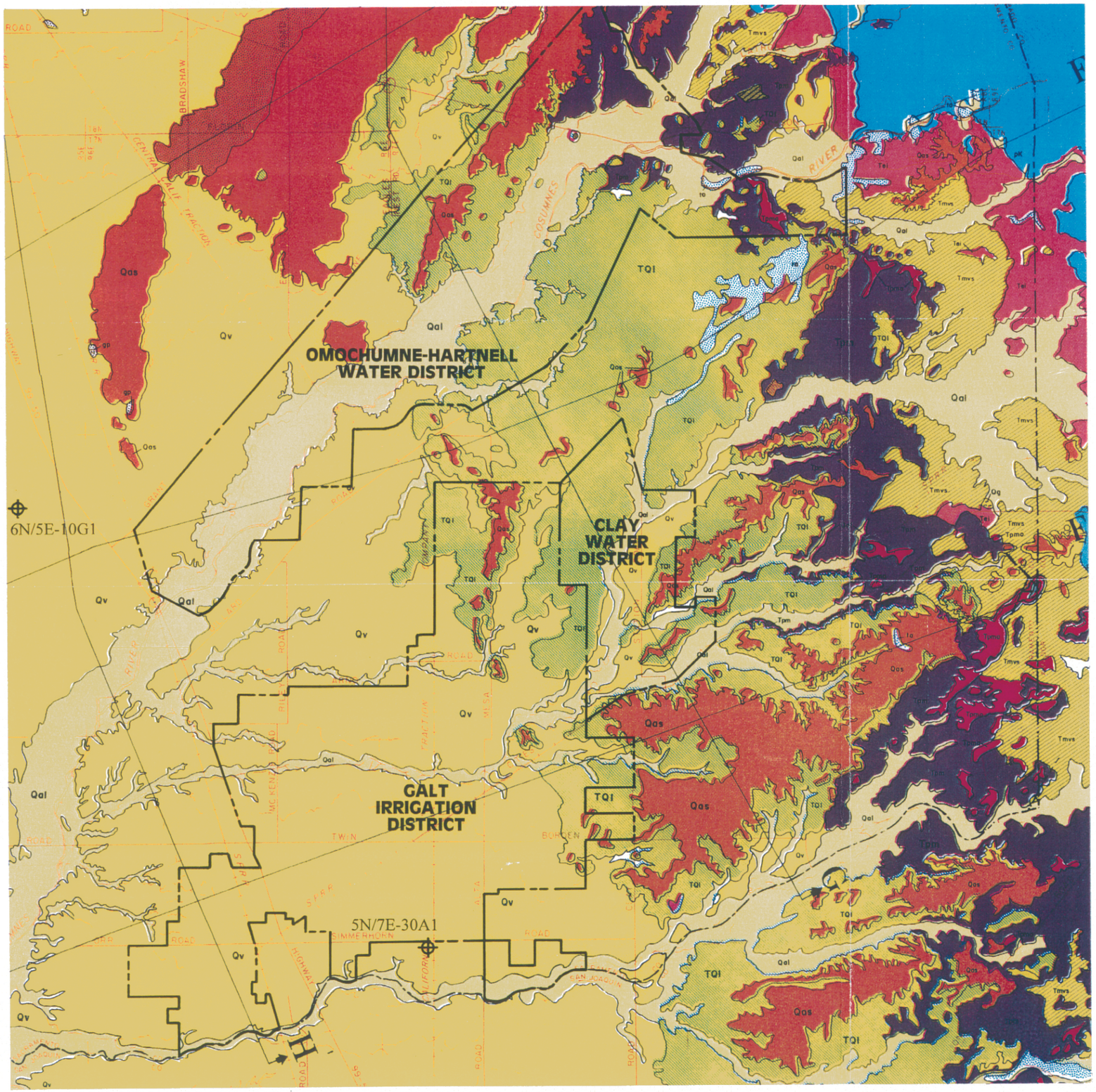
Groundwater Levels

Groundwater levels in the GMA have declined between 10 and 80 feet from 1963 to 2001. Groundwater levels for selected wells are shown in Figures 5 and 6, and the locations of those wells shown in Figure 7.

The horizontal flow of groundwater in the GMA trends from the Northeast to the Southwest towards the pumping depressions under the City of Elk Grove and the City of Galt. Figure 8 shows a map of groundwater contours for the fall of 1963, developed from historical well data. This contour map shows a slight depression near Elk Grove, to a depth of approximately 60 feet below mean sea level (MSL). Groundwater levels in the central portion of the GMA were about 20 feet above mean MSL in 1963.

Figure 9 shows groundwater contours for the fall of 2001. Groundwater levels through the central portion of the GMA have fallen to 30 feet below MSL (a decrease of 50 feet from 1963 levels). Additionally, the groundwater depression beneath Elk Grove has grown to cover a greater area, but has not significantly lowered in depth. The groundwater depression below the City of Galt has significantly increased in size. In 1963, the groundwater level was approximately 20 feet below MSL, by 2001 the groundwater level had lowered to 50 feet below MSL (a drop of 30 feet).

As these pumping depressions located under the cities of Elk Grove and Galt deepen and expand in areal extent from increased demand, subsurface flow of groundwater from the GMA toward



LEGEND

Qal — VALLEY ALLUVIUM

Unconsolidated deposits of sand, silt, clay, and occasional lenses of gravel. Occurs along east side tributary streams, also occurs as alluvial plain areas in Solano and Contra Costa Counties. Permeability varies from high to low; in certain areas acts as forebay for ground water recharge. May provide small yields of ground water to shallow wells.

Qas — ARROYO SECO GRAVELS

Exposed only in east-central part of county. Composed of well-rounded pebbles and cobbles in a matrix of iron-cemented sandy clay; hardpan may be present. Gravels have low infiltration rates; yield small quantities of water to wells.

Qv — VICTOR FORMATION

Underlies the broad plain between Sacramento River and the foothills. Composed of interbedded sand, silt, and clay with lenses of gravel; includes buried meandering stream channel deposits composed of poorly sorted cobbles, gravel, and sand. Surficial materials typically contain hardpan. Infiltration rates are very low as is permeability. May provide large quantities of water to wells tapping buried stream channels; wells not tapping channels may yield little water.

TQl — LAGUNA FORMATION

Exposed in foothill area south of American River. Upper portion of formation may be correlative in part with the Fair Oaks Formation. Composed of beds of nonvolcanic sand, silt, and clay. Infiltration rates range from low to high depending on grain size. Wells tapping sand zones yield high quantities of ground water; those tapping clays yield only small quantities.

Tpm — MEHRTEN FORMATION

Exposed in foothill area immediately east of Laguna Formation. Composed of beds of clay and black volcanic sands. Infiltration rates are high where streams cross zones of black sands. Sands contain confined ground water; yields to wells are high from the sand zones.

Tpma — MEHRTEN ANDESITE

Zones of andesite tuff-breccia interbedded with sediments of the Mehrten Formation. Except along joints, andesite is impermeable. Acts as confining layer for ground water in underlying sediments.

Tmvs — VALLEY SPRINGS FORMATION

Crops out to east of Mehrten Formation. Composed of light-colored rhyolitic sands, clays, and beds of tuff and pumice. Yields moderate quantities of ground water of good quality.

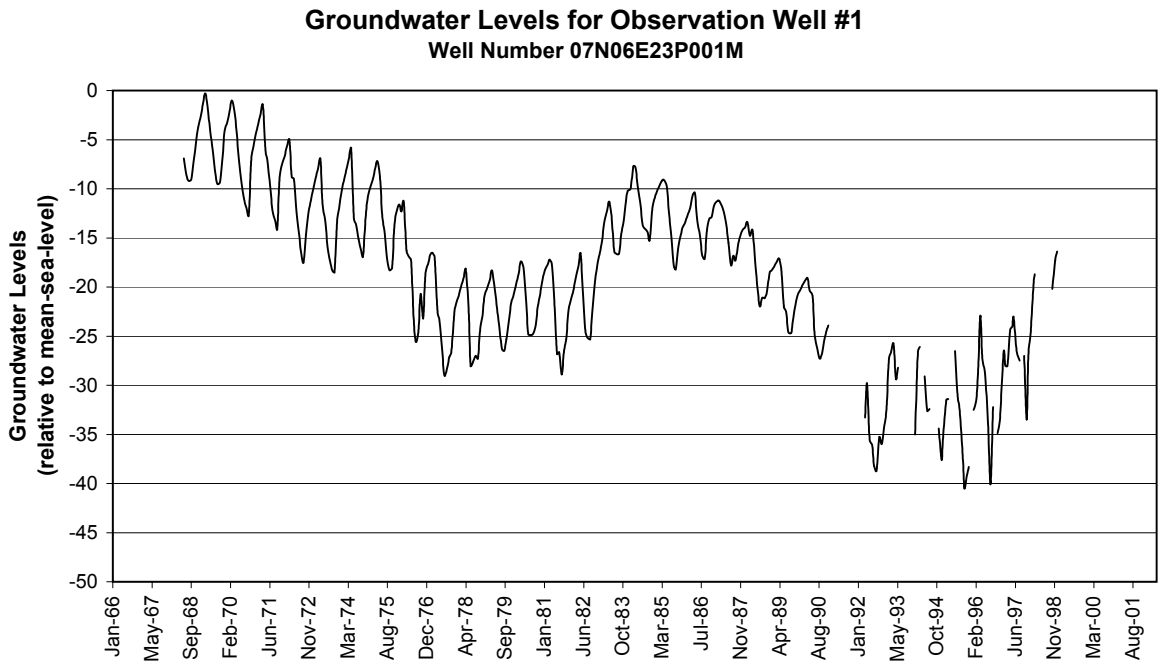
⌖ LOCATION OF WELL USED IN LONG TERM HYDROGRAPH

GROUNDWATER MANAGEMENT AREA

AREAL GEOLOGY

NOT TO SCALE

FIGURE 2



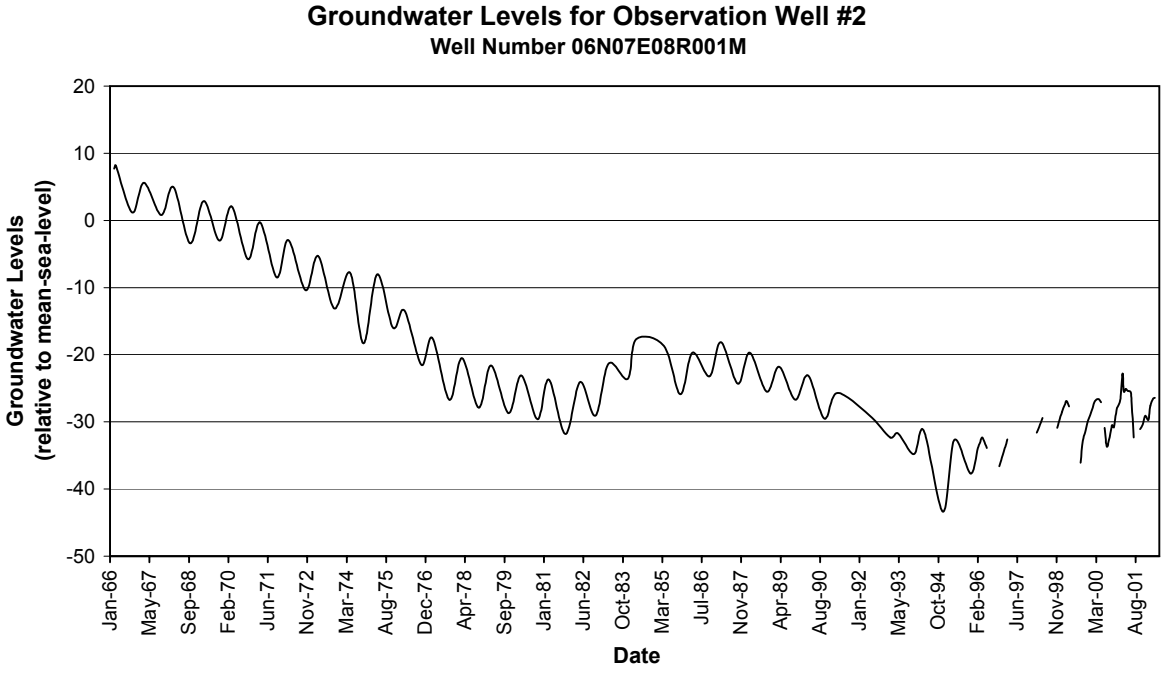


Figure 5. Well Level Graphs for Observation Wells 1 and 2.

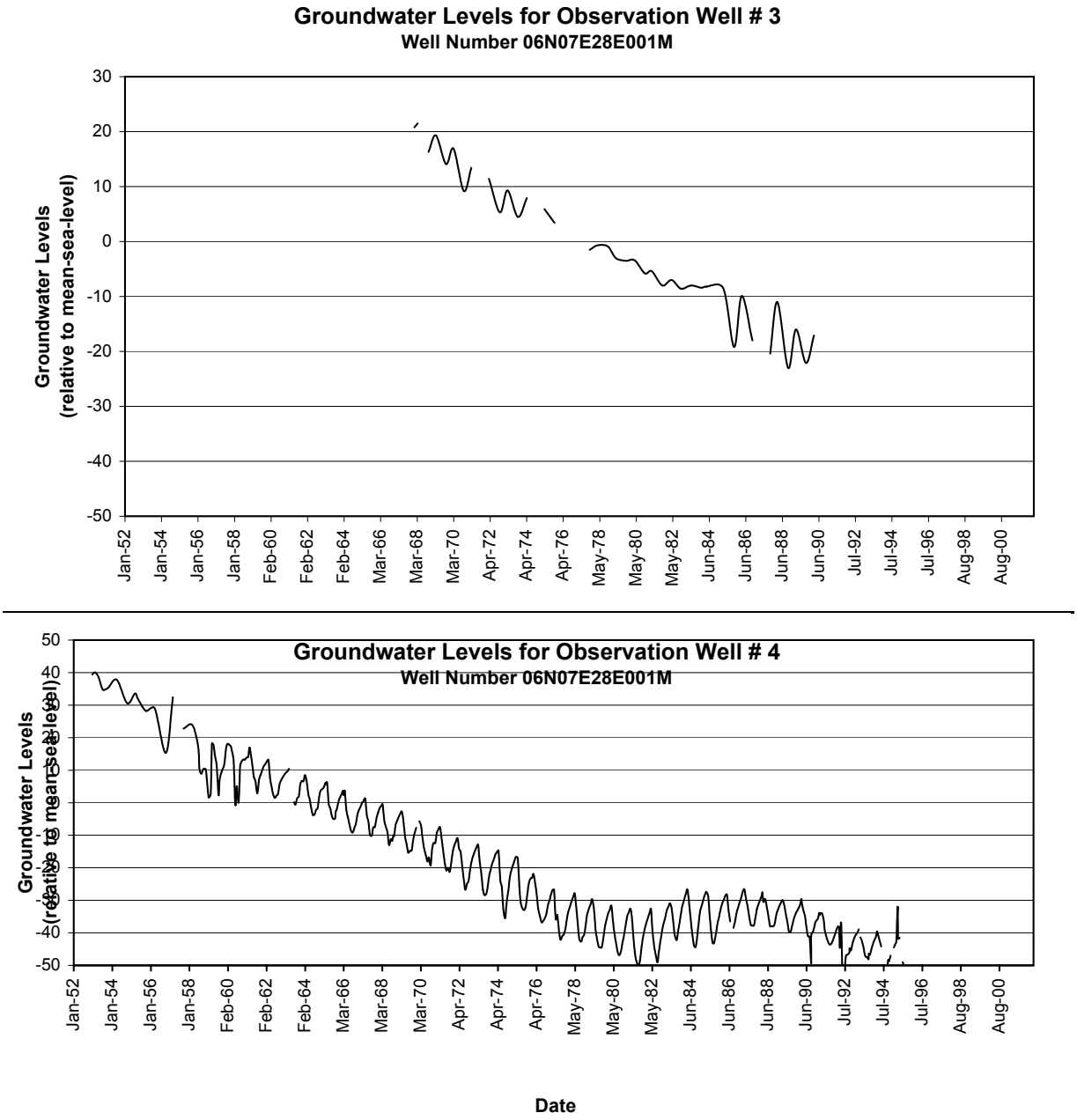


Figure 6. Well Level Graphs for Observation Wells 3 and 4.

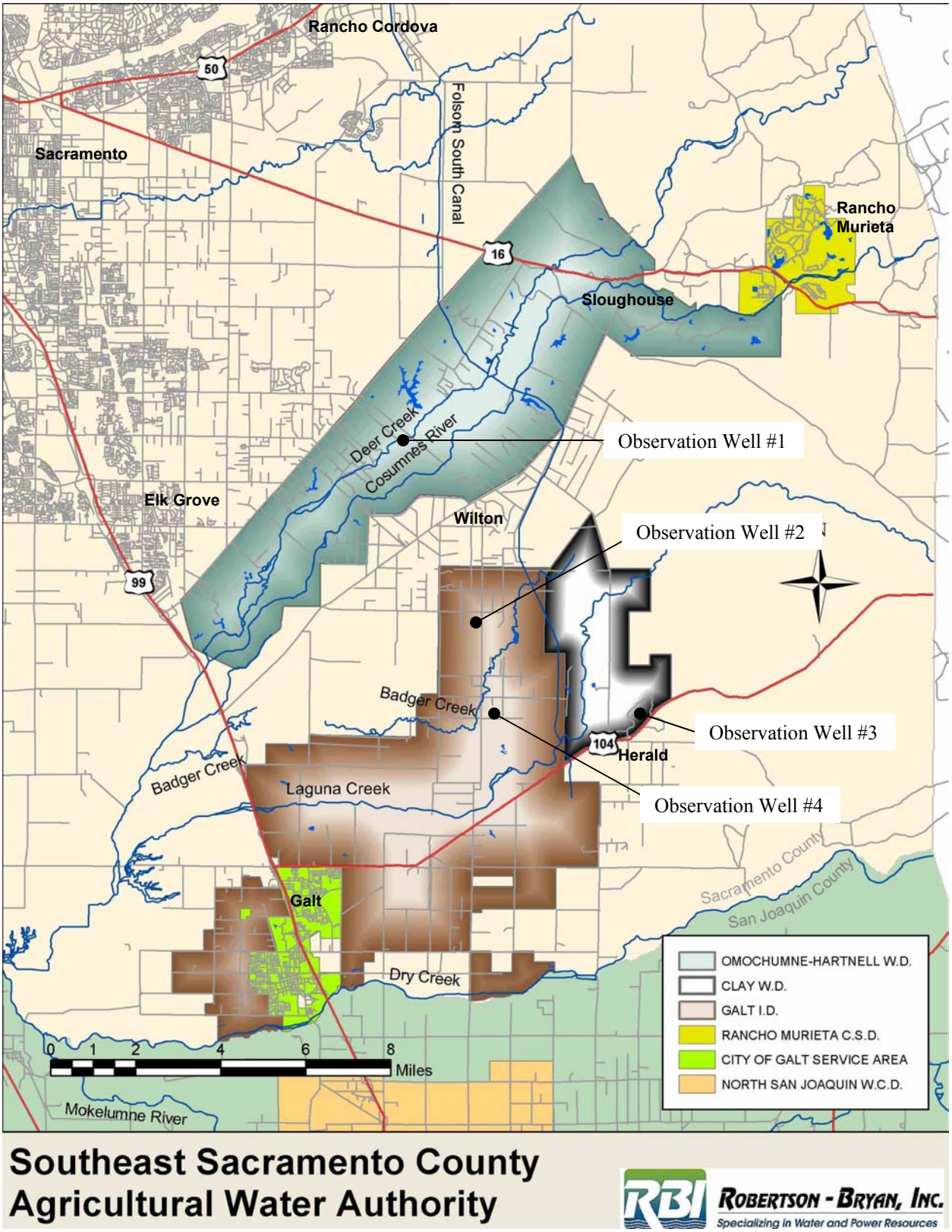


Figure 7. Locations of Observation in Figures 5 and 6.

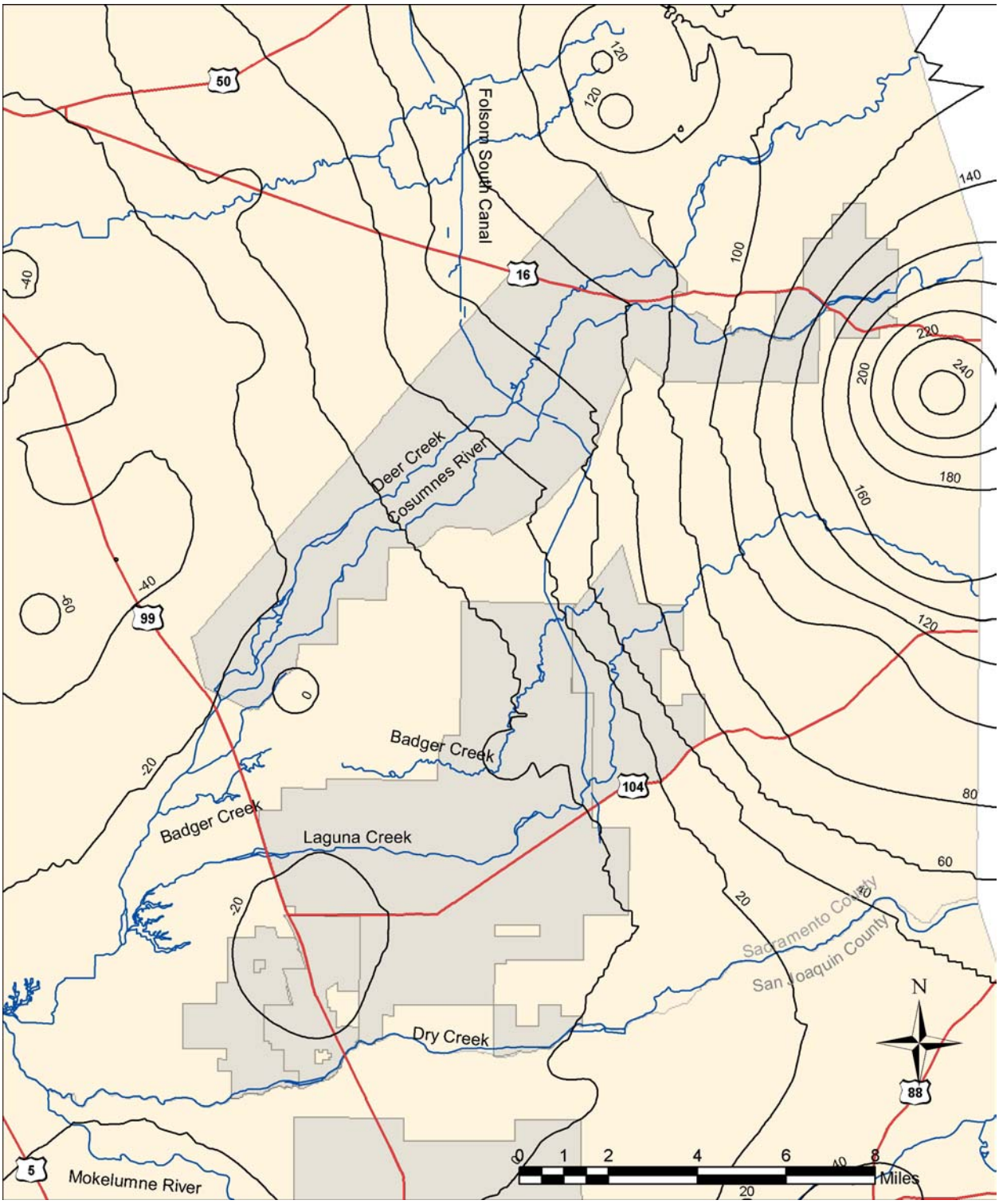


Figure 8. Groundwater Contour Map for Southeast Sacramento County for fall 1963.
Data provided by California Department of Water Resources.

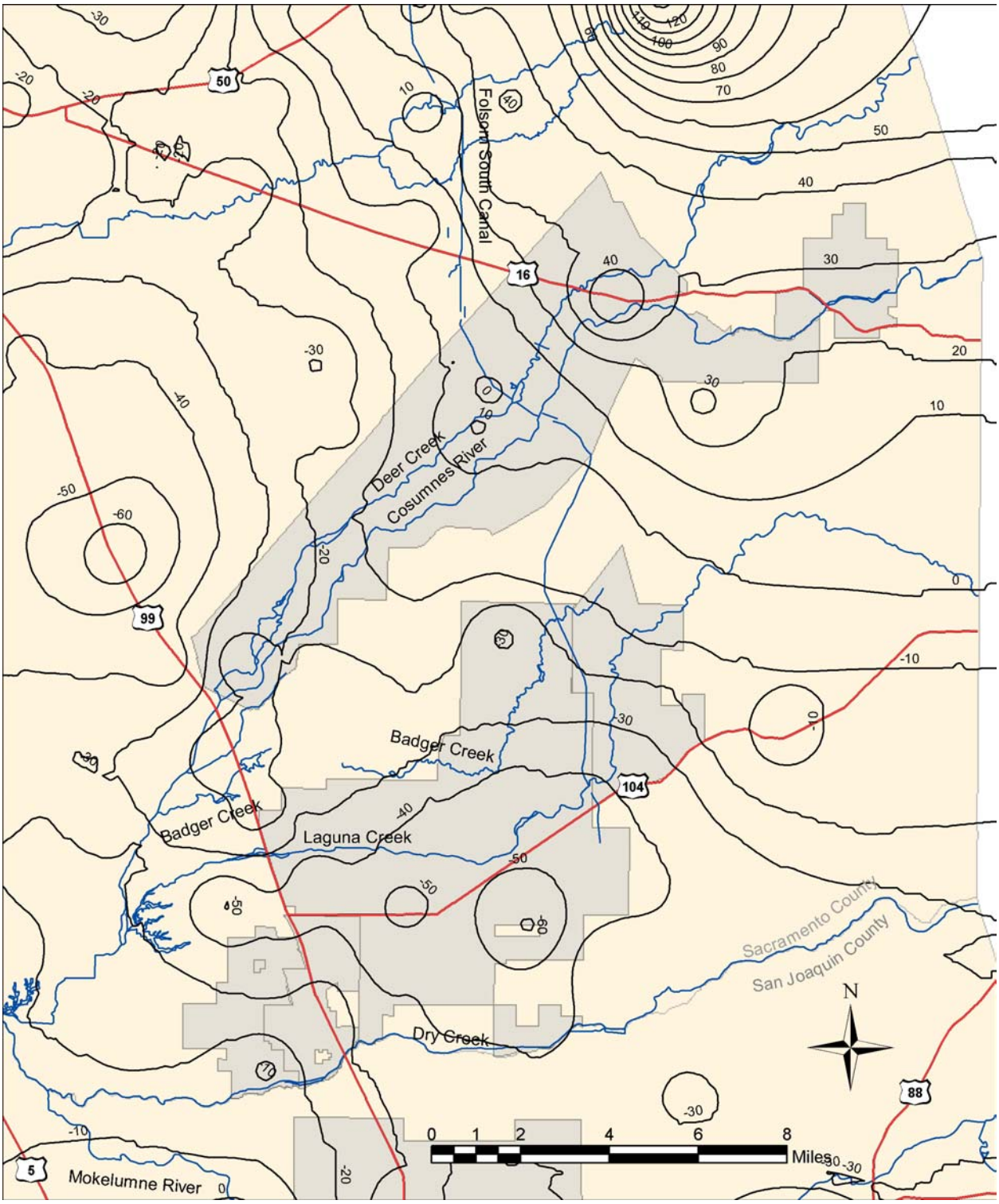


Figure 9. Groundwater Contour Map for Southeast Sacramento County for fall 2001.
Data provided by California Department of Water Resources.

these depressions is expected to increase. The expected consequences are additional lowering of groundwater levels within the GMA and increased water quality risks from the movement of contaminant plumes north of the GMA.

IV GROUNDWATER MANAGEMENT ACTIVITIES

Groundwater comprises the only source of water available to many of the agricultural and residential users in the GMA, however, the Districts that make up the Authority have historically not actively managed their groundwater resources. Predictably, as shown in the groundwater level graphs and groundwater contour maps, groundwater levels have fallen over time as the population of the area has increased. Those agricultural users that have access to the creeks and rivers that transect the GMA use a small portion of the available surface water flows for irrigation. However, the unpredictable nature of these perennial watercourses precludes significant reliance on surface water for irrigation.

Each of the Districts has independently purchased imported surface water supplies at various times in the past. GID and CWD annually purchase discharged cooling water from Sacramento Metropolitan Utility District's (SMUD) Rancho Seco Power Plant through annual contracts. These supplemental surface water supplies is distributed via Laguna Creek and area available only to those users adjacent to the creek. Neither district own or operate water distribution facilities that could facilitate greater distribution of the supplemental surface water supplies.

Beginning in 1959 OHWD began importing supplemental water supplies from the Sly Park Unit of the Central Valley Project. Imports ranged from 800 acre feet to as much as 5,300 acre feet in 1966 and continued until 1974. After 1974 supplemental water was no longer available from Central Valley Project. With the completion of the Folsom South Canal in the early 1970's, supplemental water was made available to the Districts on an interim basis. The districts have consistently sought to secure long-term contracts either directly or through the County of Sacramento; however, these efforts have not been successful.

In an effort to help increase groundwater recharge the Cosumnes River, OHWD repaired four flashboard dams on the Cosumnes River during the summer of 2002. These flashboard dams will be operated to impound water during the late spring to increase the wetted area of the river bottom to increase percolation to groundwater. The dams were repaired with the assistance of Federal Emergency Management Agency funds secured to repair damage sustained during flooding in 1997. The OHWD will begin operation of the dams in the spring of 2003 and will work with other interested stakeholders, such as the University of California, Davis, to evaluate the effectiveness of these facilities.

V COMPONENTS OF THE GROUNDWATER MANAGEMENT PLAN

The California Water Code identifies the following twelve groundwater components that may be included in the GMP:

1) The control of saline water intrusion.
2) Identification and management of well head protection areas and recharge areas.
3) Regulation of the migration of contaminated groundwater.
4) The administration of a well abandonment and well destruction program.
5) Migration of conditions of overdraft.
6) Replenishment of groundwater extracted by water producers.
7) Monitoring of groundwater levels and storage.
8) Facilitating conjunctive use operations.
9) Identification of well construction activities.
10) The construction and operation by a local agency of groundwater contamination clean-up, recharge, storage, conservation, water recycling, and extraction projects.
11) The development of relationships with the state and federal regulatory agencies.
12) The review of land issue plans and coordination with land use planning agencies to assess activities which create a reasonable risk of groundwater contamination.

With the approval of SB 1938, the following additional requirements were placed on agencies choosing to prepare a GMP:

1) Prepare and implement a groundwater management plan that includes basin management objectives for the groundwater basin that is subject to the plan.
2) The local agency shall prepare a plan for involving other agencies that enables the local agency to work cooperatively with other public agencies whose service area or boundaries overly the groundwater basin.
3) The local agency shall prepare a map that details the groundwater basin.
4) The local agency shall adopt monitoring protocols that are designed to detect changes in groundwater levels, groundwater quality, and inelastic subsidence for basins in which subsidence has been identified as a potential problem, and to detect flow and quality of surface water that directly affect groundwater levels or quality that are caused by groundwater pumping in the basin.

The Authority has reviewed these requirements for developing a GMP, and identified a set of components that meets its needs and objectives. These components, which are discussed below,

are designed to move the Authority forward in developing appropriate groundwater management programs. The components listed below may be modified as the Authority moves forward with data collection efforts and evaluations of potential groundwater management programs.

Groundwater Levels And Groundwater In Storage

Groundwater provides the only reliable sources of water available in the GMA. Therefore, the Authority considers developing more information about the groundwater levels in the GMA the first priority of this GMP. Regular mapping of groundwater levels depicts the direction of groundwater movement and hydraulic data collection gradients necessary for quantifying flows into and out-of the GMA. This was also the consensus of the local interests attending the Groundwater Workshop held in September 2002. As described below the objective of this component is to gain an understanding of how groundwater in the GMA reacts to natural and manmade influences.

- **Groundwater Levels and Storage Management Objectives**

  Through an analysis of past, current, and projected groundwater levels the Authority will develop objectives for groundwater levels and groundwater in storage. These objectives will be developed to meet the needs of the Authority's members, and to maintain the health of local water resources both for consumptive use and for the environment. The impact of groundwater extraction or recharge in neighboring areas within the groundwater basin (as defined in Bulletin 118) will be considered in developing objectives for groundwater levels and storage within the groundwater management area GMA.

  The objective of the groundwater level and storage component of the GMP is to identify areas of overdraft and provide data to calculate changes in groundwater storage and net recharge and depletion over time. This information will assist the Authority in setting management targets for groundwater levels and storage.

- **Monitoring Protocols**

  The Authority will develop semi-annual groundwater maps to assist it in developing, and later, managing a sustainable groundwater management strategy. Monitoring will include the following activities:

  1. Inventory active wells and existing water level data.
  2. Determine wells to be included in the monitoring program.
  3. Establish frequency for well data collection.
  4. Compile data and map groundwater elevations.

  The DWR, the County of Sacramento Department of Water Resources, the Sacramento Municipal Utility District all act as clearinghouses to gather well water-level data in the GMA. The Authority will rely on these agencies to continue to collect this. The Authority

will also work with these agencies to identify the number and distribution of wells for which data will be collected.

Groundwater Quality

Since groundwater accounts for nearly all of the water used within the GMA, it is important to protect that water source from contamination. Through implementation of this component, the Authority will develop quantitative objectives for groundwater quality in the underlying aquifer to meet the needs of the major uses of groundwater within the GMA. The Authority will also assist responsible regulatory agencies in developing an understanding of the hydrogeology of the GMA and the vertical and lateral movement of groundwater based on monitoring activities undertaken by the Authority. The Authority will notify appropriate regulatory agencies of changes in water quality (both surface and groundwater) that might indicate the occurrence of point source contamination and changes in direction of flow from existing contaminated groundwater plumes.

- **Groundwater Quality Objectives**

  The Authority will collect past and current water quality data within the GMA to assist it in setting groundwater quality objectives. These objectives will be numerical standards based existing water quality and the various uses of groundwater in the GMA.

- **Groundwater Quality Monitoring Protocols**

  The Authority will develop and implement a well-water monitoring program. Where possible the Authority will work with other local, state, or federal agencies to determine well-water monitoring protocols. Because surface flows can contribute to the contamination of groundwater, the Authority will also develop monitoring protocols for surface water bodies influencing groundwater within the GMA. Due to the contaminated plume from the County's Kiefer Land Fill, travel times and trends will be charted to monitor the risk of contamination from that source.

Surface Water Contributions To Groundwater

The Authority will inventory all surface water sources that contribute to groundwater recharge within the GMA. Objectives will be developed aimed at maintaining or enhancing groundwater recharge from natural and imported surface water sources. The GMA includes five major waterways; Cosumnes River, Dry Creek, Badger Creek, Deer Creek and Laguna Creek. The Cosumnes River and Dry Creek are the two major waterways within the GMA, however, flows in both these systems generally cease from mid-summer to late fall.

The Authority will work with other agencies to ensure that surface water flows into the GMA meet the objectives set forth as a component of this GMP. Recognizing the interest in the Cosumnes River for anadromous fish protection, the Authority will work cooperatively with the California Department of Fish and Game, Nature Conservancy, Cosumnes River Preserve, the

Fisheries Foundation of California, and the Central Valley Project Improvement Act's Anadromous Fish Restoration Program.

- **Surface Water Objectives**

  The objectives for surface water resources, within the scope of this GMP, are to quantify the amount of groundwater recharge attributable from local waterways, evaluate the potential to expand on the uses of local waterways, to enhance and protect surface water contributions to groundwater, and to work with other agencies or private parties to increase the amount of surface water available for groundwater recharge.

- **Surface Water Monitoring Protocols**

  The Authority will, in cooperation with other agencies, monitor surface water flows in the GMA. The Authority will inventory all significant surface water sources in the GMA

  In-order to quantify the volume of groundwater being recharged from surface water flows the Authority will develop a surface water monitoring program. On the Cosumnes River, which is believed to be a major source of groundwater recharge, the Authority will install two stream flow gauges. These gauges will be installed at Rooney Dam and at Mahon Dam. These dams are flashboard dams operated by OHWD to enhance groundwater recharge. The Authority will collect flow data on other waterways in the GMA to assist in determining the amount of groundwater recharge occurring from these waterways.

  Where possible the Authority will work with other local, state or federal agencies to collect surface flow data. Surface flows are important to aquatic life in local waterways, particularly the Cosumnes River. The Authority will work closely with, and share data with, other parties interested in surface flow data in developing monitoring protocols.

Water Conservation

The Authority will develop objectives for water conservation for the major uses of water in the GMA, which primarily include agriculture and residential use. Water conservation objectives will be developed to reflect objectives for groundwater levels, groundwater storage, and water quality. The Authority will advise water users in the GMA why water conservation efforts are important to the protection of local water resources.

- **Water Conservation Objective**

  The Authority will act to educate water users in the GMA about conservation practices through the periodic dissemination of information. The Authority will rely on state, federal, and other agencies that develop residential or agricultural water conservation literature.

- **Water Conservation Monitoring Protocols**

  As more information becomes available on the efficiency of water use in the GMA, the Authority will develop appropriate monitoring protocols.

Conjunctive Use

The Authority will actively pursue the development of a conjunctive use program where surface water supplies are made available to groundwater users, in-lieu of pumping, or where surface water is recharged into the underlying aquifer as a water banking operation. Conjunctive use has only been practiced on a limited scale within the GMA. This is due primarily to a lack of surface water supplies and a distribution system for surface water supplies.

- **Conjunctive Use Objectives**

  The Authority will collaborate with other agencies and interested parties to develop a conjunctive use program that is consistent with the management objectives of this GMP.

- **Conjunctive Use Monitoring Protocols**

  At the present time no conjunctive use program exists in the GMA. As feasible opportunities for conjunctive use are identified monitoring protocols will be established as part of the implementation program.

Identify, Protect, And Enhance Groundwater Recharge Areas

The Authority will actively pursue funding to develop groundwater recharge areas independently or in cooperation with other agencies or stakeholders. The Authority will also develop an ongoing program for identifying potential groundwater recharge areas and reviewing updated land use development plans to determine whether proposed developments will impact recharge area or groundwater quality.

- **Groundwater Recharge Area Objectives**

  The Authority will undertake an assessment of all significant recharge areas that influence the GMA. The primary objective of this assessment will be to physically identify recharge areas, and to protect those areas from degradation.

- **Groundwater Recharge Area Monitoring Protocols**

  Appropriate monitoring protocols will be developed as the Authority identifies recharge areas.

Well Abandonment And Well Destruction

Permits are required from the county for abandonment of wells. The Authority will rely on continued administration of the well abandonment and destruction program by the appropriate regulatory agencies. The Authority's objective for well abandonment and destruction will be to provide available groundwater data, assist in identifying locations of operating and abandoned wells, and to advise well owners in the GMA why proper well destruction is important for protection of water quality. The Authority will also investigate alternatives to well abandonment such as conversion to monitoring wells or pretreated injection wells.

Work With State, Federal And Local Agencies And Stakeholders

The Authority will collaborate with the appropriate agencies and stakeholders in furthering the effective transfer of information regarding all aspects of groundwater management in the GMA. The Authority is an active member of the Sacramento Groundwater Forum Successor Effort.

Mediation Clause

If an unresolved dispute arises during implementation of this GMP, the members of the Authority and all other interested parties will, in good faith, attempt to resolve such dispute through non-binding mediation based on the following three principles.

A. Each party involved in the dispute will promptly designate an individual to act on its behalf during the mediation. These representatives will agree upon and retain a single, neutral mediator with expertise in water matters. The mediator will decide the dispute among the parties, but may retain an engineer or other technical staff the mediator reasonably believes are necessary in resolving the dispute among the parties. The mediation will take place at a neutral site chosen by the mediator, except as the parties' representatives mutually agree.

B. The parties' representatives will promptly meet with the mediator in an attempt to resolve the dispute. In addition to its representative, each party may be represented during mediation by counsel. The parties may present witnesses for questioning by the mediator and may present the mediator with any documents or information that the parties deem appropriate. The technical rules of evidence will not apply to the mediation; instead, the mediator may rely upon any evidence that responsible persons are accustomed to rely upon in the conduct of serious affairs. Witnesses shall testify under oath or via affidavit.

C. The costs of such mediation will be split equally among the parties. The costs of attorneys, experts, and other legal services incurred by a given party will be borne by that party alone.

APPENDIX A

Board of Directors' Resolution to Prepare Groundwater Management Plan

RESOLUTION NO. 02-02

A RESOLUTION BY THE BOARD OF DIRECTORS OF THE SOUTHEAST SACRAMENTO COUNTY AGRICULTURAL WATER AUTHORITY OF INTENTION TO ADOPT AND IMPLEMENT A GROUNDWATER MANAGEMENT PLAN

WHEREAS, the landowners within the Southeast Sacramento County Agricultural Water Authority ("Authority") are dependent on the groundwater basin underlying the Authority ("Basin") to meet their irrigation and domestic water needs; and

WHEREAS, protection of the water quality and water quantity of the Basin is a matter of vital importance to the Authority; and

WHEREAS, pursuant to California Water Code § 10750 *et seq.* ("AB 3030") the Authority is authorized to adopt a groundwater management plan in accordance with the procedures set forth therein; and

WHEREAS, Galt Irrigation District, Omochumne-Hartnell Water District and Clay Water District, who formed the Authority for the purpose of adopting a groundwater management plan for the Basin, have previously adopted a coordinated groundwater management plan, which remains in effect; and

WHEREAS, the Board of Directors desire to draft and adopt a new groundwater management plan to take into consideration the formation of the Authority; and

WHEREAS, the Authority has held a public hearing and has complied with the requirements for publication of notice set forth in California Water Code § 10753.2(a);

NOW, THEREFORE, BE IT RESOLVED THAT:

1. The Authority intends to adopt and implement a groundwater management plan, pursuant to California Water Code § 10750 *et seq.*

2. The District's consulting engineers, Robertson-Bryan, Inc., are directed to prepare a draft coordinated groundwater management plan for submittal to the Authority's Board of Directors on or before _____ ___, 2002.

3. The Secretary of the Authority is instructed to publish this resolution in accordance with both section 10753.3 of the California Water Code and section 6066 of the California Government Code.

Approved this 22nd day of August, 2002

Ayes: _____

_____

Noes: _____

Absent: _____

Certification

I, Wendy Sparrowk, hereby certify that I am and at all times mentioned herein was duly elected, qualified and acting Secretary of the Southeast Sacramento County Agricultural Water Authority organized and existing under and by virtue of the laws of the State of California, that the foregoing is a full, true and correct copy of a Resolution duly and regularly adopted at a meeting of the Board of Directors of said Authority duly held on August 22, 2002, a majority and quorum of the members of said Board of Directors being present and voting in favor of said Resolution; and that said Resolution has not been modified, rescinded, altered or amended and is now in full force and effect.

_____

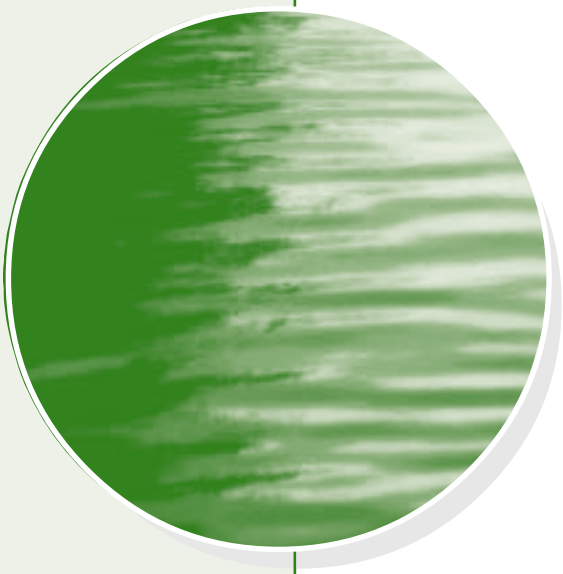
Wendy Sparrowk, Secretary

APPENDIX B

Information on the Central Sacramento County Groundwater Forum

Central Sacramento County Groundwater Forum

A Partnership of the Water Forum, California Department of Water Resources and the California Center for Public Dispute Resolution



What's the Situation?

- About two-thirds of the water used in the Central Sacramento County area comes from underground. This groundwater is vital to all segments of the community – agriculture, business, the environment and residents.
- While actual use varies according to conditions, in 1990 about 250,000 acre-feet of groundwater was pumped in Central Sacramento County for ranching, farming, environmental, business and residential uses.
- Significant increases in urban demand are anticipated, which could increase reliance on the groundwater aquifer.

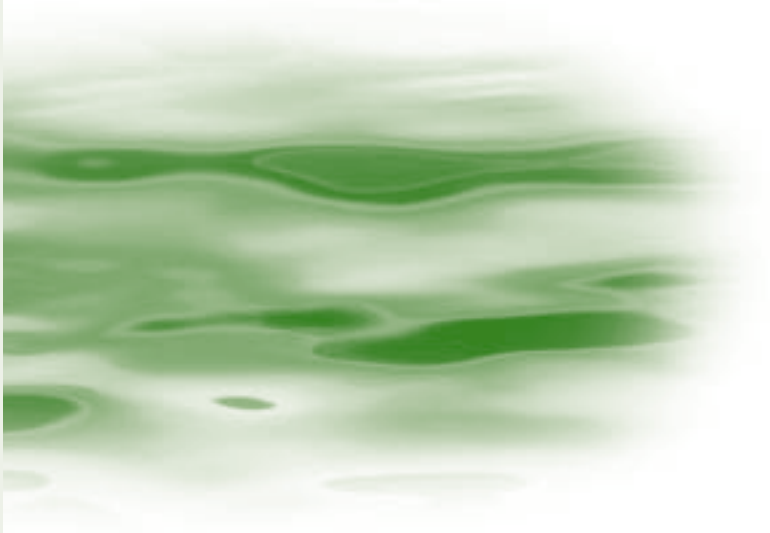
What's Broken?

- For years, the risk facing Central Sacramento County's groundwater resource has been growing. The presence and migration of contamination within the aquifer and continued reliance on groundwater threaten to affect groundwater storage capacity and quality.
- In some areas, groundwater pumping levels have declined,
- Several contamination sites affect Central County groundwater, including three USEPA Superfund sites, Aerojet, the former Mather AFB, and Sacramento Army Depot. Other sites are Kiefer Landfill, the abandoned PG&E site adjacent to the Sacramento River, Southern Pacific and Union Pacific RR yards in downtown Sacramento, and the former McDonald-Douglas Rancho Cordova rocket test site (also known as the Inactive Rancho Cordova Test Site).

WATER FORUM

What Are the Risks of No Action?

- Unless there is a plan for preventing over-pumping and further contamination, groundwater availability and quality in Central Sacramento County is at risk.
- Many community members are concerned about increased costs – to pump water, drill wells, clean up contamination, and pay for replacement surface water.
- As groundwater levels decline, well owners may be forced to incur the expense of deepening or drilling new wells.
- Water purveyors may be forced to spend more money on increased water treatment, installation of new, and/or deeper wells, and the purchase of surface water. These expenses will be passed on to consumers.
- A result of falling groundwater levels is a decline in river and stream flows, including Laguna Creek, Deer Creek, and the Cosumnes River. These flow reductions have negatively affected the populations of salmon and other native fish species.
- Contamination in the groundwater aquifer is spreading more quickly than once anticipated. Pumping can increase and accelerate the movement of contamination plumes.
- The state may intervene with legislation.
- Potential lawsuits could force adjudication, a process that will be less responsive to local interests and concerns than would a locally developed management plan.



What's the Path to a Solution?

- Everyone who relies upon groundwater, including ranchers and farmers, residents, business and environmental interests, must take action now to prevent a groundwater crisis in the future.
- Management of groundwater by those who use the resource most and know it best is the most promising solution. Determining the best management structure should come through collaboration among all the stakeholder interests.
- While there are a number of possible solutions to the Central Sacramento County's groundwater problem, the first step is to convene the local stakeholder groups and engage them in the problem-solving process.

What's the Process?

- The Water Forum is sponsoring the Central Sacramento County Groundwater Forum to provide an avenue for local stakeholders to collaboratively develop recommendations to protect the health and viability of the Central Sacramento County groundwater basin.
- Participants in the Central County Groundwater Forum include representatives of stakeholder interests in the Central County area, including ranchers and farmers, business, community and environmental interests, local government and public agencies, water purveyors and agricultural/residential users.
- Through education and negotiation, the Central Groundwater Forum will protect the long-term interests of Central Sacramento County stakeholders by developing recommendations that will protect and use groundwater resources in a sustainable manner.
- Stakeholder group representatives are responsible for communicating with members of their interest group and representing these interests in the Central County Groundwater Forum process.
- The Groundwater Forum is not a decision-making body. Proposed recommendations will be presented to the Water Forum stakeholders for review and approval, and forwarded to the relevant public agencies for implementation as appropriate.

What are the Benefits?

- Creating a groundwater management plan for the Central Sacramento County area will result in a number of positive and tangible benefits for all stakeholders.
- Groundwater will be used in a responsible and sustainable manner.
- Central Area groundwater users, small and large, public and private, can have a voice in the future use of their groundwater resource.
- Stabilizing groundwater levels will benefit rivers, streams, and wetlands in the Central County area and provide a predictable foundation for undertaking habitat enhancement and restoration programs.

What Are the Challenges?

- Although there are a number of challenges inherent in any discussion of groundwater management, the process of interest-based negotiation by local stakeholders is designed to find common ground.
- Areas of concern, including property rights, cost-benefit, governance, growth, taxes, safety, water quality, reliability, energy costs, equity, rates and fees, equitable cost-sharing and a realistic sustainable yield, are all issues that will need to be addressed before management recommendations can be developed.
- Consistent with the Water Forum Agreement, recommendations for groundwater management plans must respect the existing rights of any entity and individual and recognize the vested nature of both exercised and unexercised overlying groundwater rights.

About the Groundwater Basin

- The Central County Area is bounded on the north by the American River, on the east by the Sierra foothills, on the south by the Cosumnes River and on the west by the Sacramento River and Interstate 5.

- The groundwater basin underlying Sacramento County covers about 880 square miles and stores about 48 million acre-feet of water. It is part of the Central Valley groundwater basin, which covers 20,000 square miles and stores 1,927 million acre-feet of water.
- In the Central Area of Sacramento County, over 609,000 residents rely upon this important resource. Over 140,000 acres are farmed. More than 6,000 residents and businesses rely on private wells.
- Groundwater recharge comes from deep percolation of rainfall and applied water, streams and rivers, and underground inflow from adjacent areas. It varies from year to year, depending on hydrologic conditions and use. Recharge in 1990, for example, was approximately 250 thousand acre-feet.

About the Water Forum and the Central County Groundwater Forum

The Water Forum is a diverse group of business and agricultural leaders, citizens groups, environmentalists, water managers and local governments in Sacramento County, and water managers in Placer and El Dorado Counties. They engaged in a six-year process to develop and negotiate the Water Forum Agreement, which was adopted in April 2000. The Agreement is a long-term plan to provide a reliable and safe water supply for the region, and preserve the Lower American River.

The Central County Groundwater Forum was started in 2002 to fulfill an element of the Water Forum Agreement. Its mission is to develop recommendations designed to protect the health and viability of the Central Sacramento County groundwater basin as a sustainable resource for both current users and future generations.

For more information about the Water Forum and the Central County Groundwater Forum, contact the Water Forum office
(916)264-1999
660 J Street, Suite 260
Sacramento, CA 95814
www.waterforum.org.

WATER FORUM
660 J Street, Suite 260
Sacramento, CA 95814

APPENDIX C

Information on the Cosumnes River Task Force

COSUMNES RIVER TASK FORCE

WATERSHED PLANNING
AND
FLOOD RELIEF INVESTIGATION

Sponsored By:
County of Sacramento
Supervisor Don Nottoli, Chair
Resource Conservation Districts of Sacramento County

"A Strategy for study & collaboration"
December 1997

PROJECT DESCRIPTION:

Introduction:

The Cosumnes River Watershed and its tributaries have for many years been subject to occasional and sometimes severe flood events. From a historical perspective, these high flows were not necessarily of significant impact and often benefited wildlife species and the indigenous people living throughout the watershed. In more recent times, the watershed has become developed, first by ranchers and agriculturists and more recently with modern infrastructure and home development.

In the upper watershed of the Cosumnes River, the stream itself has stayed within the confines of mountainous terrain. In the Valley the river has over time meandered, resulting in deposition of fertile soil and creation of wetlands and streamside riparian habitat. The Watershed empties into the Mokelumne River and is an integral part of the Sacramento Bay-Delta ecosystem. In the early 1900s, agriculturists began intensively farming land throughout the watershed. Levees were established along the river to help contain the occasional high flow making the farmed land available for more varieties of crops and more stable production. This pattern of land use remained relatively constant through the last Decade. The occasional flood and its impacts were weathered by farmers and ranchers and economic losses were tolerable.

In more recent times, the value and cost associated with agricultural operations have risen dramatically and the impact from flooding can be significant. Today, besides agricultural operations, a significant number of homes, communities, business, roads and infrastructure exist within the watershed. Over time, privately owned levees, originally designed to protect low impact fanning, have become less stable and now are expected to protect much more. A break in a levee along the Cosumnes today usually mean significant impact to agriculture, flooded homes and damage to public roads and utilities. The issues surrounding the management of levees, wildlife habitat, levee repair, and land use throughout the Cosumnes River watershed are diverse and complex.

Background:

On January 2, 1997, the Cosumnes River Watershed experienced one of the most extensive flood events recorded during modern history. The flow was estimated to exceed a 100 year storm event and channel capacity in a number of locations that resulted in over 20 significant breaches and levee breaks.' As a result, over 24,000 acres of farm and ranch land were impacted, over 80 homes flooded, and a significant number of public roads and structures damaged. Economic loses were well over $20 million. Impacts from this flood event was repeated throughout the state prompting the Governor to create a Flood Emergency Action Team assigned to make recommendations for repair and plans for future flood disasters. The Final Report, published May 10, 1997, recommended that the County of Sacramento and the Sloughhouse Resource Conservation District form a "Cosumnes River Task Force" to explore options for management of floods and associated impacts within the watershed. This report and proposal is prepared in response to the Governor's request and will serve as a guide for Task Force efforts.

' "Final Report, Governor's Flood Emergency Action Team" May 10, 1997
'USDA NRCS Damage Survey Report 3150-97-001

Mission Statement:

"The mission* of *the Cosumnes* River *Task Force is to develop a long term strategy that will encourage restoration* of *watershed health and improve flood management.

Process and Organization:

It is the intent of the Task Force to develop a consensus building process that will allow participation by the public, interest groups, landowners, and agencies. Because most of the watershed is privately owned and as expected will require significant commitment by landowners to implement various options and strategies proposed by this report, Task Force sponsor's have created an organizational structure that will allow needed guidance by those key stakeholders. The local Task Force "Steering Committee" will consist of the following representatives:

Don Nottoli, Chair
One Representative Each From:
Farm Bureau
Cattleman's Association
Reclamation District 800
Sloughhouse Resource Conservation District
Florin Resource Conservation District
Lower Cosumnes Resource Conservation District
Amador or El Dorado County Resource Conservation District
The Nature Conservancy

Appointed Citizen*

It is anticipated that the Steering Committee will meet often to guide support of any participating agencies, interest groups, Sub-Committee groups, assigned County Staff, or hired staff and consultants. The Committee will sponsor as many public meetings as needed to understand landowners needs, options available to improve flood management, provide expert testimony and technical data, and form consensus for recommendations or strategies for improved watershed health. The following plan will serve as a guide for development of a project report and hopefully action items and direction that local, state, federal agencies and private organizations can undertake to assist landowners implement resource improvements. It is a goal of the task force to create a structure for consensus building, use of professional facilitated processes, and provide an atmosphere that promotes participation by stakeholders. Nevertheless, the Steering Committee realizes that adjustments may be necessary as the planning effort advances, and members must remain flexible and ready to change the organizational structure or process to accommodate stakeholders needs. With the local focus of the Steering Committee and process involving community and stakeholders, the sponsors are confident that progress can be made and positive results for implementation at the conclusion of the effort.

*The Appointed Citizen position will be filled by consensus of the Steering Committee members.

Refer to figure I for the proposed organizational structure of the Cosumnes River Task Force. The Steering Committee will create various Sub-Committees that will be assigned to address various resource related topics and planning needs. The structure provides that various agencies or interest groups will serve as advisors to the Task Force Committees to provide expert information, suggested alternatives or help initiate studies needed to fill in where additional data is needed.

At the request of the Task Force Chair, Resource Conservation Districts of Sacramento County have submitted grant proposals for funding a full time staff position to provide direct support to the Chair and the Steering Committee for coordination and management of the planning process. The Task Force anticipates submission of additional grant proposals for additional planning support, resource studies, professional facilitators, consultants, or other needs. The Task Force may request agency funding to support special studies or provide for implementation of various recommended strategies.

At the conclusion of the planning process, the Steering Committee will guide the development and editing of a final report that will include input from the subcommittees, agencies, interest groups and outline feasible long term solutions to flooding and other resource concerns. The Steering Committee will summarize feasible alternatives and make recommendations for action or implementation.

Planning Area:

The size and complexity of concerns surrounding flooding and resource impacts within the Cosumnes River Watershed requires that the Task Force look at a wide variety of issues. It is not possible to examine options for flood management without study of land use, regulation, land rights, historical and cultural issues, biologic processes, and many other issues. Because the Cosumnes River Watershed crosses County Boundaries, there are political issues to address. The Task Force Map shows the approximate boundaries of the watershed.

Timetable:

Refer to Figure 3 which outlines the schedule to be followed by the Task Force.
Meetings, deadlines and task completion are subject to change.

PROJECT DESCRIPTION:

Introduction:

The Cosumnes River is one of California's last remaining free flowing streams. As such, it flows without any significant human made controls such as dams or diversions. This situation is sanctioned by some groups who desire to keep the Cosumnes "wild and free" as an example of what nature had intended. Indeed, a free flowing stream tends to provide the kinds of processes that are needed to maximize habitat for endangered and threatened terrestrial and aquatic species. Some agencies and organizations have goals and plans that strive to improve or rehabilitate resources for wildlife within the watershed.' Nevertheless, land use and owners within the watershed are at risk both physically and financially as a result of this "untamed" river. It has become apparent to all stakeholders that the levees are not adequate to protect existing agricultural enterprises, development or infrastructure. It is also apparent to all stakeholders that new strategies and management options need to be developed,

understood, supported and implemented to gain any long term security for watershed landowners and to accomplish resource goals proposed by various agencies. To be successful, this effort must employ a process that recognizes the fragile nature of the watershed, the needs and input of local landowners, the need for protection of the public trust, and is economically feasible.

It is the hope of the Task Force sponsors, that the process and following plan accomplish this objective. Following is a description of the elements of the Cosumnes River Task Force Plan that will be addressed through the process.

"Revised Draft Restoration Plan For The AFRP", May 30,1997, US Fish & Wildlife Service
"Ecosystem Restoration Program Plan", Draft July 28, 1997, CALFED

Watershed Description:

The plan will include a general description of the Cosumnes River Watershed as follows:

Cultural & Historical Resources: The Plan will include information about the historical use throughout the watershed. Understanding of historical use, cultural practices by indigenous people, and modern historical uses are critical to the understanding of natural resource processes and present day needs of humans.

Climate, Geology, Geomorphology & Hydrology: The Plan will include information about climate, historical rainfall, and its interaction with topography. Decision makers will need to understand the nature of river system and hydrology processes. Our understanding of geomorphologic processes is critical in making responsible decisions regarding land use and river control practices.

Land Use: Most stakeholders understand the significance of development, farming with perennial crops, and increased infrastructure within the watershed. Development of this kind poses a risk. A risk that needs to be addressed by decision makers who allow such development; A risk that needs to be addressed by those who choose to invest in this development within the watershed; A risk that needs to be addressed by the public in general policy and support if public assistance is needed.

Biologic Resources: The Plan must address the biologic resources that are impacted by actions in the watershed. Terrestrial and aquatic species, and wildlife habitat must be described to understand present conditions, potential enhancement, potential impacts, and requirements for the Public Trust.

Agricultural Resources: The Plan must recognize that agricultural use represents a significant economic and cultural resource within the watershed. The needs of the agricultural industry must be understood and incorporated into any environmental scheme that is proposed for this watershed plan. Property rights must be respected and efforts to support voluntary incentives need to be considered. An inventory of existing and potential agricultural enterprises within the watershed needs to be completed.

Issues & Impacts:

Stakeholders need to have a clear understanding of the perspective of each other in regards to watershed management. The planning process needs to include efforts to identify all issues of importance to stakeholders and what impact the issue has. Key to the development of consensus is understanding and knowledge about natural resource processes, cultural needs, and economic impact. The following issues, and other added as needed, will be addressed through the planning effort.

Flood Impacts: The report must clearly provide information about the economic and social impact of floods. What are the implications of present protection efforts?

Levees: The report should inventory all existing levee systems within the Cosumnes River watershed, including location, condition, risk of failure, ownership, maintenance needs, and associated costs for maintaining, repair or enhancement.

Land Use: Without doubt, increased development within the watershed increases the risk of loss to life and property. Not only have costs associated with traditional agriculture increased over time, but costs associated with human development and restoration of wildlife habitat and natural resources have increased. The plan should inventory present land use, zoning, infrastructure, and potential land use changes within the watershed. Considerable discussion has been raised over the placement of residential development within the floodplain. Maps are revised often to reflect new information and areas subject to or protected from flooding. Concern has been expressed regarding management and capacity of remaining old drainage channels. Resource Conservation Districts and others have been active in trying to promote responsible management and provide wildlife habitat within these tributaries. The inventory should address the impacts to society as well as to individuals. The plan should address general plan, important farmland protection, easement programs, and other efforts that impact and affect land use.

Wildlife & Aquatic Concerns: Considerable effort and study has been conducted towards identification of species and habitat that has been negatively impacted by human actions. The plan should inventory those species of concern within the watershed and identify the efforts being made or suggested by groups or agencies to restore natural wildlife species and habitat. The plan should identify those local, state, and federal regulations that impact land use decisions and the efforts of this study.

Erosion & Sedimentation: The report should seek to inventory any erosion and sedimentation problems that may exist in the watershed. The inventory should include descriptions of the kinds of erosion, sources, impacts from erosion and resulting sedimentation. Historical studies have indicated that most erosion sources are related to improperly designed roads, developments, and certain land use practices. Sedimentation throughout the watershed can significantly influence flood impacts.

Issues & Impacts, continued:

Agricultural Impacts: The report should seek to inventory any impacts related to agricultural practices including concerns associated with cultural practices, livestock and dairy operations, commercial timber operations, surface and groundwater management practices. The report should identify those agricultural practices that tend to help or hinder impacts from flooding. Of

all land uses, other than wilderness, agriculture is probably the most suitable or compatible with flood related impacts.

Agency Regulation & Misc. Programs: Various local, state and federal agencies maintain or enforce regulation of land use and activities within the Cosumnes River watershed and floodplain areas. These regulations can have a positive and negative impact upon flood potential. In addition, regulation and some agency programs are actively used to promote practices and measures that tend to lessen the impact of flooding. The plan shall inventory all existing regulatory authority and programs currently used to manage flood impacts.

Miscellaneous Impacts & Concerns: Other issues may develop or affect flood related impacts. Other concerns that the plan should address include, but are not limited to, Wildfire Management; Scenic and Aesthetic Concerns; Toxic Concerns; Utility Corridors and Water Transference Facilities; Sanitary Land Fills; Mining, and others. The plan needs to address all issues and concerns expressed by stakeholders.

Social & Cultural Considerations: A major objective of the sponsors of this effort is to provide information and increase the knowledge base of the stakeholders through workshops, newsletters and media outlets. Key to developing "buy in" from stakeholders and landowners is a clear understanding of the issues, impacts, and potential solutions for flood management. The sponsors hope to develop a process where participants feel welcome, believe they have a voice in the decision making process, and will endorse or help implement recommended actions. The landowner culture must be understood and accepted by agencies of jurisdiction. Issues such as access, trespass, and land rights must be respected. In addition, landowners must understand that agency staff will probably need access to complete studies and have confidence that some kind of "Safe Harbor" concept will be observed by agency personnel. Through this planning process, the sponsors hope to achieve trust among stakeholders in order to develop consensus and action items that can be implemented. The sponsors hope the final report will promote voluntary implementation of recommended practices through incentive based programs. A number of public information workshops are scheduled to encourage participation by individuals, groups, and organizations with an interest in the program and problems associated with flooding.

Management Strategies & Potential Direction:

The planning process will culminate with development of strategies and recommendations for stakeholders. If properly developed, these suggestions will be acceptable to a wide range of participants.

Existing Studies, Programs & Efforts: The planning effort needs to inventory any existing studies or programs being conducted within the watershed that could provide valuable data or knowledge about flood processes that help reduce flood potential. This process should not promote duplication of any studies and may help endorse existing efforts that would help decision makers.

Information & Data Needs: Through any planning process, participants often discover data gaps or information that is not available, that would be helpful to decision makers. The plan process should recognize that some information or knowledge needs that will not be able to be completed or studied. Further, the studies that are completed should rely as much as possible upon real data or in field survey rather than computer generated models. Recommendations will

be developed indicating what kinds of information is still needed to make informed decisions about flood management.

Potential Strategies & Options: A major objective of this planning process is develop a menu of recommendations or strategies that could be implemented to reduce flood impacts. The report should detail these options showing the benefits, disadvantages and probable costs of implementation. The report will present these alternatives without prejudice. Individual stakeholders can request or petition agencies of jurisdiction to support or implement various desired options.

Task Force Consensus Recommendations: From the final list of alternatives and options, the steering committee hopes to develop consensus on some issues and provide some direction or recommended actions. The steering committee and stakeholders do not hold any collective authority to require implementation of any one alternative or option. Recommendations presented would only promote implementation of those options the stakeholders believe would have the most benefit and likelihood of performance.

Report Summary & Conclusions:

The process, consensus and recommendations will be summarized. The report will be provided to all stakeholders.

Summary

Published by: Sacramento County Resource Conservation Districts December 1997

"The mission of the Cosumnes River Task Force is to develop a long term strategy that will encourage restoration of watershed health and improve flood management. "

History: On January 2, 1997, the Cosumnes River experience one of the most extensive flood events ever recorded. The flow was estimated to exceed a 100 year storm event and triggered numerous levee breaks that flooded over 24,000 acres. Over 80 homes were inundated, public roads and infrastructure was damaged, and watershed health was impaired. The Governor's Flood Emergency Action Team (FEAT) recommended that the County of Sacramento and Resource Conservation Districts (RCDs) form a Task Force to explore options for flood management.

Purpose: The primary purpose of the Cosumnes River Task Force is to develop a Coordinated Resource Management Plan (CRMP) process by which stakeholders can identify resource concerns, plan and implement improvements, and collaborate on common goals to improve watershed health. Stakeholders realize that any potential solutions for improved flood management must also address concerns beyond the immediate impacts associated with flooding. The proposed Task Force will also have to examine resource issues such as land use; infrastructure; water quality and supply; riparian and terrestrial wildlife habitat needs; channel maintenance; channel management including levee, floodway, easement, non-structural options; and, other issues developed during the plan process.

A major objective of the Task Force process is to provide a forum for discussion, education

and understanding regarding the complex issues surrounding watershed management. From this, the Task Force hopes to develop consensus, form partnerships, and opportunities to collaborate on alternative solutions for watershed improvement. The process would not preclude any existing program or agency/private group effort to manage resources within the watershed.

Organization: Because most of the watershed is privately owned and will require significant commitment by landowners to implement various alternatives, RCDs have suggested that the planning process be guided by those key stakeholders. A local Task Force "Steering Committee" would be chaired by a Sacramento County Supervisor and member representatives from various landowner groups.

Schedule: The Task Force is slated to begin meeting in the spring of 1998 with formation of the Steering Committee and Sub-Committees, invitation to all stakeholders including agency advisors and interest groups. If funding is obtained, RCDs will provide the Task Force with logistical support, staff and consultants to assist with the planning process. The process is anticipated to take at least two years ending in early 1999.

Funding: Resource Conservation Districts have applied for grants to assist the Task Force in the planning process. It is hoped that various existing agency and private organization will help contribute to the effort. Funding has already been appropriated to the US Army Corps to conduct a hydrologic study of the Cosumnes. Other programs may be available to assist with other needed studies and planning.

FOR MORE INFORMATION, CONTACT: Sacramento County Resource Conservation Districts 916-714-1104 ext.3

APPENDIX D

Local Groundwater Assistance Fund Application – Groundwater Management a

PROPOSAL SOLICITATION AND APPLICATION PACKAGE

LOCAL GROUNDWATER ASSISTANCE FUND APPLICATION

GROUNDWATER MANAGEMENT AND RECHARGE INVESTIGATION

SUBMITTED BY:

SOUTHEAST SACRAMENTO COUNTY
AGRICULTURAL WATER AUTHORITY

OCTOBER 24, 2002

ATTACHMENT A
LOCAL GROUNDWATER ASSISTANCE GRANT APPLICATION COVER SHEET
LOCAL GROUNDWATER MANAGEMENT ASSISTANCE ACT OF 2000

Proposal Title: Groundwater Management and Recharge Investigation

Name of Agency: Southeast Sacramento Agricultural Groundwater Authority

Contact person/title: Ronald R. Lowry, Chairman of the Board

Address: P.O. Box 445, Herald CA 95638

County: Sacramento

Telephone number: (209) 748-2324 Fax number: (209) 748-2324

E-mail address: Ronlowry@aol.com

Date Groundwater Management Plan adopted, if any: Apr. 1997 (predecessor JPA) / Nov. 2002 (SSCAWA)

Pursuant to Water Code Section: 10750 or other legal authority: (Please identify)

Amount of grant requested: $ 246,629

Duration of project: 19 months - anticipated completion date December 2004.

Location and geographic boundaries of the proposed project:

The groundwater management area is located in southeast Sacramento County, bordered on the north by Gran Road, on the south by Dry Creek and the Sacramento/San Joaquin county line, on the west by the Sacramento Joaquin River Delta and the east by the Sierra Nevada foothills.

Project Coordinates: Latitude (North): 38.17 Longitude (West): 121.15

DWR Bulletin 118-80 Hydrologic Study Area (HAS): San Joaquin River and Sacramento River

DWR Bulletin 118-80 Basin-subbasin Number: 5-21.65 and 5-22.16

FOR PROJECT TRACKING PROPOSES, PLEASE PROVIDE THE FOLLOWING INFORMATION:

1. Name, title, address, telephone number, fax number, and e-mail address of the person of the applicant's governing body (such as mayor, supervisor, board president or chairman, etc) authorized by the Agency's resolution to file the application and enter into an Agreement with DWR:

Name: Ronald R. Lowry Phone: (916) 689-3900 Fax: (916) 689-3900

Title: Chairman of the Board e-mail: Ronlowry@aol.com

Address: 7515 Lakehill Court

City: Elk Grove Zip: 95624-9642

2. Name, title, address, telephone number, fax number, and e-mail address of the applicant's local contact person to be designated as the Agency's Project Manager:

Name: Larry J. Rodriguez Phone: (916) 714-1806 Fax: (916) 714-1804

Title: District Consultant e-mail: Larry@robertson-bryan.com

Address: 9766 Waterman Road, Suite L2

City: Elk Grove Zip: 95624

3. Names of State Senate and Assembly representatives for project area:

State Senator: Michael Machado District: 05

State Senator: District:

State Assemblyperson: Anthony Pescetti District: 10

State Assemblyperson: District:

State Assemblyperson: District:

1. A concise description of the proposed project:

The Southeast Sacramento County Agricultural Water Authority (Authority) proposes to evaluate groundwater management strategies for recharging depleted groundwater resources within the Authority's boundaries. The Authority, which is comprised of Omochumne-Hartnell Water District, Galt Irrigation District, and Clay Water District, is entirely dependent on groundwater for residential and agricultural uses. The Authority is in the process of re-adopting a Groundwater Management Plan that will identify, as a key objective, protecting and enhancing groundwater conditions to protect groundwater users from increasing demands on the resources and prolonged drought conditions.

The first phase of the proposed project the Authority will perform a Basin Assessment to gain an understanding of surface water and groundwater hydrology, groundwater basin characteristics, and demands on the groundwater resource within the groundwater management area. The second phase of the project will evaluate potential groundwater management scenarios for recharging the basin. In developing and evaluating potential management strategies or projects the Authority will work closely with local stakeholder groups. These stakeholder groups include, but are not limited to, the Nature Conservancy (Cosumnes River Preserve), the Cosumnes River Task Force, the Central Sacramento County Groundwater Forum, Fisheries Foundation of California, University of California, Davis (Cosumnes Research Group), and the Anadromous Fish Restoration Program (Central Valley Project Improvement Act).

I. Groundwater Management Plan

A. Existing Groundwater Management Plan

The Southeast Sacramento County Agricultural Water Authority (Authority) is comprised of the Omochumne-Hartnell Water District (OHWD), Galt Irrigation District (GID), and Clay Water District (CWD) (Figure 1). These three districts formed a Joint Powers Agreement that adopted a Coordinated Groundwater Management Plan (CGMP) in 1997. In June 2002, the districts modified their organization to a Joint Powers Authority and are in the process of updating and re-adopting their predecessor CGMP. The Authority anticipates adopting the new CGMP in December 2002 that will reflect the following goals:

- Establish a contract for surface water
- Maintain local control of groundwater management
- Preserve agricultural activities in the area
- Maintain local control of water distribution, advocacy, and planning
- Maintain each District's independence in representing its respective voters and water users

The new CGMP will include the following elements that are considered pertinent to the Authority's groundwater management area (GMA):

1. Groundwater Levels and Groundwater Volume in Storage

   Groundwater provides the only reliable sources of water available in the GMA (Figure 2). Therefore, the Authority considers knowledge of the groundwater resource in the GMA a first priority. The objective of this component is to gain an understanding of how groundwater in the GMA reacts to influences both natural and manmade. The Basin Assessment described in the Work Plan of this proposal will provide the Authority with information to satisfy this element of the CGMP.

2. Groundwater Quality

   Since groundwater accounts for nearly all of the water used within the GMA, it is important to protect that water source from contamination. This element will allow the Authority to develop quantitative objectives for groundwater quality in the underlying aquifer to meet the needs of the major uses of groundwater within the GMA. The Authority will also assist responsible regulatory agencies in developing an understanding of the hydrogeology of the GMA and the vertical and lateral movement of groundwater based on monitoring activities undertaken by the Authority. The Authority will notify appropriate regulatory agencies of changes in water quality (both surface and

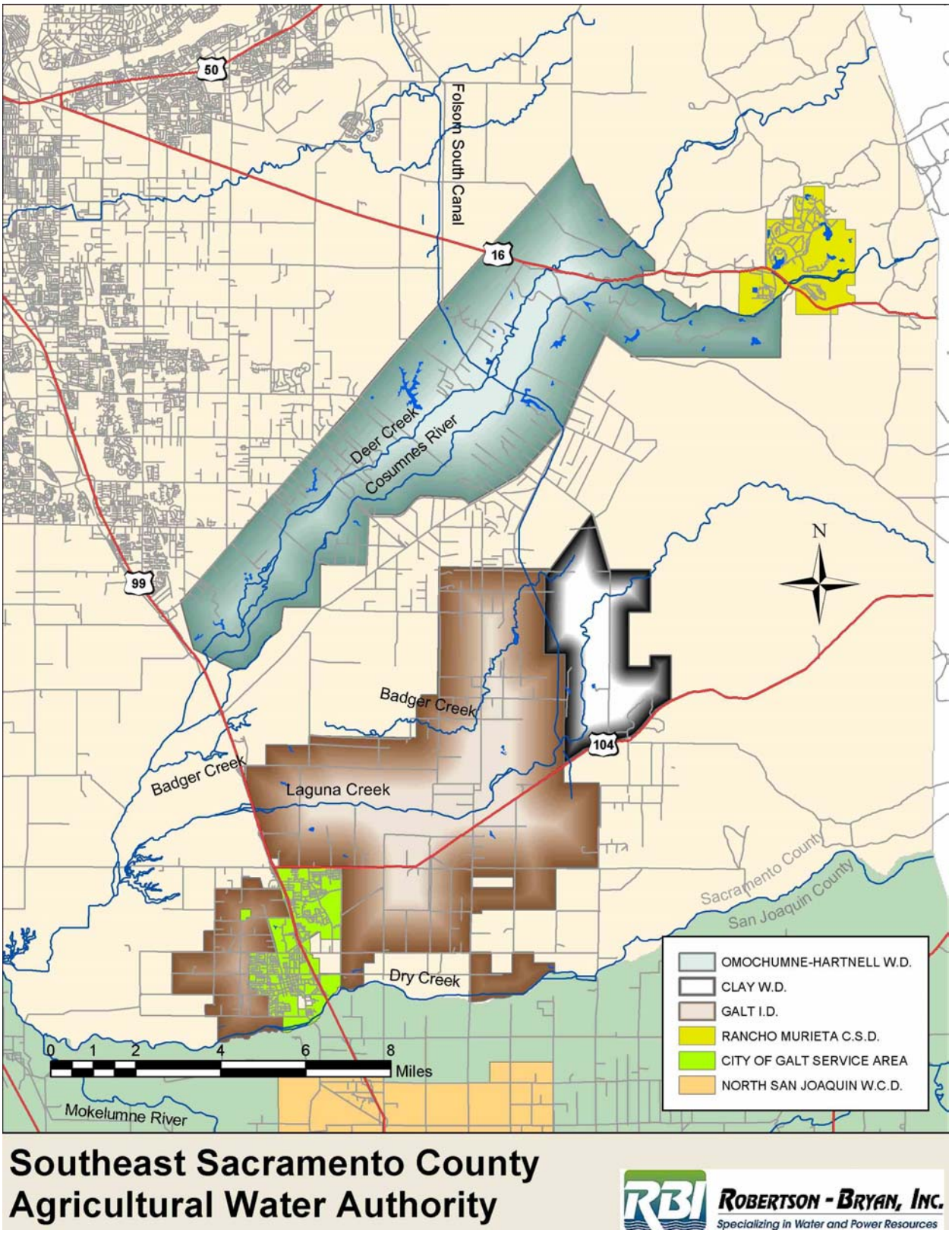


Figure 1. Location of Southeast Sacramento County Agricultural Water Authority.

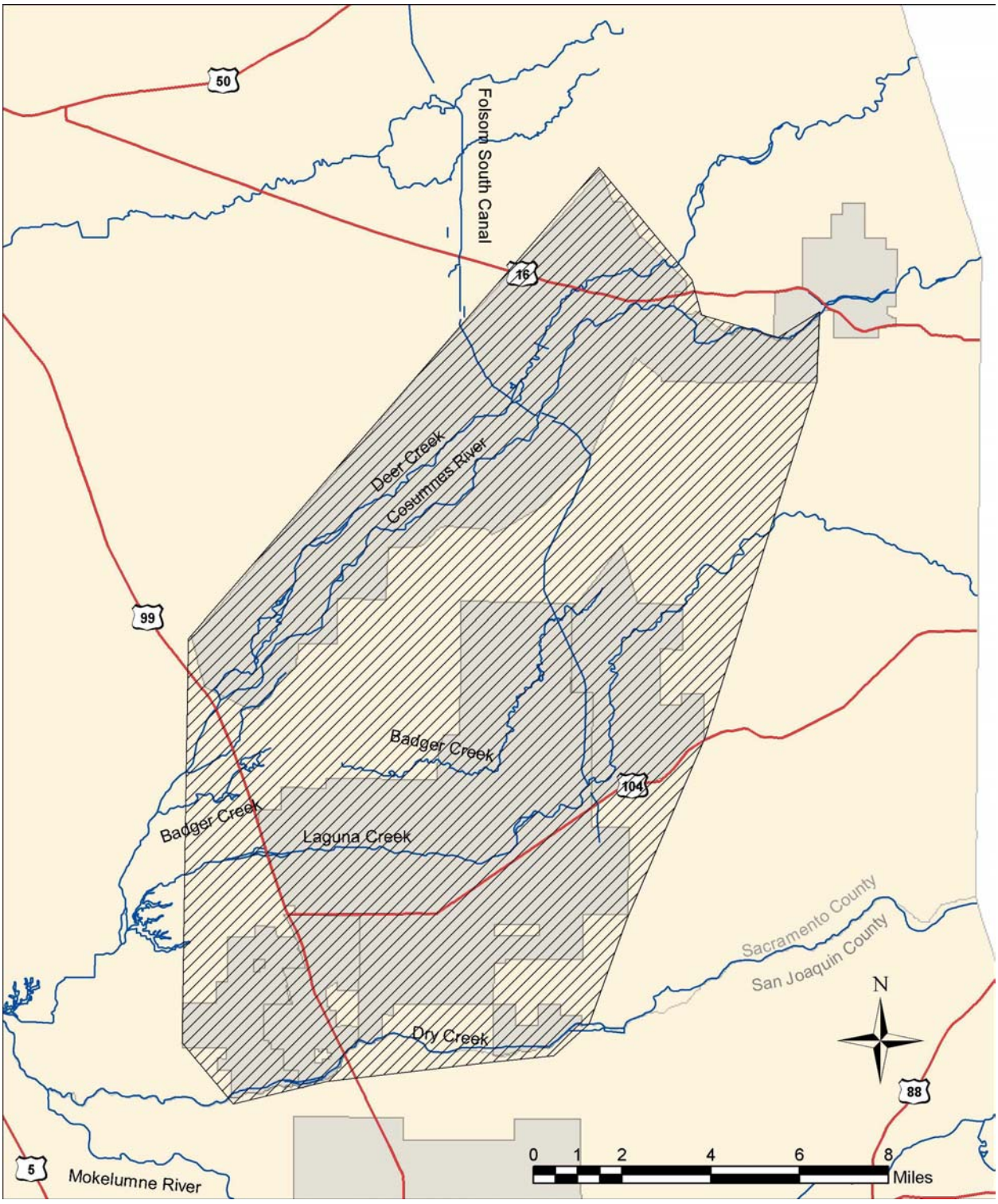


Figure 2. Location of groundwater management area for the Southeast Sacramento County Agricultural Water Authority

groundwater) that might indicate the occurrence of point source contamination and changes in direction of flow from existing contaminated groundwater plumes.

3. Surface Water Contributions to Groundwater

   The Authority will inventory all surface water sources that contribute to groundwater recharge within the GMA. Objectives will be developed aimed at maintaining or enhancing groundwater recharge from natural and imported surface water sources. The GMA includes five major waterways: Cosumnes River, Dry Creek, Badger Creek, Deer Creek and Laguna Creek. The Cosumnes River and Dry Creek are the two major waterways within the GMA, however, flows in both these systems generally ceases from mid-summer to late fall.

   The Authority will work with other agencies to ensure that surface water flows into the GMA meet the objectives set forth as a component of this groundwater management plan. Recognizing the interest in the Cosumnes River for anadromous fish protection, the Authority will work cooperatively with the Nature Conservancy and the Cosumnes River Preserve, the Fisheries Foundation of California, Central Valley Project Improvement Act's Anadromous Fish Restoration Program to augment flows on the Cosumnes River.

4. Water Conservation

   The Authority will develop objectives for water conservation for the major uses of water in the GMA, which primarily include agriculture and residential use. These objectives will reflect acceptable minimum groundwater levels and groundwater in storage. The Authority will act to educate water users in the GMA about conservation practices through periodic dissemination of information. The Authority will rely on state, federal, and other agencies that develop residential or agricultural water conservation literature.

5. Conjunctive Use

   The Authority will actively pursue the development of a conjunctive use program where surface water supplies are made available to groundwater users, in-lieu of pumping, or where surface water is recharged into the underlying aquifer as a water banking operation. Due to the lack of reliable and economical surface water, conjunctive use has only been practiced on a limited scale within the GMA. As indicated above establishing a reliable surface water supply is a primary objective of the Authority and the CGMP.

6. Identify, Protect, and Enhance Groundwater Recharge Areas

   The Authority will actively pursue funding to develop groundwater recharge areas independently or in cooperation with other agencies or stakeholders. The Authority will also develop an ongoing program for identifying potential groundwater recharge areas and reviewing updated land use development plans to determine whether proposed development will have the potential to impact recharge area or the quality of recharged groundwater.

7. Well Abandonment and Well Destruction

   Permits are required from the County of Sacramento for abandonment of wells. The Authority will rely on continued administration of the well abandonment and destruction program by the appropriate regulatory agencies. The Authority's objective for well abandonment and destruction will be to provide available groundwater data, assist in identifying locations of operating and abandoned wells, and to advise well owners in the GMA why proper well destruction is important for protection of water quality. The Authority will also investigate alternatives to well abandonment such as conversion to monitoring wells or pretreated injection wells.

8. Work with State, Federal and Local Agencies and Stakeholders

   The Authority will collaborate with the appropriate agencies and stakeholders in furthering the effective transfer of information regarding all aspects of groundwater management in the GMA. The Authority and the OHWD are active members of the Central Sacramento Groundwater Forum and the Cosumnes River Task Force.

Each of the elements described above include objectives that reflect management goals of the Authority. Where appropriate, monitoring protocols for measuring the success of the Authority's efforts will be developed. The new CGMP will incorporate the requirements recently adopted in California Senate Bill 1938 (SB 1938), authored by Senator Michael Machado. Additionally the new CGMP will include protocols for dispute resolution, a component required for this AB 303 grant application.

A copy of the original CGMP adopted by the predecessor Joint Powers Agreement is provided as Attachment D to this application. A copy of the new CGMP will be forwarded to the California Department of Water Resources when finalized and adopted by the Authority.

B. Milestones Since Adoption of Groundwater Management Plan

Since the adoption of the predecessor CGMP, two Annual Updates have been prepared, for 1998 and 1999. The updates detail the activities of the participating agencies with respect to implementing the CGMP and to activities associated with the objectives of the CGMP.

The participating districts meet once per month to discuss issues surrounding the CGMP. These meetings are intended to review regular business and activities of the CGMP and to serve as an educational forum. All meetings are open to the public and the public is encouraged to attend. The members of the Authority are proactive in staying abreast of activities outside of their districts that might affect their resources or that might present opportunities to benefit their resources.

The Authority and the OHWD are active in the Central Sacramento County Groundwater Forum and the Cosumnes River Task Force. The Authority and its member districts maintain regular communications with stakeholders involved in the Cosumnes and Mokelumne River. The Authority and OHWD are currently working with both the Fisheries Foundation of California

and the Anadromous Fish Restoration Program (AFRP) to fund an investigation of hydrologic and anadromous salmonid migration correlations. This investigation will develop information on the migration timing of salmonids in the Cosumnes River. This will be critical to evaluating the potential use of the Cosumnes River for recharge or conjunctive use operations. Additionally, the OHWD is working with the AFRP to evaluate the potential of augmenting flows in the Cosumnes River for the benefit of fall run chinook salmon. Such flow augmentations could also benefit groundwater recharge from the Cosumnes River streambed.

Through review of various investigations and discussions with stakeholders the Authority has become aware that improving the condition of the groundwater table (i.e. raising falling groundwater levels) will result in direct benefits to the natural environment of the Cosumnes River and other creeks within the groundwater management area. Accordingly, the Authority's objective of improving groundwater conditions for the benefit of local groundwater users will also benefit the natural resources of the local rivers and creeks. The Authority is and will continue to work closely with local stakeholders involved in restoration and protection activities for the Cosumnes River and other creeks in the groundwater management area.

During the summer of 2002 the OHWD, with funding from the Federal Emergency Management Agency, reconstructed four flashboard dams on the Cosumnes River. These dams will be utilized from April 15 through October 15 of each year to impound Cosumnes River flows in-order to augment groundwater recharge. The effectiveness of these dams will be examined as part of this proposed investigation. OHWD worked with the California Department of Fish and Game and the Nature Conservancy in designing a fish passage structure for one of the dams and the Fisheries Foundation of California will be monitoring the effectiveness of this fish ladder over the next several years.

II. Public Outreach and Community Support for the Proposed Project

In addition to the community involvement activities that the Authority and its members have engaged in, the Authority invited local stakeholders to a Groundwater Planning Workshop held on September 19, 2002 in Elk Grove, Ca. The purpose of this workshop was to review the concept of the CGMP the Authority is in the process of developing and to solicit input for from local stakeholders on additional groundwater management activities that could be implemented in the CGMP or this grant application. The table below provides a list of attendees to the workshop.

Southeast Sacramento County Agricultural Water Authority
Groundwater Planning Workshop
List of Attendees
September 19, 2002
Elk Grove Farm Bureau Office

Name	Organization
Keith Whitener	Nature Conservancy – Cosumnes River Preserve
Jim B. Moore	Consultant – Galt Irrigation District
Ed Staffani	North San Joaquin Water Conservation District
Leo VanWarmerdam	Galt Irrigation District
Tom Young	Omochumne-Hartnell Water District
Leland Schneider	Omochumne-Hartnell Water District
Gonzalo Castillo	USFWS – AFRP
Tina Lunt	Cosumnes River Task Force
Jan Fleckenstein	UC Davis – Cosumnes Research Group
Derick Louie	DWR – Conjunctive Water Management Branch
Tanya Meeth	DWR – Central District Groundwater Division
Will Trowbridge	Clay Water District
Ken Whittemore	Clay Water District
Ron Lowry	Omochumne-Hartnell Water District
Stuart Robertson	Robertson-Bryan, Inc – OHWD/Authority
Larry Rodriguez	Robertson-Bryan, Inc – OHWD/Authority
Bob Mahon	Omochumne-Hartnell Water District
Denny Lewis	Sacramento Farm Bureau
Wendy Sparrowk	Secretary - Authority

The workshop provided the Authority an opportunity to dialogue with stakeholder groups and other state and federal agencies on its CGMP. The attendees provided the Authority with a range of potential groundwater recharge projects and projects that could couple environmental needs with those of local agricultural users. The Authority also had the opportunity to hear about other projects that are ongoing in the groundwater management area. Chief among these is the research that is being done by the Cosumnes Research Group from the University of California, Davis (UC Davis). The research that UC Davis is performing is related to a variety of hydrologic, groundwater and aquatic processes along the Cosumnes River. This information will be valuable to the Authority as it moves forward in evaluating groundwater management options, and therefore the Authority is investigating potential partnership arrangements with UC Davis.

The underlying theme of the discussions at the workshop was that there is a lack of sufficient information to either implement or manage an effective groundwater management program. This lack of information was a strong influence in the design of the investigations being proposed for this grant through the Local Groundwater Assistance Fund.

III. Project Work Plan

A. Description of Need for the Proposed Project.

The groundwater resources underlying the groundwater management area (GMA) have been depleted by as much as 80-feet in the past 50 years. A priority of the Authority's CGMP is to ensure the future reliability of the groundwater resource that serves as the primary source of water in the GMA. To this end, the Authority is actively investigating options for protecting and recharging groundwater within its boundaries. To ensure that the Authority proceeds with the most effective plan for groundwater management, the Authority needs to develop a baseline evaluation of current conditions within the GMA and to develop an understanding of how current and natural influences affect the groundwater basin. This basic understanding of the GMA will be developed in the first phase of this Work Plan. A Basin Assessment of the GMA will allow the Authority to evaluated the effectiveness of its current and proposed groundwater management scenarios.

The second phase of the Work Plan will involve evaluating the feasibility of various groundwater management scenarios and particularly groundwater recharge. Because Authority water users are almost entirely dependent on groundwater, it is crucial that groundwater recharge projects be developed to offset the growing demand for this resource. Improvements in groundwater levels will benefit users in the GMA, the local environment, and protect against prolonged drought conditions.

As the Authority moves forward with developing a strategy for protecting and recharging groundwater it will work closely with local state and federal agencies, local stakeholder groups, and interested parties in developing groundwater recharge projects. Projects that couple environmental restoration and protection objectives of other agencies or stakeholder groups will be prioritized for evaluation.

The Work Plan also includes a monitoring element for water quality and groundwater levels and storage. Water quality monitoring will include both groundwater and surface water sources. Monitoring for changes in groundwater quality will ensure that the Authority can be proactive in reacting to potential threats to groundwater quality. Monitoring groundwater levels and groundwater volume in storage will be an ongoing component of the CGMP. The Authority will rely on the California Department of Water Resources, the County of Sacramento, Department of Water Resources, and the Sacramento Municipal Utility District to provide well level data.

B. Detailed Work Plan

1. Basin Assessment

a. Define Basin Characteristics – Data will be collected and analyzed on the subsurface geologic and hydrologic characteristics of the GMA from existing reports and studies as well as reviewing well log data. This analysis will be used to determine the transmissivity and yield of the groundwater basin underlying the GMA. If available, existing models that have been developed for this basin (such as IGSM) will be utilized to assist in this analysis. This analysis will be used to develop the following information:

   i. Determine the usable groundwater storage space underlying the GMA

   ii. Delineate specific areas with recharge capability

   iii. Rank recharge areas relative to percolation potential and influence on regional water levels

b. Determine Usable Groundwater Basin Storage Capacity and Trends – Information will be collected and analyzed from existing studies, reports and modeling efforts to determine the amount of useable and vacated groundwater storage space available in the GMA.

   i. Compile well construction data for both residential and agricultural wells to determine operable range of water levels and project utility of the existing system under present and projected water level trends

   ii. Compile water quality data to ascertain utility of the basin as constrained by water quality

   iii. Identify a range of water levels that would constrain potential groundwater banking opportunities

c. Quantify Demands On Groundwater Resources (Water Balance) – Existing data will be collected and analyzed on groundwater uses (including pumping, gain/losses to surface sources, and migration out of basin) and recharge (including percolation from waterways, precipitation, and agricultural activities). The information collected will be used to develop an historical and projected water balance based on anticipated land uses.

2. Identify Benchmark Objectives to Guide Alternative Management Scenarios – Based on data developed in Task 1, this task will provide refined objectives and benchmarks for evaluating the performance of potential groundwater management scenarios.

a. Water reliability – The primary goal of the Authority is to ensure the future reliability of its water resources. While this is an obvious goal, the level of groundwater management required to secure a reliable resource must be determined. This task will identify benchmarks for developing sustainable long-

term yields from the GMA, preservation of groundwater quality, and integration of groundwater and surface water into a comprehensive management plan. An example of Water Reliability Benchmarks would be quantifying minimum groundwater levels for sustaining agricultural practices. Such benchmarks could vary across the GMA to reflect changes in groundwater water quality acceptable to agricultural users.

b. Environmental – The Authority's CGMP elements is to preserve and enhance aquatic environments through the prudent management of groundwater resources. Several key aquatic environments exist within the study area, including the Cosumnes River. The CALFED Bay-Delta Program and the Anadromous Fish Restoration Program have developed certain objectives for protecting anadromous fish in the Cosumnes River. These objectives will be reviewed and will form a baseline for gauging environmental benefits created by groundwater management activities. Other environmental features in the influence of the GMA are Deer Creek, Dry Creek, Laguna Creek, Badger Creek and the Cosumnes River Preserve. The Authority will work closely with environmental stakeholder groups such are the Cosumnes River Task Force, the Nature Conservancy and the Fisheries Foundation of California in developing and evaluating potential groundwater management scenarios.

3. **Evaluate Alternative Groundwater Management Scenarios –** This task will develop and evaluate a full range of alternatives for groundwater management, primarily groundwater recharge. Alternatives will consist of projects that could be reasonably implemented solely by the Authority or in conjunction with other stakeholders in the study area. The types of alternatives that will be evaluated include, but are not limited to the following.

   a. Recharge within stream channels (existing practice) – To evaluate the effectiveness of groundwater recharge from stream course crossing the GMA existing models developed by UC Davis and other will be reviewed and utilized. Existing studies examining the interaction of surface flows and groundwater recharge for the Cosumnes River will be expanded to include other watercourses. The Authority will collaborate with UC Davis and others that have develop models for this purpose. These evaluations will cover the following watercourses.

      i. Cosumnes River – The Omochumne-Hartnell Water District operates four flashboard impoundment dams on the Cosumnes River. The effectiveness of these dams will be quantified and alternative operation scenarios will be developed as appropriate.

         1. Evaluate effectiveness of current dam impoundment operations

         2. Develop alternative dam operation scenarios with existing structures

ii. Dry Creek – Recharge options to be evaluated include impounding water within the stream channel, artificially increasing creek flows to induce groundwater recharge, or creating recharge areas adjacent to the creek.

iii. Deer Creek – The groundwater recharge capability of Deer Creek will be evaluated, as will options for improving recharge. Potential options to be evaluated will include augmenting natural flows with Cosumnes River water or new sources; and/or developing groundwater recharge impoundments.

iv. Laguna Creek and Badger Creek – The groundwater recharge capability of these creeks will be evaluated. Recharge options that will be investigated will include augmenting natural flows and/or developing groundwater recharge impoundments.

b. Recharge outside stream channels (artificial recharge sites) – From the information developed in the Basin Assessment potential projects will be formulated that have the potential to provide groundwater recharge. Identified projects will have recharge capacities and access to surface water supplies. All identified projects will be developed to a conceptual level to facilitate these evaluations.

c. Distribution of surface water supplies for agricultural users (in-lieu recharge) – Concepts for developing surface water distribution facilities for use primarily by agricultural users will be developed. Distribution systems will have their points of origin at either natural waterways, such as the Cosumnes River or the Folsom South Canal.

4. **Identify/Quantify Potential Sources Of Recharge Water** – Recharge can only be made possible from existing or imported surface water sources. In this task, potential sources of surface water will be evaluated in conjunction with projects identified in the previous task. Surface water sources will be identified and evaluated based on timing, quantity, reliability, and cost.

5. **Evaluate Institutional, Technical, and Financial Feasibility of Alternative Groundwater Management Scenarios –** The effectiveness of a project will be evaluated based on the Authority's ability to implement the project, the projects effectiveness at recharging the groundwater basin (either actively or passively), and the sustainability of the project.

6. **Develop a Strategy for Implementing a Groundwater Management Program that Best Fits the Objectives of the Authority and Other Stakeholders –** From the list of potential groundwater management scenarios a strategy will be developed to move forward with implementation of a preferred management option. The implementation strategy will include, but not be limited to:

   a. Developing a public outreach program.

   b. Identifying potential stakeholders and participating entities.

c. Identifying funding sources.

d. Determining regulatory procedures necessary to implement the project.

C. Detailed Project Budget

A detailed itemized budget for this proposed project is provided on the following page.

D. Monitoring Element

The proposed project includes a monitoring element that corresponds to elements contained in the new CGMP. The proposed monitoring programs that will be funded through this grant application are detailed below.

1. Water Quality Monitoring

Water quality monitoring will be carried out for a two-year period in GMA. This monitoring program will sample 10 wells in the Fall of 2003 and 2004. Surface water flows will be sampled on the Cosumnes River and Dry Creek in the fall of 2003, spring and fall of 2004 and the spring of 2005. Twenty well water and eight surface water samples will be taken over the period of study. The parameters that will be sampled are listed below along with an estimated cost for laboratory services.

Water Quality Sampling Parameters and Estimated Costs

Parameter	Method	Number of Samples	Unit Cost	Extended Cost
General Minerals	Various	28	$150.00	$4,200.00
15 Metals	200.8	28	$180.00	$5,040.00
Pest & PCB's	8081A/8082	28	$125.00	$3,500.00
Herbicides	8151A	28	$165.00	$4,620.00
Ammonia	350.2	28	$40.00	$1,120.00
Conductivity	120.1	28	$12.00	$336.00
			Total Estimated Cost:	$18,816.00

Estimated costs from California Laboratory Services, Sacramento CA.

2. Groundwater Level and Storage Volume Monitoring

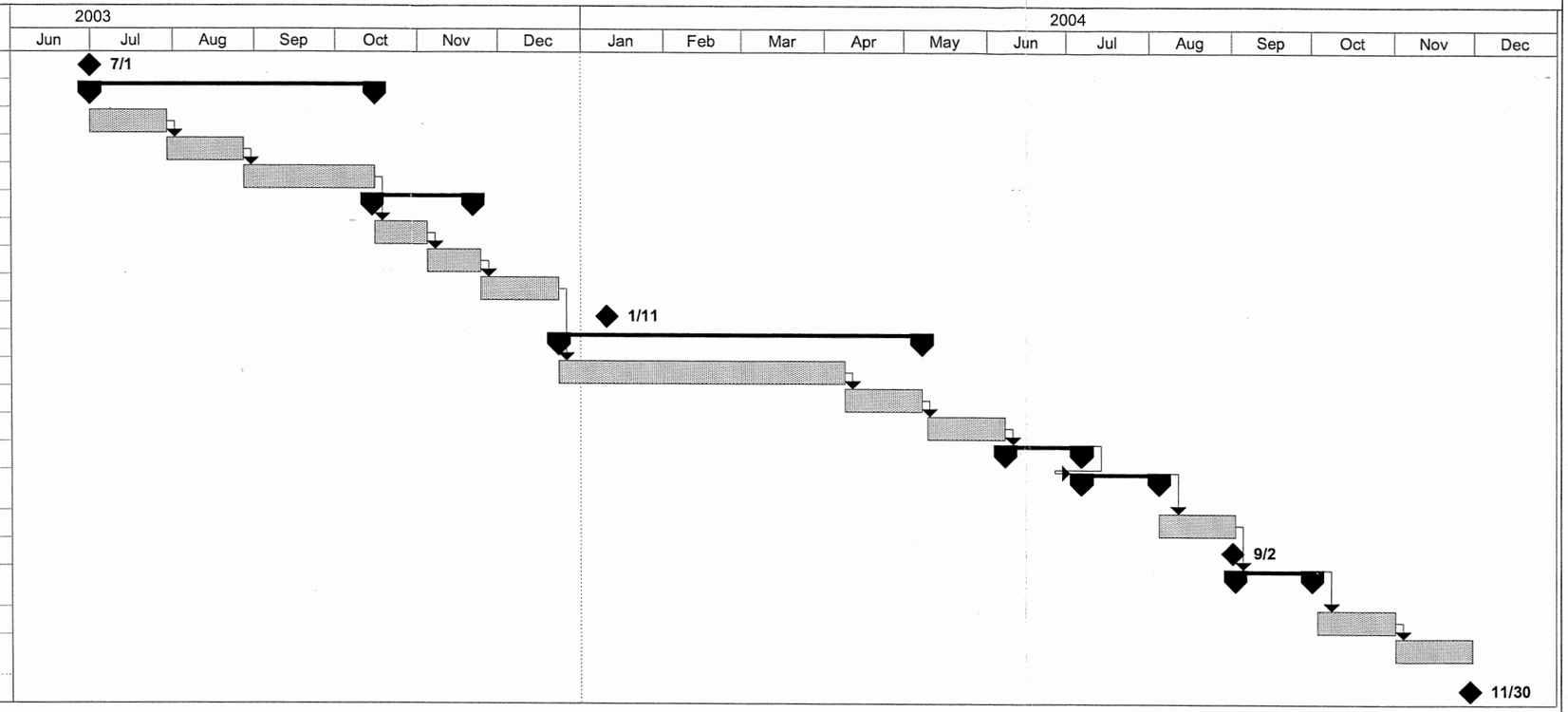
A groundwater level and storage volume monitoring program will be developed as a component of this project that will allow the Authority to regularly collect, interpret and present groundwater levels and storage volumes. The Authority will evaluate groundwater levels each spring and fall. The well data need to make this evaluation will be gathered from data collected by the County of Sacramento, the California Department of Water Resources, and the Sacramento Municipal Utility Company.

Detailed Budget Estimate for Southeast Sacramento County Agricultural Water Authority AB 303 Groundwater Study Grant

TASKS	$246,629	Robertson-Bryan, Inc.						Geo-Technical	Expenses	TOTAL	Contingency	District Admin	TOTAL PROJECT	Schedule (weeks)	
		Principal	Project	Staff	Tech	Graphical	Admin	Consultant							
		$135.00	$95.00	$85.00	$75.00	$65.00	$55.00	$100.00	0.5%	CONSULTANT	10%	2%	Costs	Duration	Elapsed
STUDY ELEMENTS															
1) Basin Assessment															
a) Define Basin Characteristics		8	40		24		4	80	$75	$14,975	$7	$301	$15,358	3	3
b) Determine Usable Groundwater Basin Storage Capacity and Trends		6	40	24	16		4	40	$60	$12,130	$1,213	$267	$13,610	3	6
c) Quantify Demands on Groundwater Resources (Water Balance)		8	60	16	24	16	4	16	$64	$12,864	$1,286	$283	$14,433	5	11
2) Identify Benchmark Objectives to Guide Alternative Management Scenarios															
a) Water Reliability		8	24						$17	$3,377	$338	$74	$3,789	2	13
b) Environmental		8	24	16					$24	$4,744	$474	$104	$5,322	2	15
Prepare Technical Memorandum on Basin Assessment & Benchmark Objectives		4	40			16	16	4	$33	$6,693	$669	$147	$7,510	3	18
Stakeholder Workshop - Basin Assessment & Benchmark Objectives		4	16	8		8	4	4	$19	$3,899	$390	$86	$4,375	2	20
3) Evaluate Alternative Groundwater Management Scenarios															
a) Recharge within stream channels (existing practices)															
i) Cosumnes River		16	40	16	24			32	$62	$12,382	$1,238	$272	$13,892	3	23
ii) Dry Creek		8	40	8	16			40	$54	$10,814	$1,081	$238	$12,133	3	26
iii) Deer Creek		4	32	8	16			32	$43	$8,703	$870	$191	$9,765	3	29
iv) Laguna Creek & Badger Creek		4	16	8	16			32	$36	$7,176	$718	$158	$8,051	2	31
b) Recharge outside stream channels (artificial recharge sites)		16	40	16	32			60	$79	$15,799	$1,580	$348	$17,726	3	34
c) Surface water distribution for agricultural users (in-lieu recharge)		16	40	16	20			8	$48	$9,668	$967	$213	$10,848	3	37
4) Identify/Quantify Potential Sources of Recharge Water		24	40						$35	$7,075	$708	$156	$7,938	3	40
5) Evaluate Institutional, Technical, and Financial Feasibility of Alternative Groundwater Mangement Scenarios		16	40		24		4	32	$56	$11,236	$1,134	$125	$12,599	3	43
Prepare Technical Memorandum on Alternative Development		8	32	8	4	8	8	8	$34	$6,894	$689	$152	$7,735	3	46
Stakeholder Workshop - Alternative Groundwater Recharge Practices		4	16	4	8	4	4	4	$19	$3,899	$390	$86	$4,375	2	48
6) Develop a Strategy for Implementating a Groundwater Management Program That Best Fits the Objectives of the Authority and Other Stakeholders.		16	40		24		4	8	$44	$8,824	$882	$194	$9,900	3	51
Prepare Draft Final Report on Ground Water Recharge Program		16	40	16	24	16	8	16	$61	$12,261	$1,226	$270	$13,757	3	54
Prepare Final Report on Ground Water Recharge Program & Update Groundwater Management Plan		8	32		8		4	8	$29	$5,769	$577	$127	$6,472	3	57
Stakeholder Workshop - Implementation Strategy		4	16	8		8	4	4	$19	$3,899	$390	$86	$4,375	2	59
MONITORING ELEMENTS															
Water Quality Monitoring		8	60		60		4		$19,058	$30,558	$3,056	$672	$34,286		
Groundwater Level and Storage Monitoring		2	24	24	24	16			$37	$7,467	$747	$164	$8,378		
		216	792	196	364	92	72	428							
Total Dollars		**$29,160**	**$75,240**	**$16,660**	**$27,300**	**$5,980**	**$3,960**	**$77,600**	**$20,006**	**$221,106**	**$20,631**	**$4,714**	**$246,629**		**59**

Detailed Schedule
Southeast Sacramento County Agricultural Water Authority
Groundwater Mangement and Recharge Investigation

ID	Task Name
1	Execute Contract with DWR
2	**Task 1 - Basin Assessment**
3	Task 1.a - Define Basin Assessment
4	Task 1.b - Determine Usable Groundwater Basin Storage Capacity and Trends
5	Task 1.c - Quantify Demands on Groundwater Resources (Water Balance)
6	**Task 2 - Identify Benchmark Objectives to Guide Alternative Management Scenarios**
7	Task 2.a - Water Reliability
8	Task 2.b - Environmental
9	**Prepare Technical Memorandum on Basin Assessment & Benchmark Objectives**
10	**Stakeholder Workshop - Basin Assessment & Benchmark Objectives**
11	**Task 3 - Evaluate Alternative Groundwater Management Scenarios**
12	Task 3.a - Recharge within stream channels (existing practices)
13	Task 3.b - Recharge outside stream channels (artificial recharge sites)
14	Task 3.c - Surface water distribution for agricultural users (in-lieu recharge)
15	**Task 4 - Identify/Quantify Potential Sources of Recharge Water**
16	**Task 5 - Evaluate Institutional, Technical, and Financial Feasibility of Alternative Groundwater Mangement Scenarios**
17	**Prepare Technical Memorandum on Alternative Development**
18	**Stakeholder Workshop - Alternative Groundwater Recharge Practices**
19	**Task 6 - Develop a Strategy for Implementating a Groundwater Management Program That Best Fits the Objectives of the Authority and Other Stakeholders.**
20	**Prepare Draft Final Report on Ground Water Recharge Program**
21	**Prepare Final Report on Ground Water Recharge Program & Update Groundwater Management Plan**
22	**Stakeholder Workshop - Implementation Strategy**



Project: schedule SSCAWA
Date: Thu 10/24/02

Task | Progress | Summary | External Tasks | Deadline
Split | Milestone | Project Summary | External Milestone

The Authority will develop an ArcGIS software database to develop groundwater contours and compute the volume of groundwater in storage. The ArcGis software allows for efficient data entry of well level data and computation of groundwater contours and storage volumes.

E. Reporting Requirements and Stakeholder Workshops

1. Technical Memoranda

Two Technical Memoranda will be prepared during the course of this project. After completion of Task 2, a Basin Assessment and Benchmark Objectives will be developed to report the findings of the Tasks 1 and 2. This Technical Memorandum will be provided for review to the California Department of Water Resources and to interested agencies, stakeholders, or individuals.

After the completion of Task 4, an Alternative Groundwater Management Scenarios Technical Memorandum will be prepared. This Technical Memorandum will detail the findings of Tasks 3 and 4 and will include summary of all alternatives evaluated and a preliminary determination of implementation feasibility for each of the alternatives. This Technical Memorandum will be provided for review to the California Department of Water Resources and to interested agencies, stakeholders, or individuals.

2. Final Report

The Authority will prepare a final report of the proposed study that will incorporate all the information contained in the Technical Memoranda and a strategy for implementing a preferred groundwater management program. The final report will be circulated first as a draft to allow interested agencies, stakeholders, or individuals to provide comments. After receiving and reviewing comments, the Authority will prepare a final report to be distributed to the appropriate parties.

3. Stakeholder Workshops

A total of three stakeholder workshops will be held, corresponding to the preparation of the Technical Memoranda and the final report.

ATTACHMENT C

AUTHORIZING RESOLUTION

RESOLUTION NUMBER 2002/03-1

AUTHORIZING THE SOUTHEAST SACRAMENTO COUNTY AGRICULTURAL WATER AUTHORITY TO PURSUE GROUNDWATER MANAGEMENT GRANT FUNDS

WHEREAS, the Board of Director of the Southeast Sacramento County Agricultural Water Authority (SSCAWA) has the responsibility to prepare and manage groundwater planning; and

WHEREAS, the demand for groundwater within the area served by SSCAWA continues to increase; and

WHEREAS, The Board of Directors find there is a need for additional funds to properly pursue this element of their purpose in a comprehensive manor;

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the SSCAWA as follows:

1. An application for grant funds, in compliance with the Local Groundwater Assistance Act (AB 303, Statues of 2000, Chapter 708), shall be prepared and submitted to the Department of Water Resources.

2. The Chairman and Secretary are hereby authorized, on behalf of the Authority, to take actions applicable to said grant process.

The forgoing resolution was duly passed and adopted by the Board of Directors of the SSCAWA at a meeting thereof held on the 10th day of September, 2002 by the following roll call vote:

AYES: 7
NOES: 0
ABSENT: 2

Signed after its passage this 10th day of September, 2002

Ronald R. Lowry
President, Board of Directors

ATTEST:

Wendy Sparrock
Secretary, Board of Directors

ATTACHMENT D

GROUNDWATER MANAGEMENT PLAN

COORDINATED GROUNDWATER MANAGEMENT PLAN FOR THE GALT IRRIGATION DISTRICT, OMOCHUMNE-HARTNELL WATER DISTRICT AND CLAY WATER DISTRICT IN SACRAMENTO COUNTY

Prepared By:

JAMES C. HANSON
CONSULTING CIVIL ENGINEER
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Sacramento, CA 95814
(916) 448-2821

APRIL 1997

REVISED APRIL 18, 1997

COORDINATED GROUNDWATER MANAGEMENT PLAN
FOR THE
GALT IRRIGATION DISTRICT,
OMOCHUMNE-HARTNELL WATER DISTRICT
AND
CLAY WATER DISTRICT
IN
SACRAMENTO COUNTY

I. INTRODUCTION

The Groundwater Management Act, Assembly Bill 3030 (AB 3030) signed into law in 1992 established provisions to allow local water agencies to develop and implement Groundwater Management Plans (GMP). Provisions of the act are contained in Section 10750 and following of the Water Code. The act applies to the groundwater basins identified in the Department of Water Resources Bulletin 118-80.

There are twelve elements listed in Section 10753.7 of AB 3030 that may be included in the GMP. These twelve elements form a basic list of data collection activities and actions that may be undertaken under the act. The three agencies participating in this Coordinated GMP are Galt Irrigation District (Galt), Omochumne - Hartnell Water District (OHWD) and Clay Water District (Clay) and are herein after collectively referred to as "Districts." (See Plate 1.) The Districts have entered into a Joint Exercise of Powers Agreement and have agreed to jointly fund the preparation and implementation of a GMP.

While the individual districts will independently adopt the plan, the Sacramento Water Forum has recommended the establishment of a local Groundwater Management Council (GMC) in each of three sub-areas of the groundwater basin that underlies the Sacramento metropolitan area. The districts fully intend to participate in discussions regarding the formation of GMC's for the "South," and the "Galt "sub areas as defined by the water forum.

The Districts encompass some 70,980 acres of land situated in the southeasterly portion of Sacramento County. Approximately 25,000 acres are devoted to irrigated agriculture. Residential development within the study area consists of rural residential developments, small ranchetts and the communities of Herald, Sheldon, Sloughhouse, and Wilton.

The water required for domestic uses is derived almost entirely from groundwater sources. With respect to irrigated agriculture, surface supplies available in the Cosumnes River and other surface streams provide water on lands immediately adjacent to the water

courses which flow through the area. These supplies are generally insufficient to meet irrigation demands for the entire season.

This GMP is part of the ongoing efforts of the Districts to actively participate in the management of the limited groundwater resource which constitutes, for the most part, their only water supply source.

II. GROUNDWATER MANAGEMENT AREA

The California Department of Water Resources (DWR) in cooperation with the State Water Resources Control Board has identified ten Hydrologic Study Areas (HSA's) in California. The HSA's are defined on the basis of geological and hydrological conditions with considerations of political boundary lines, whenever practical. The HSA's are further divided into separate subbasins for groundwater management purposes.

The Districts participating in this GMP are a part of the Sacramento County Basin which is located in both the Sacramento HSA and the San Joaquin HSA; Galt and Clay being totally within the San Joaquin HSA and the northerly portion of OHWD being within the Sacramento HSA. (See Figure 1.)

III. HYDROGEOLOGIC CHARACTERISTICS OF THE GMA

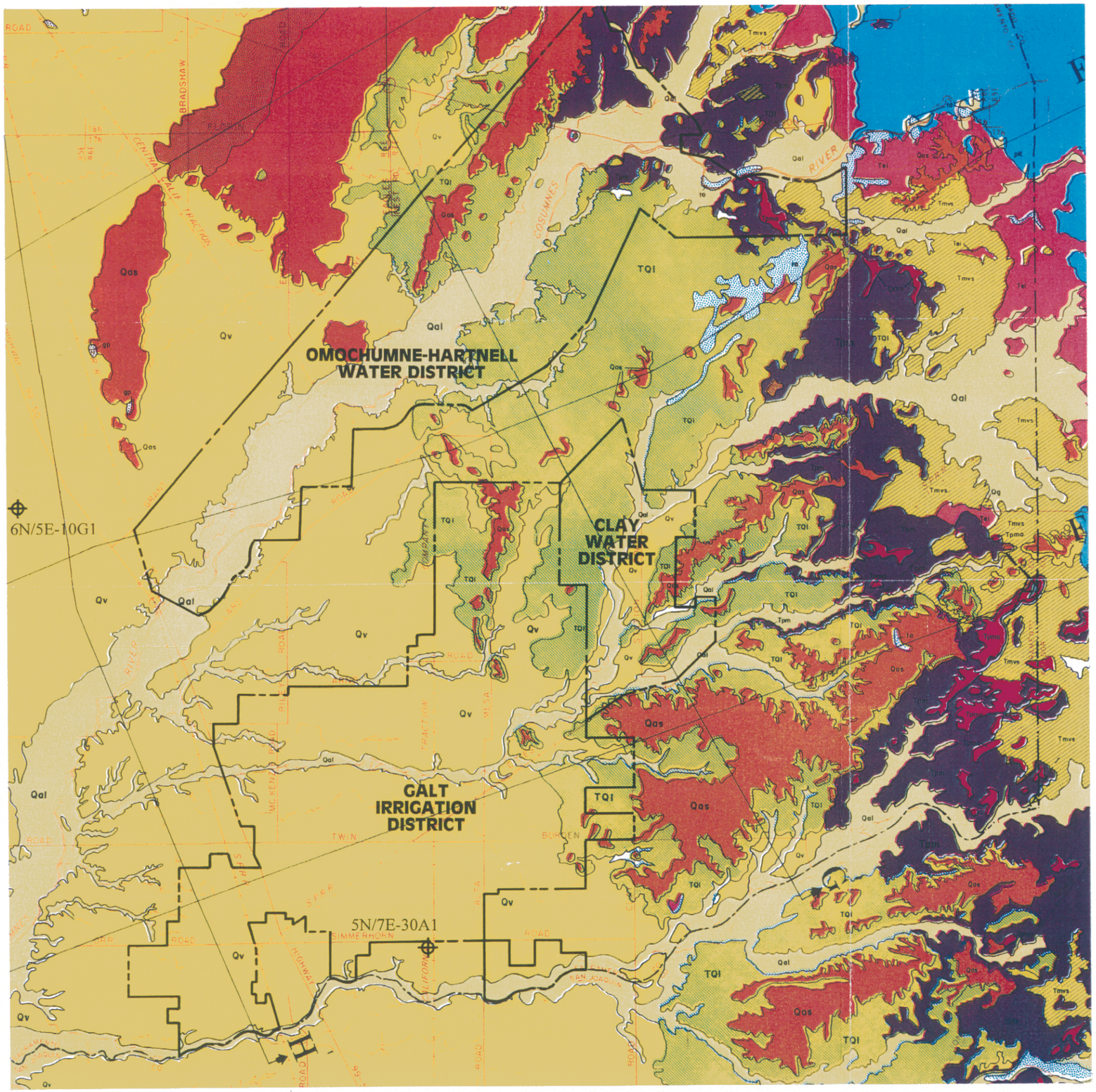
The groundwater aquifer underlying the GMA consists of unconsolidated sediments of the Victor Formation made up of sands, silts and clays with sand and gravel along old stream courses. These deposits yield little to moderate amounts of water but do not generally accept recharge readily due to layers of hardpan. Larger amounts of water are yielded if old stream channels are tapped. The Laguna Formation consisting of bedded silts, clays and sands underlies the Victor Formation and is exposed in the easterly and northerly portion of the study area characterize by low rolling foothills. Wells tapping sand layers in the Laguna Formation yield high amounts of groundwater. The Mehrten Formation of volcanic origin underlies the Laguna Formation and consists of beds of black volcanic sand, brown clay and sand. The sands in the Mehrten Formation yield large to moderate amounts of water to wells. (See Figure 2.)

Recharge to the groundwater basin is derived from three major components: deep percolation of precipitation, applied water and streamflow. The Victor Formation is underlain by soils containing hardpan or organic clays which inhibit infiltration. In the eastern areas slopes are too steep and consequently precipitation in excess of evapotranspiration becomes runoff. It is only along active stream channels that sands and gravels occur of sufficient areal extent and depth that sufficient amounts of surface water may infiltrate to recharge the groundwater body. Replacement of consumptive uses of groundwater with imported water and the deep percolation of such water results in a net positive recharge to the basin.

Base map from DWR Bulletin 118-80

MAP SHOWING
HYDROLOGIC STUDY AREAS

FIGURE 1



LEGEND

Qal — VALLEY ALLUVIUM

Unconsolidated deposits of sand, silt, clay, and occasional lenses of gravel. Occurs along east side tributary streams, also occurs as alluvial plain areas in Solano and Contra Costa Counties. Permeability varies from high to low; in certain areas acts as forebay for ground water recharge. May provide small yields of ground water to shallow wells.

Qas — ARROYO SECO GRAVELS

Exposed only in east-central part of county. Composed of well-rounded pebbles and cobbles in a matrix of iron-cemented sandy clay; hardpan may be present. Gravels have low infiltration rates; yield small quantities of water to wells.

Qv — VICTOR FORMATION

Underlies the broad plain between Sacramento River and the foothills. Composed of interbedded sand, silt, and clay with lenses of gravel; includes buried meandering stream channel deposits composed of poorly sorted cobbles, gravel, and sand. Surficial materials typically contain hardpan. Infiltration rates are very low as is permeability. May provide large quantities of water to wells tapping buried stream channels; wells not tapping channels may yield little water.

TQl — LAGUNA FORMATION

Exposed in foothill area south of American River. Upper portion of formation may be correlative in part with the Fair Oaks Formation. Composed of beds of nonvolcanic sand, silt, and clay. Infiltration rates range from low to high depending on grain size. Wells tapping sand zones yield high quantities of ground water; those tapping clays yield only small quantities.

Tpm — MEHRTEN FORMATION

Exposed in foothill area immediately east of Laguna Formation. Composed of beds of clay and black volcanic sands. Infiltration rates are high where streams cross zones of black sands. Sands contain confined ground water; yields to wells are high from the sand zones.

Tpma — MEHRTEN ANDESITE

Zones of andesite tuff-breccia interbedded with sediments of the Mehrten Formation. Except along joints, andesite is impermeable. Acts as confining layer for ground water in underlying sediments.

Tmvs — VALLEY SPRINGS FORMATION

Crops out to east of Mehrten Formation. Composed of light-colored rhyolitic sands, clays, and beds of tuff and pumice. Yields moderate quantities of ground water of good quality.

⌖ LOCATION OF WELL USED IN LONG TERM HYDROGRAPH

GROUNDWATER MANAGEMENT AREA

AREAL GEOLOGY

NOT TO SCALE

FIGURE 2

Groundwater levels in the GMA have declined as much as 80 feet over the last 45 years. (See Figure 3.) The horizonal groundwater flow is in a southwest direction towards the pumping depressions which exist under the cities of Galt and Elk Grove located to the south and west of the GMA respectively. As these pumping depressions under Elk Grove and Galt deepen and expand in areal extent with increase demand the subsurface outflow of groundwater from GMA toward the depressions is expected to increase. Expected consequences of this increase in outflow will be the further lowering of groundwater levels within the GMA.

IV. GROUNDWATER MANAGEMENT ACTIVITIES

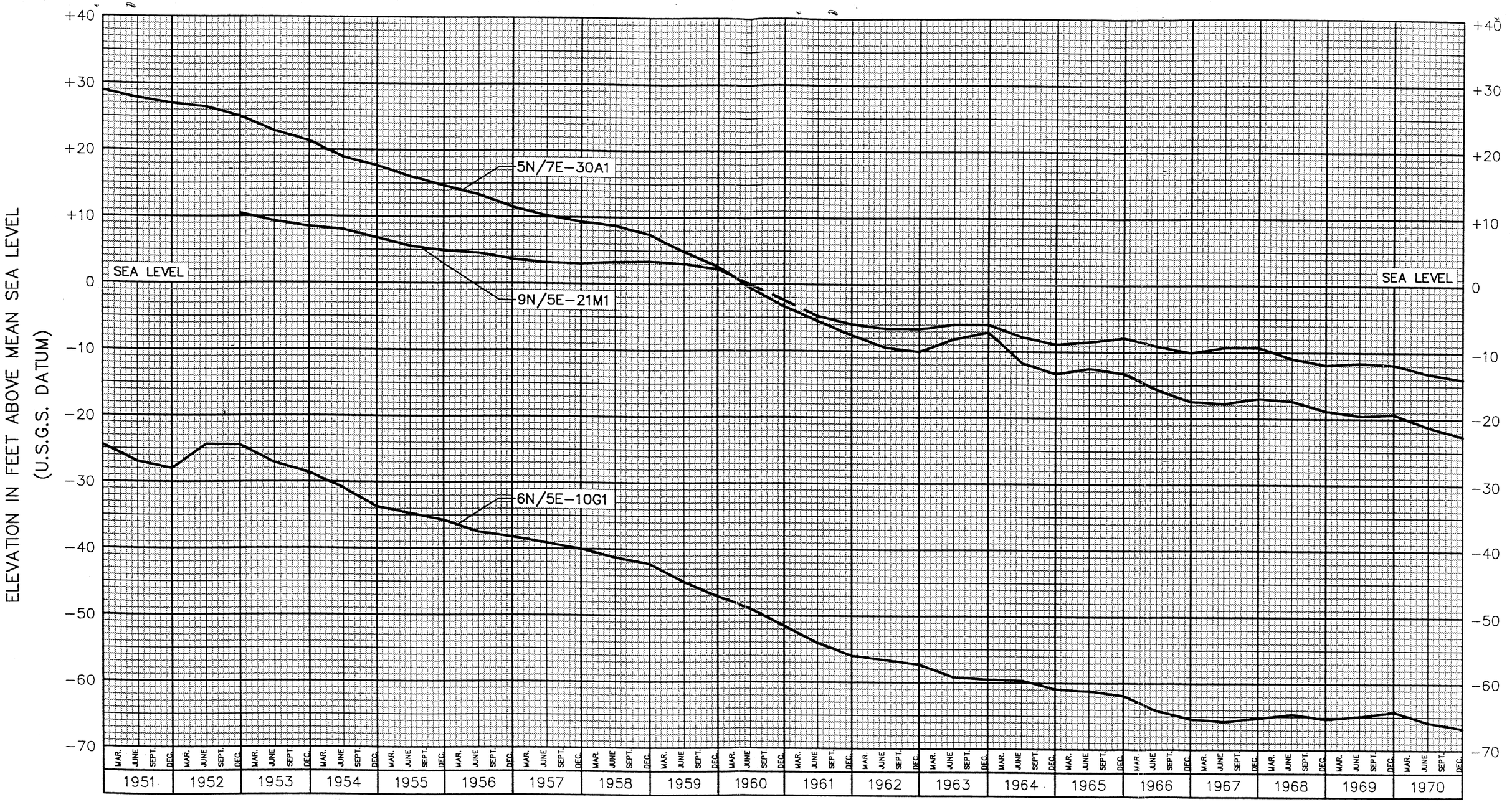
Beginning in 1959 OHWD began importing supplemental water supplies from the Sly Park Unit of the Central Valley Project. Such imports ranged from 800 acre feet to as much as 5,300 acre feet in 1966 and continued until 1974. After 1974 water was no longer available from this source. With the completion of the Folsom South Canal in the early 1970's supplemental water was made available to the Districts on an interim basis. Efforts were made by the Districts to secure long term contracts either directly or through the County of Sacramento; however these efforts have not been successful. Galt and Clay have, from time to time, entered into short term contracts with the Sacramento Municipal Utility District to purchase cooling water discharged from its Rancho Seco Nuclear Power Plant.

V. ELEMENTS OF THE GROUNDWATER MANAGEMENT PLAN

Section 10753.7 of AB 3030 provides a listing of twelve elements or components that **may** be included in a GMP. The following is a discussion of seven of those elements considered pertinent to this particular GMA.

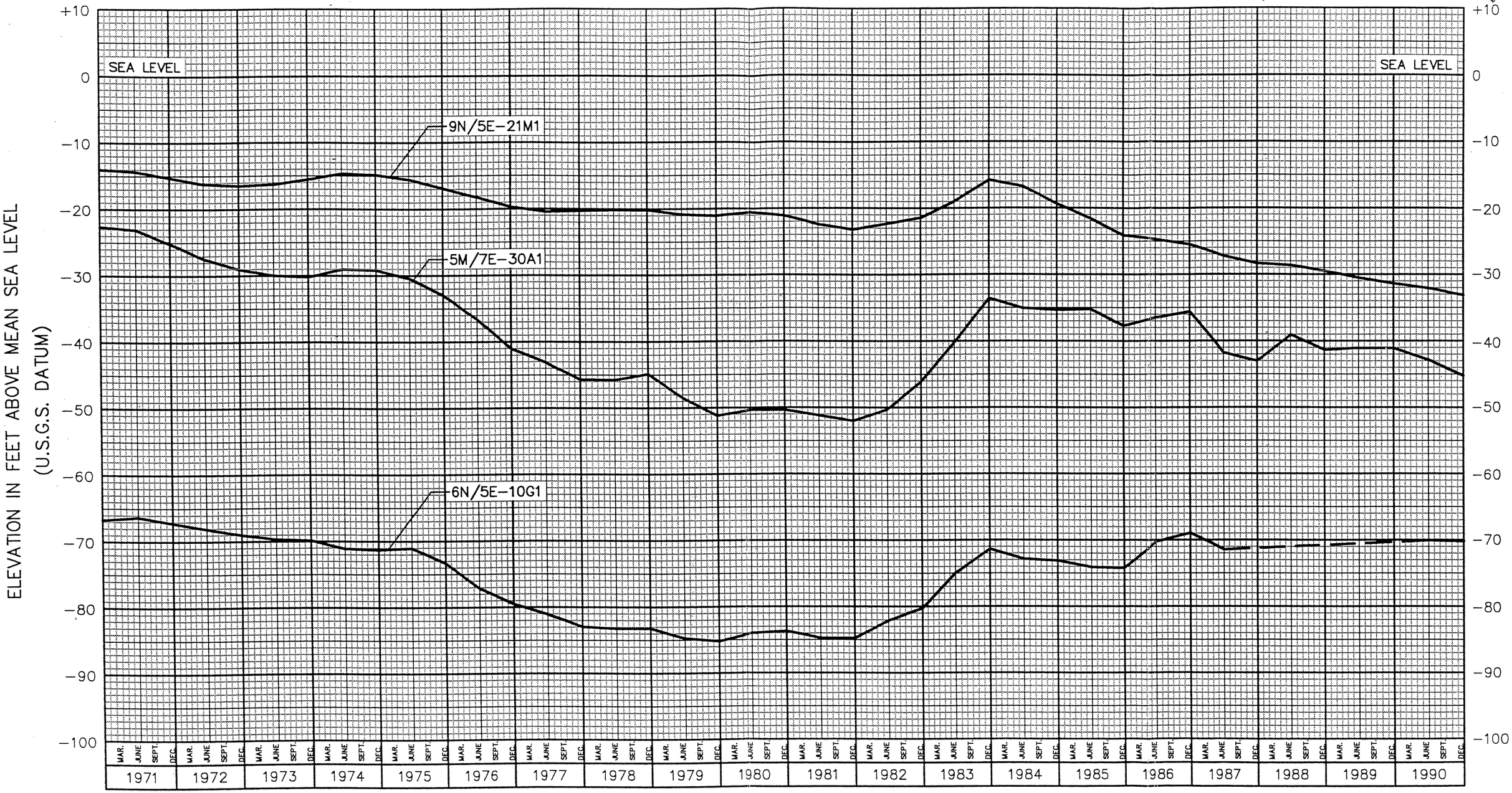
A. Monitor Groundwater Levels and Groundwater in Storage

Groundwater is the only reliable source of water available to the GMA and therefore knowledge regarding this resource and its reaction to influences both natural and man made is essential and considered a first priority of this plan. The purpose of a groundwater level monitoring program is to identify areas of overdraft and provide information that will allow determination of changes in groundwater storage and net recharge and depletion. Groundwater level monitoring is essential to understand the impact on aquifer storage due to changes in water inflow and outflow components and recharge and pumping activities. Mapping of groundwater levels depicts the direction of groundwater movement and hydraulic gradients necessary for quantifying flow and verifying estimates of subsurface outflow. Basic elements of the plan would include the following activities:



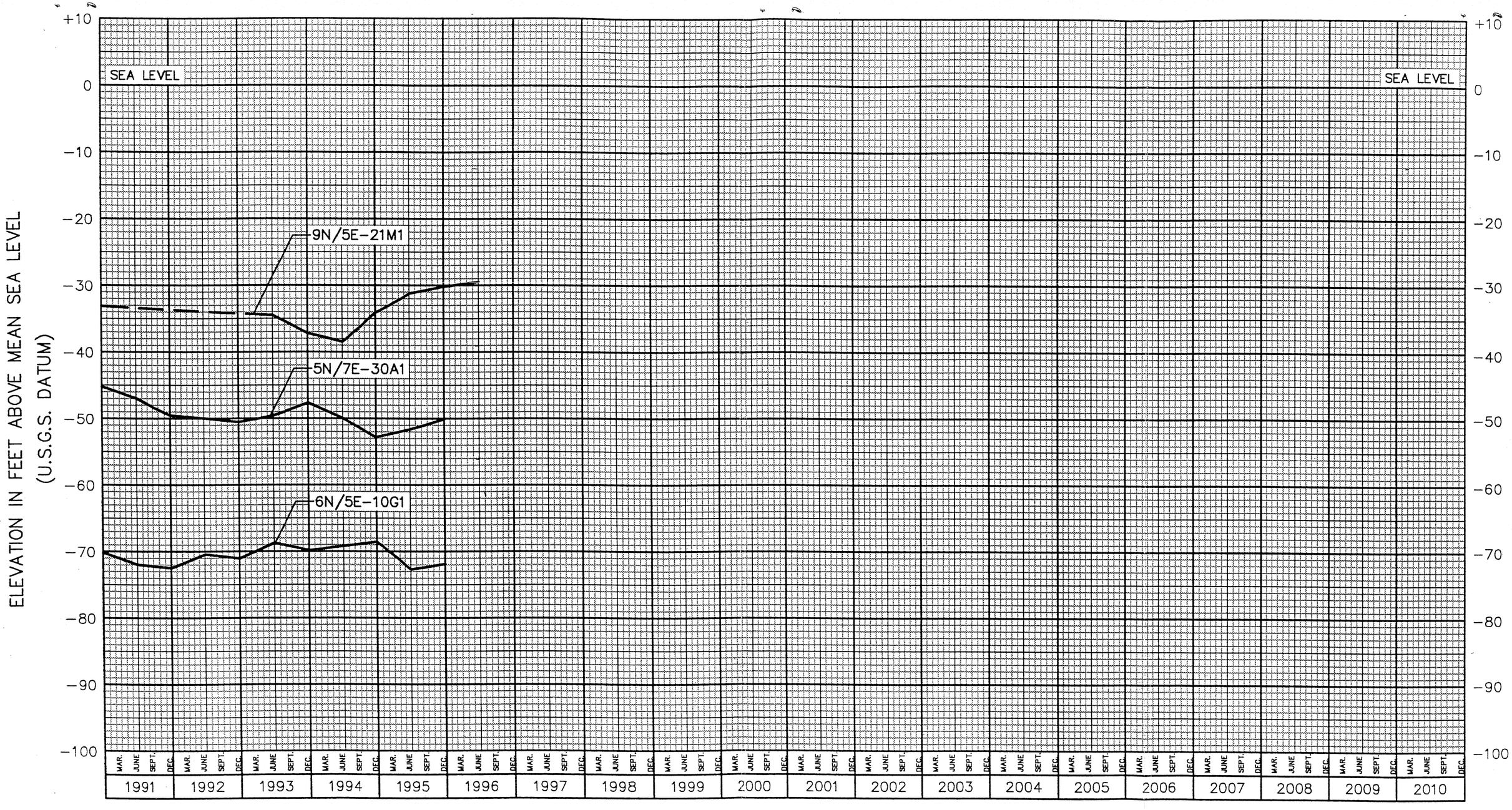
WATER LEVELS IN WELLS
1951−1996

FIGURE 3



WATER LEVELS IN WELLS
1951−1996

FIGURE 3
SHEET 2 OF 3



WATER LEVELS IN WELLS
1951−1996

FIGURE 3

1. Inventory active wells and existing water level data.
2. Determine wells to be included in the program.
3. Establish frequency of water level monitoring.
4. Develop a standardized data collection method.
5. Compile data and map groundwater elevations.
6. Interpret results.

B. Management of Wellhead Protection Areas and Recharge Areas for Purposes of this GMP

For purposes of this GMP this recommendation does not anticipate the development of an EPA approved Wellhead Protection Plan . Participating agencies should however be alert to existing and proposed land use activities that have the potential to degrade recharge areas and groundwater, so that appropriate action can be taken.

C. Control of Movements of Contaminants

The participating agencies will assist responsible regulatory agencies in understanding the hydrogeology of the GMA and vertical and lateral movement of groundwater based on monitoring activities carries out by the participating agencies. The participating agencies shall make the appropriate regulatory agencies aware of changes in water quality, which may indicate that point source contamination has occurred.

D. Well Abandonment and Well Destruction

Permits are required from county for abandonment of wells. For public water supply wells additional requirements may be prescribed by the State Department of Health Services. The participating agencies will rely on continued administration of the well abandonment and detraction program by the permitting agencies. The participating agencies' role in well abandonment and destruction will be to provide available groundwater data, assist in identifying locations of operating and abandoned wells, and to advise well owners why proper well destruction is important for protection of water quality.

E. Facilitate Conjunctive Use

Conjunctive use of groundwater and surface water typically occurs when surface water is available but such availability varies from year to year. In effect the groundwater basin is utilized as a storage reservoir with water being placed in storage during wet years (either directly or indirectly by replacing groundwater production) and withdrawn from the reservoir during dry years. In the GMA conjunctive use has

3. The Committee will establish a priority list for management actions. For example, a determination will be made on how groundwater levels and water quality information will be collected, who is responsible for collecting the information and how the information will be compiled and analyzed.
4. An annual summary will be prepared to describe the management activity that has taken place for each plan element and to keep participating agencies abreast of the groups activities.