

# **Cosumnes Groundwater Authority**

## **Meeting of the Board of Directors**

### **Agenda**

**When:** 9:00 am, Monday, March 21, 2022  
**Where:** [Via Zoom: https://us02web.zoom.us/j/82393964507](https://us02web.zoom.us/j/82393964507)  
Meeting ID: 823 9396 4507  
Call in Number: 1-669-900-9128

**PUBLIC COMMENT** – Any member of the public may address the Board concerning any matter on the agenda before or during its consideration of the matter. Public comment is limited to three (3) minutes per person. For good cause, the Board Chair may waive these limitations. **ACCESSIBILITY** - If you have a disability and require a reasonable accommodation to fully participate in this event, please contact Austin Miller (CGA Secretary) before March 21, 2022 via email [[info@CosumnesGroundwater.org](mailto:info@CosumnesGroundwater.org)] or telephone [916-526-5447] to discuss your accessibility needs.

#### **Call to Order**

1. Introductions
2. Determine if Quorum is Present

#### **Public Comment on Non-Agenda Items**

Comment will be received at this time for items not on the agenda, but within the jurisdiction of the agency. The Board will hear comment but may not take action on issues raised on non-agenda items. Limit of 3 minutes per speaker.

#### **Action Items**

3. Consent Items (5 minutes)
  - a. Agenda – March 21, 2022
  - b. Minutes – February 18, 2022
  - c. Consideration of Findings Related to Remote Meetings Pursuant to AB 361
  - d. Financial Report – March 2022
4. Resolution 2022-1: Resolution Recognizing Linda Dorn (10 minutes)
5. Prop. 68 Monitoring Well Cost Share (10 minutes)
6. 2021 Cosumnes GSP Annual Report (20 minutes)
7. Selection of Semiannual Groundwater Monitoring Service Provider (10 minutes)
8. Governance and Outreach (40 minutes)
  - a. Role of CGA Board, GSAs, and Staff, and Public Involvement Opportunities/Processes
  - b. DWR Facilitation Support Services Application Update
  - c. Board Policies
  - d. CGA Committees
9. Grant Applications and Letters of Support (10 minutes)

#### **Informational Items** (15 minutes)

10. Cosumnes Subbasin Watershed Coordinator Report
11. DWR North Central Regional Office Update
12. Upcoming Agenda Items
13. Director Comments

#### **Adjourn Meeting**

## **Agenda Item #3b**

### **Cosumnes Groundwater Authority Board of Directors Meeting**

Meeting Minutes  
February 18, 2022, 9:00am  
Via Zoom

#### **Call to Order: 9:04 am**

- 1) Introductions
- 2) Determine if Quorum is Present
  - a. Directors in Attendance: Rick Wohle, Mark Stretars, Leo VanWarmerdam, Don Notolli, Lindsey Liebig, Gary Thomas, Jay Vandenburg

#### **Action Items**

- 3) Consent Items
  - a. Agenda – February 28, 2022
  - b. Minutes – January 21, 2022
  - c. Consideration of Findings Related to Remote Meetings Pursuant to AB 361
  - d. Financial Report – February 2022

*Director Vandenburg moved to approve all consent items.*  
*Director Notolli seconded the motion.*  
*The motion passed with all in favor.*
- 4) Prop. 68 Monitoring Well Cost Share

Staff provided an update on the installation of a monitoring well using Prop. 68 grant funds. The project is overbudget (due to changes in costs from grant development to project implementation) and CGA has been asked to provide \$7,500.

*Director Notolli moved to table this item until March.*  
*Director Thomas seconded the motion.*  
*The motion passed with all in favor.*
- 5) GSP Annual Report Update

Staff provided an update on the development of the Water Year 2019-2021 Annual Report that is due April 1, 2022. There are still outstanding data needs that the Watershed Coordinator will be contacting GSAs about.
- 6) 2022 Monitoring Network Efforts Update

*Director Vandenburg moved to approve the draft Request for Proposals for Semiannual Groundwater Monitoring Services and to direct staff to publish the RFP.*  
*Director Stretars seconded the motion.*  
*The motion passed with all in favor.*
- 7) Cosumnes Subbasin Priority Projects/Activities

### **Agenda Item #3b**

*Director Thomas moved to direct staff to prepare an open committee application for review in March.*

8) Citizen Advisory Committee

The Board continued their discussion regarding forming a Citizen Advisory Committee to provide feedback to the Board on GSP implementation and directed Staff to prepare drafted formation documents in the next agenda packet.

9) Long-Term Budget Considerations

The Board discussed a variety of long-term revenue options and potential expenses.

#### **Information Items**

10) CGA Administrative Update

Staff provided an update on a variety of administrative activities.

11) Cosumnes Subbasin Watershed Coordinator Report

The Cosumnes Subbasin Watershed Coordinator provided an update on a variety of projects throughout the Subbasin.

12) DWR North Central Regional Office Update

DWR Staff provided a monthly update on DWR activities.

13) Upcoming Agenda Items

No additional agenda items were identified.

14) Director Comments

No Director comments.

#### **Adjourn Meeting**

*Chair Liebig adjourned the meeting by consensus at 12:25.*

The next regular meeting of the Cosumnes Groundwater Authority will on March 21, 2022 at 9:00 am at the Galt Police Department Community Meeting Room (or via Zoom).

# Cosumnes Groundwater Authority

## Financial Report

March 2022

<u>Expenses</u>		
Description	Source	Amount
Staff Support (SRCD, February)	Sloughhouse RCD	\$ 6,400.00
Staff Support (SSCAWA, February)	SSCAWA	\$ 6,380.00
EKI - Annual Report (January + February)	EKI	\$ 23,988.12
Legal Services (December 2021)	Downey Brand	\$ 3,555.00
Total Monthly Expenses		\$ 40,323.12

<u>Revenue</u>		
Description	Source	Amount
Invoiced: FY21/22 Member Contribution (1 of 2)	City of Galt	\$ 110,473.40
Total Monthly Revenue		\$ 110,473.40

Monthly Change	\$	70,150.28
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**BOARD OF DIRECTORS  
COSUMNES GROUNDWATER AUTHORITY  
RESOLUTION NO. 2022-1**

**HONORING LINDA DORN FOR HER SERVICE TO THE COSUMNES SUBBASIN**

**WHEREAS**, the State of California adopted the Sustainable Groundwater Management Act legislation became effective in 2015, and

**WHEREAS**, Sacramento County places a high priority on Countywide groundwater management, and

**WHEREAS**, Sacramento County created the position of Groundwater Sustainability Manager to facilitate groundwater management in four subbasins that are within the county, and

**WHEREAS**, Linda Dorn was hired to fill this new position in 2017 and became Sacramento County's first Groundwater Sustainability Manager, and

**WHEREAS**, Linda engaged in groundwater issues in the Cosumnes Subbasin, and participated in the Cosumnes Working Group, and

**WHEREAS**, Linda took the lead in the administration of the Prop. 68 and Prop. 1 grants on behalf of the Cosumnes Working Group, and

**WHEREAS**, Linda served as a leader in the subbasin and provided technical support for the development of the groundwater sustainability plan (GSP), and

**WHEREAS**, Linda's optimism and positive spirit was an optimistic example for the entire subbasin, and

**WHEREAS**, Linda's leadership and engagement in the development of the Cosumnes GSP is a large part of the reason for the success in this subbasin, and

**WHEREAS**, Linda helped develop the Cosumnes Groundwater Authority (CGA), and has served as an alternate on the CGA Board since its inception.

**NOW, THEREFORE**, the Cosumnes Groundwater Authority congratulates Linda Dorn on her well-deserved retirement from County service and recognizes her outstanding contribution to the Cosumnes Subbasin and to sustainable groundwater management Countywide. The CGA wishes to thank Linda for her service and wish for happiness and health as she begins her retirement adventure.

**PASSED AND ADOPTED** by the Board of Directors of the Cosumnes Groundwater Authority, this \_\_\_\_ day of \_\_\_\_\_, 2021, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

ATTEST:

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CGA Secretary

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CGA Chair

## **Agenda Item #5**

### **Cosumnes Groundwater Authority Board of Directors Meeting**

Agenda Date: March 21, 2022

Agenda Item #: 5

Agenda Item Subject: Prop. 68 Monitoring Well Cost Share

To: CGA Board of Directors

From: Stephen Julian, CGA Staff

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#### **Background**

A DWR Prop. 68 grant was awarded in March 2020 that included installing monitoring wells. To better understand surface water/groundwater interactions, that support groundwater dependent ecosystems, a multi-depth monitoring well on a DWR owned property adjacent to New Hope Road is proposed for meeting the grant requirements. Well siting and access permitting has taken much longer than anticipated.

#### **Attached**

[DWR Grant Agreement \(link\)](#)

[Budget Amendment \(link\)](#)

[Prop. 68 Well Location Map \(link\)](#)

#### **Discussion**

Update: an extension has been submitted and approved, well installation shall be completed by October 2022 and grant funds expended by December 2022.

When applying for this grant in 2019, well construction costs were significantly less expensive. Due to the regulatory permitting process and selecting the well location, the timeline was unexpectedly extended, and the project is expected to be approximately \$46,738 over budget. The County of Sacramento has agreed to pay permitting costs of approximately \$20,000 contingent upon CGA covering up to \$7,500. The original budget was \$101,297.

#### **Staff Recommendation**

- Approve up to \$7,500 from the Data Gap (FY 21/22 Total Budget: \$25,000. Spent to date: \$0.) to be spent on this well installation.

**Board action needed.**

## **Agenda Item #6**

### **Cosumnes Groundwater Authority Board of Directors Meeting**

Agenda Date: March 21, 2022

Agenda Item #: 6  
Agenda Item Subject: 2021 Cosumnes GSP Annual Report

To: CGA Board of Directors  
From: Stephen Julian, CGA Staff

#### **Background**

During the November 29, 2021, CGA Board Meeting, a contract with EKI to complete the 2021 Annual Report was agreed upon.

#### **Attached**

[6 - Cosumnes Annual Report WY 2021.pdf](#)

#### **Discussion**

As directed, staff coordinated with EKI to gather data and provide PMA updates. The report has been completed and was submitted to staff on March 16, 2022. The Annual Report will satisfy the regulations set forth by DWR and SGMA. The deadline to submit the annual report is April 1, 2022.

#### **Staff Recommendation**

- Approve and adopt the 2021 Cosumnes GSP Annual Report and direct staff to submit the report to DWR.

**Board action needed.**

# **WATER YEAR 2021 ANNUAL REPORT**

## **Cosumnes Groundwater Authority Cosumnes Subbasin**

16 March 2022  
EKI C20007.00

## Water Year 2021 Annual Report

Cosumnes Subbasin

16 March 2022

***Prepared for:***

Cosumnes Groundwater Authority  
8970 Elk Grove Blvd.  
Elk Grove, CA 95624

***Prepared by:***

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(650) 292-9100  
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Anona Dutton, P.G., C.Hg.  
Vice President



Kristyn Lindhart  
Hydrogeologist  
QA/QC Reviewer



John Fio  
Principal Hydrogeologist

# Water Year 2021 Annual Report

Cosumnes Subbasin

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## APPENDICES

Appendix A	Annual Report Submittal Checklist
Appendix B	Stakeholder Outreach

## ABBREVIATIONS AND ACRONYMS

ACGMA	Amador County Groundwater Management Authority
AF	acre-feet
AFY	acre-feet per year
Ag-Res	Agricultural-Residential
ARSA	Amador Regional Sanitation Authority
AWA	Amador Water Agency
CCR	California Code of Regulations
CGA	Cosumnes Groundwater Authority
CoSANA	Cosumnes, South American, and North American model
DWR	California Department of Water Resources
eWRIMS	Electronic Water Rights Information Management System
Flood-Mar	Flood Managed Aquifer Recharge
FSC	Folsom South Canal
ft	feet
ft msl	feet above mean sea level
GID	Galt Irrigation District
GPS	Global Positioning System
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
GWE	Groundwater Elevation
IDC	Irrigation Demand Calculator
IMs	Interim Milestones
IWFM	Integrated Water Flow Model
JPA	Joint Powers Agreement
mg/L	milligrams per liter
MO	Measurable Objective
MT	Minimum Threshold
N	Nitrogen
OHWD	Omoichumne-Hartnell Water District
PMA	Projects and Management Actions
PWS	Public Water System
RMW-ISW	Representative Monitoring Well for the Depletions of Interconnected Surface Water
RMW-WL	Representative Monitoring Well for Chronic Lowering of Groundwater Levels
RMW-WQ	Representative Monitoring Well for Degraded Water Quality
SAFCA	Sacramento Area Flood Control Agency
SGMA	Sustainable Groundwater Management Act
SMC	Sustainable Management Criteria



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SMUD	Sacramento Municipal Utility District
SRCD	Sloughhouse Resources Conservation District
TDS	Total Dissolved Solids
TT	Trigger Threshold
UNAVCO	University NAVSTAR Consortium
USBR	United States Bureau of Reclamation
UWMP	Urban Water Management Plan
WWTP	Wastewater Treatment Plant
WY	Water Year

## EXECUTIVE SUMMARY

The San Joaquin Valley Groundwater Basin – Cosumnes Subbasin (also referred to herein as “the Basin”), California Department of Water Resources (DWR) Basin No. 5-022.16, is classified as a “medium priority” basin (DWR, 2019). To address the long-term reliability of groundwater within the Basin, the Basin’s seven Groundwater Sustainability Agencies (GSAs) developed a Groundwater Sustainability Plan (GSP), which was adopted by the GSAs between 14 December 2021 and 12 January 2022 and submitted to DWR on 27 January 2022.

The Basin encompasses 210,300 acres at the northern end of the San Joaquin Valley Groundwater Basin within Sacramento and Amador Counties (see **Figure AR-1**). It is bordered on the north by the South American Subbasin and on the south by the Eastern San Joaquin Subbasin. The Basin is bounded by surface water features to the north, south, and west and the eastern Basin boundary is formed by low permeability metamorphic rocks in the Sierra Nevada foothills region. The Basin has a single Principal Aquifer which is comprised of six hydraulically connected sedimentary formations that include Younger Alluvium, Victor, Laguna, Mehrten, Valley Springs, and Lone Formations.

The Basin is managed by seven GSAs: Amador County Groundwater Management Authority (ACGMA) GSA, City of Galt GSA, Clay Water District GSA, Galt Irrigation District (GID) GSA, Omochumne-Hartnell Water District (OHWD) GSA, Sacramento County GSA, and Sloughhouse Resource Conservation District (SRCD) GSA. In November 2021 the Cosumnes Groundwater Authority (CGA) was formed upon adoption of a Joint Powers Agreement (JPA) between the seven GSAs. The CGA enables the GSAs to collaboratively comply with the Sustainable Groundwater Management Act (SGMA), implement the GSP, seek and secure grant or other funding to support implementation, and work collaboratively with the GSAs and other entities to sustainably manage the Basin.

This Water Year (WY) 2021 Annual Report for the Basin has been prepared by the CGA in compliance with California Code of Regulations (CCR) 23 § 356.2. WY 2021 includes the period from 1 October 2020 through 30 September 2021, which is prior to adoption of the Basin’s GSP and before a finalized plan for Basin-wide monitoring existed. Nevertheless, the GSAs proactively implemented a monitoring event based on the preliminary network to provide data for this WY 2021 Annual Report, build relationships with well owners, and identify potential monitoring plan improvements.

**Figure AR-2** and **Figure AR-3** present groundwater elevation contours for data collected in Fall 2020, and Spring 2021, respectively. Groundwater elevations generally decrease from east to west across the Basin, with the highest elevations measured in the higher topographic areas in the east. At lower topography, the western component of groundwater flow shifts towards the south where extractions have created a depression in the elevation contours (a cone of depression).

Long-term hydrographs for water levels measured in the Representative Monitoring Wells for Chronic Lowering of Groundwater Levels (RMW-WLs) and the Representative Monitoring Wells for Representative Monitoring Well for the Depletions of Interconnected Surface Water (RMW-ISWs) are shown on **Figure AR-4**. Sustainable Management Criteria (SMCs), including Measurable Objectives (MOs) and Minimum Thresholds (MTs), were established in the GSP for groundwater levels at the 19 RMW-WLs and the nine RMW-ISWs. Hydrographs based on available data for each well are shown in **Figure AR-4** and reported in **Table AR-4** and **Table AR-6**.

During WY 2021, the total volume of extracted groundwater from the Basin was 149,300 acre-feet (AF); almost 90% was for use by agriculture, which includes domestic (agricultural-residential [Ag-Res]) uses, and 10% was used for developed areas including urban (public water systems [PWS]) and industrial water

uses (aquaculture). **Table AR-1** reports WY 2021 groundwater extraction data by water use sectors (e.g., agricultural and developed) and **Figure AR-5** shows the general location and volume of annual extractions represented by groundwater use within each GSA.

Surface water and groundwater extractions comprise most of the water use in the Basin. Additionally, recycled water is used for irrigation within the Basin. **Table AR-3** summarizes the total water use by water use sector and water use type.

Changes in groundwater storage were calculated using the Cosumnes, South American, and North American groundwater flow model (CoSANA) prepared to support GSP development and implementation. **Figure AR-6** is a map showing the distribution of model-calculated changes in groundwater storage between October 1, 2020, through September 30, 2021 (WY 2021). Groundwater storage declined across most of the Basin, as would be expected given that WY 2021 was a critically dry year. **Figure AR-7** shows water year type, annual groundwater extractions, annual change in groundwater storage, and the cumulative change in groundwater storage for WY 2015 through WY 2021.

**Table AR-4** compares WY 2021 groundwater elevations to SMCs at the RMW-WLs for the Chronic Lowering of Groundwater Levels, **Table AR-5** compares WY 2021 water quality concentrations for Arsenic, Nitrate, and Total Dissolved Solids (TDS) to their respective SMCs at the Representative Monitoring Wells for Degraded Water Quality (RMW-WQs), and **Table AR-6** compares WY 2021 groundwater elevations to SMCs and trigger thresholds at the RMW-ISWs established for Depletions of Interconnected Surface Water. Based on evaluation of these data, no Undesirable Results were observed within the Basin.

The GSP outlined six Projects and Management Actions (PMAs) for the Basin. During WY 2021 a temporary diversion permit was granted for PMA #1 OWHD Agricultural Flood Managed Aquifer Recharge (Flood-MAR). Also during 2021, coordination began to conduct a pilot study for PMA #2 Sacramento Area Flood Control Agency (SAFCA) Flood-MAR. A brief description of each PMA is listed in **Section 7**.

## 1 GENERAL INFORMATION

### ☒ § 356.2 (a)

*Each Agency shall submit an annual report to the Department by April 1 of each year following the adoption of the Plan. The annual report shall include the following components for the preceding water year:*

*(a) General information, including an executive summary and a location map depicting the basin covered by the report.*

On 16 September 2014, the California legislature enacted the Sustainable Groundwater Management Act (SGMA) - the primary purpose of which is to achieve and/or maintain sustainability within the state's high and medium priority groundwater basins. The San Joaquin Valley Groundwater Basin – Cosumnes Subbasin (also referred to herein as “the Basin”), California Department of Water Resources (DWR) Basin No. 5-022.16, is classified as a “medium priority” basin (DWR, 2019). To address the long-term reliability of groundwater within the Basin, the Basin's seven Groundwater Sustainability Agencies (GSAs)<sup>1</sup> developed a Groundwater Sustainability Plan (GSP), which was adopted by the GSAs between 14 December 2021 and 12 January 2022 and submitted to DWR on 27 January 2022.

The Basin encompasses 210,300 acres at the northern end of the San Joaquin Valley Groundwater Basin within Sacramento and Amador Counties (see **Figure AR-1**). It is bordered on the north by the South American Subbasin and on the south by the Eastern San Joaquin Subbasin. The Basin is bounded by surface water features to the north, south, and west and the eastern Basin boundary is formed by low permeability metamorphic rocks in the Sierra Nevada foothills region. The Basin has a single Principal Aquifer which is comprised of six hydraulically connected sedimentary formations that include Younger Alluvium, Victor, Laguna, Mehrten, Valley Springs, and Lone Formations. Hydraulic conditions in the Principal Aquifer range from unconfined to semi-confined, and as reported in the GSP its total thickness ranges from 810 to 1,750 feet (ft). Water inflows include rainfall infiltration, leakage from surface water features, percolation of relatively small quantities of imported surface water that originated outside the Basin, and subsurface flows from adjacent basins. Outflows include seepage to surface water features, subsurface flows to adjacent basins, evapotranspiration, and consumption of groundwater extracted by wells.

The Basin is managed by seven GSAs: Amador County Groundwater Management Authority (ACGMA) GSA, City of Galt GSA, Clay Water District GSA, Galt Irrigation District (GID) GSA, Omochochumne-Hartnell Water District (OHWD) GSA, Sacramento County GSA, and Sloughhouse Resource Conservation District (SRCD) GSA. In November 2021 the Cosumnes Groundwater Authority (CGA) was formed upon adoption of a Joint Powers Agreement (JPA) between the seven GSAs. The CGA enables the GSAs to collaboratively comply with SGMA, implement the GSP, seek and secure grant or other funding to support implementation, and work collaboratively with the GSAs and other entities to sustainably manage the Basin.

This Water Year (WY) 2021 Annual Report for the Basin has been prepared by the CGA in compliance with California Code of Regulations (CCR) 23 § 356.2. The GSP Annual Report Elements guide (**Appendix A**) lists the Annual Report requirements and where in this report they are specifically addressed. WY 2021 includes the period from 1 October 2020 through 30 September 2021, which is prior to adoption of the Basin GSP and before a finalized plan for Basin-wide monitoring existed. Nevertheless, the GSAs

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<sup>1</sup> The Cosumnes Subbasin GSAs include Amador County Groundwater Management Authority (ACGMA) GSA, City of Galt GSA, Clay Water District GSA, Galt Irrigation District (GID) GSA, Omochochumne-Hartnell Water District (OHWD) GSA, Sacramento County GSA, and Sloughhouse Resource Conservation District (SRCD) GSA.

proactively implemented a monitoring event based on the preliminary network to provide data for this WY 2021 Annual Report, build relationships with well owners, and identify potential monitoring plan improvements. While this Annual Report includes the best available data, and as required by CCR 23 §356.2 (b) includes the available and appropriate historical information back to calendar year 2015, the results are not fully representative of the final representative monitoring network or the overall monitoring plan as described in the GSP. Accordingly, discrepancies between the final plan and WY 2021 data collection efforts do not represent monitoring deficiencies but rather opportunities to improve GSA coordination and increase the effectiveness of future data gathering efforts.

## 2 GROUNDWATER ELEVATION DATA

### ☑ § 356.2 (b) (1)

*Each Agency shall submit an annual report to the Department by April 1 of each year following the adoption of the Plan. The annual report shall include the following components for the preceding water year:*

*(b) A detailed description and graphical representation of the following conditions of the basin managed in the Plan:*

*(1) Groundwater elevation data from monitoring wells identified in the monitoring network shall be analyzed and displayed as follows:*

*(A) Groundwater elevation contour maps for each principal aquifer in the basin illustrating, at a minimum, the seasonal high and seasonal low groundwater conditions.*

*(B) Hydrographs of groundwater elevations and water year type using historical data to the greatest extent available, including from January 1, 2015, to current reporting year.*

### 2.1 Groundwater Elevation Contour Maps

In May 2021, the GSAs proactively conducted a monitoring event based on the preliminary network to provide data for WY 2021, build relationships with well owners, and identify potential monitoring plan improvements. Fall water levels were measured between October 8 and November 18 2020, and Spring water levels were measured between February 17 and May 27 2021. All available groundwater elevation data were used to create groundwater elevation contours, however during WY 2021 the monitoring network had not been finalized for the GSP and thus data were not available for all Representative Monitoring Wells for Chronic Lowering of Groundwater Levels (RMW-WLs).

**Figure AR-2** and **Figure AR-3** show groundwater elevation contours for data collected in Fall 2020 and Spring 2021, respectively. Groundwater elevations generally decrease from east to west across the Basin, with the highest elevations measured beneath the higher topographic areas in the east. At lower topography, the western component of groundwater flow shifts towards the south where extractions have created a depression in the elevation contours (a cone of depression). The Fall and Spring groundwater elevation contours are similar, with changes of a few feet in most wells. WY 2021 was a critically dry year, and the similarity between Fall and Spring water levels is likely explained by the lack of rainfall, which is the primary source of groundwater recharge, and the fact that Spring contours are based on water levels measured on various dates over a four-month period.<sup>2</sup>

### 2.2 Groundwater Hydrographs

Long-term hydrographs of historical groundwater level data through WY 2021 for water levels measured in the RMW-WLs and Representative Monitoring Wells for Representative Monitoring Well for the Depletions of Interconnected Surface Water (RMW-ISWs) are shown on **Figure AR-4**. Sustainable Management Criteria (SMCs), including Measurable Objectives (MOs) and Minimum Thresholds (MTs), were established in the GSP for the 19 RMW-WLs and the nine RMW-ISWs shown in **Figure AR-4**. Hydrographs of the available data for each well are shown in **Figure AR-4** and reported in **Table AR-4** and **Table AR-6** and discussed in **Section 7**.

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<sup>2</sup> The GSP specifies that Spring water levels will be measured in March to represent the seasonal high prior to summer irrigation demands and Fall levels will be measured in October to represent the seasonal low after the increased summer irrigation demands. However, the Monitoring Plan and network had not yet been finalized in WY 2021, and as a result the Spring water level measurements represent conditions during the period February through May.

### 3 GROUNDWATER EXTRACTIONS

☒ § 356.2 (b) (2)

*Each Agency shall submit an annual report to the Department by April 1 of each year following the adoption of the Plan. The annual report shall include the following components for the preceding water year:*

*(b) A detailed description and graphical representation of the following conditions of the basin managed in the Plan:*

*(2) Groundwater extraction for the preceding water year. Data shall be collected using the best available measurement methods and shall be presented in a table that summarizes groundwater extractions by water use sector, and identifies the method of measurement (direct or estimate) and accuracy of measurements, and a map that illustrates the general location and volume of groundwater extractions.*

During WY 2021, the total volume of extracted groundwater was 149,300 acre-feet (AF), of which almost 90% was used by agriculture, which includes domestic (agricultural-residential [Ag-Res]), and the remaining 10% was for developed uses including urban (public water systems [PWS]) and industrial (aquaculture) water uses. **Table AR-1** reports WY 2021 groundwater extraction data by water use sectors (e.g., agricultural and developed) and **Figure AR-5** shows the general location and volume of annual extractions represented by groundwater use within each GSA. Total extractions represent a combination of metered and estimated values.

Extractions were reported for most but not all municipal and PWS wells, but the measurement methods were not always available. When reported extractions were not available, these extractions were estimated by repeating data from the previous year.

All extractions for agriculture were estimated from reported land use (i.e., crop types), crop water demand, and climate data. In October 2021 meters were installed on three agricultural wells; however, data were not available for WY 2021. Domestic, non-urban self-supplied water use is also included as part of agricultural extractions (Ag-Res extractions), and these extractions were calculated based on representative indoor and outdoor water use and the estimated number of residential parcels in the Basin.

**Table AR-1 Summary of Groundwater Extraction Data by Sector (AF)**

Water Year	Agricultural <sup>(b)</sup>	Developed <sup>(d)</sup>	Total
	Estimated <sup>(c)</sup>	Metered <sup>(e)</sup> and Estimated <sup>(f)</sup>	
2021	133,100	16,200	149,300

**Abbreviations:**

AF = acre-feet

**Notes:**

(a) Values are rounded to the nearest 100 AF.

(b) Agricultural includes agricultural and domestic water use.

(c) Agricultural extractions were estimated from land use and climate data using the Irrigation Demand Calculator (IDC) within Cosumnes, South American, and North American model (CoSANA). Domestic (Agricultural-Residential [Ag-Res]) extractions were estimated based on representative indoor and outdoor water use and estimated number of residential parcels in the Basin.

(d) Developed extractions include urban (public water systems [PWSs]) and industrial (aquaculture) water uses.

(e) Data reported by the City of Galt Groundwater Sustainability Agency (GSA), Amador County Groundwater Management Authority (ACGMA) GSA, and some PWSs.

(f) Estimated extractions under the “Developed” Sector include non-reporting PWSs and aquaculture.

## 4 SURFACE WATER SUPPLY

### ☒ § 356.2 (b) (3)

Each Agency shall submit an annual report to the Department by April 1 of each year following the adoption of the Plan. The annual report shall include the following components for the preceding water year:

(b) A detailed description and graphical representation of the following conditions of the basin managed in the Plan:

(3) Surface water supply used or available for use, for groundwater recharge or in-lieu use shall be reported based on quantitative data that describes the annual volume and sources for the preceding water year.

In the Basin, the surface water supply includes imported water and stream diversions (**Table AR-2**). In WY 2021, the Amador Water Agency (AWA) provided imported surface water to the City of Ione from Lake Tableaud, and the United States Bureau of Reclamation (USBR) provided imported surface water to the Sacramento Municipal Utility District (SMUD).

#### Imports:

- AWA delivered water from Lake Tableaud to meet urban demand in the City of Ione. From 1998 onward, these imports have been estimated for this report from total water treated at the wastewater treatment plant, as provided by AWA. Estimated deliveries in WY 2021 were 1,700 AF.
- Treated wastewater originating outside the Basin is delivered by the Amador Regional Sanitation Authority (ARSA) to the Castle Oaks Water Reclamation Plant, which supplies tertiary treated wastewater for irrigation to the Castle Oaks Golf Course (estimated at 600 AF based on irrigation demand).
- Agricultural diversions from the Folsom South Canal (FSC) are delivered to the decommissioned Rancho Seco nuclear power facility, which is owned by SMUD. Beyond 2014, deliveries were approximated using average monthly deliveries based on the 2003-2014 data provided by USBR. Estimated deliveries in WY 2021 were 100 AF.

#### Stream Diversions:

- In WY 2021, 23,400 AF of water was diverted from surface drainages in the Basin (e.g., the Cosumnes River and Dry Creek). The best available data for most of the diversions are the monthly reported stream diversions uploaded to the Electronic Water Rights Information Management System (eWRIMs). The monthly diversions are reported by the permit holder, but the reports do not include the measurement method. Monthly Cosumnes River diversion by Rancho Murieta were metered and reported directly to the CGA.

**Table AR-2 Summary of Surface Water Supply by Sector (AF)**

Water Year	AWA Import Surface Water	ARSA Imported Treated Wastewater	SMUD	Stream Diversions	
	Developed	Developed	Agricultural	Agricultural	Developed
2021	1,700	600	100	22,800	600

#### Abbreviations:

AF = Acre-feet

AWA = Amador Water Agency

ARSA = Amador Regional Sanitation Authority

SMUD = Sacramento Municipal Utilities District

#### Notes:

(a) Values are rounded to the nearest 100 AF.



## 5 TOTAL WATER USE

### ☒ § 356.2 (b) (4)

Each Agency shall submit an annual report to the Department by April 1 of each year following the adoption of the Plan. The annual report shall include the following components for the preceding water year:

(b) A detailed description and graphical representation of the following conditions of the basin managed in the Plan:

(4) Total water use shall be collected using the best available measurement methods and shall be reported in a table that summarizes total water use by water use sector, water source type, and identifies the method of measurement (direct or estimate) and accuracy of measurements. Existing water use data from the most recent Urban Water Management Plans or Agricultural Water Management Plans within the basin may be used, as long as the data are reported by water year.

As described above, surface water and groundwater extractions comprise most of the water use in the Basin. Additionally, recycled water is used for irrigation within the Basin. Secondary treated water is imported into the Basin and treated to tertiary standards for use as irrigation water at the Castle Oaks Golf Course. Wastewater produced by the City of Galt is treated at the City of Galt Wastewater Treatment Plant (WWTP) and delivered to nearby fields for use as irrigation water. Therefore, the total water use is equal to the sum of total estimated groundwater extraction and the total surface water and recycled water supplies.

**Table AR-3** summarizes the total water use by water use sector and water use type. Groundwater extraction and surface water supply by sector are shown in **Table AR-1** and **Table AR-2**, respectively. Recycled non-potable water used for irrigation by the golf course is estimated based on demand, and recycled water use by agricultural fields near the City of Galt WWTP is recorded using meters that record in gallons.

**Table AR-3 Summary of Total Water Use by Sector and Source (AF)**

Water Year	Agricultural				Developed			
	Estimated Extractions	Imported Water	Recycled Water	Stream Diversions	Metered/ Estimated Extractions	Imported Water	Recycled Water	Stream Diversions
2021	133,100	100	700	22,800	16,200	1,700	600	600

**Abbreviations:**

AF = acre-feet

**Notes:**

(a) Values are rounded to the nearest 100 AF.

## 6 CHANGE IN GROUNDWATER STORAGE

### ☒ § 356.2 (b) (4)

*Each Agency shall submit an annual report to the Department by April 1 of each year following the adoption of the Plan. The annual report shall include the following components for the preceding water year:*

*(b) A detailed description and graphical representation of the following conditions of the basin managed in the Plan:*

*(4) Change in groundwater in storage shall include the following:*

*(A) Change in groundwater in storage maps for each principal aquifer in the basin.*

*(B) A graph depicting water year type, groundwater use, the annual change in groundwater in storage, and the cumulative change in groundwater in storage for the basin based on historical data to the greatest extent available, including from January 1, 2015, to the current reporting year.*

Changes in groundwater storage were calculated using the Cosumnes, South American, and North American groundwater flow model (CoSANA), the Numerical Model for the Basin (Appendix M “CoSANA – An Integrated Water Resources Model of the Cosumnes, South American, and North American Groundwater Subbasins, November 2021” in “Groundwater Sustainability Plan for the Cosumnes Subbasin, December 2021). CoSANA is a three-dimensional (3-D) groundwater flow model that uses DWR’s finite-element Integrated Water Flow Model (IWFM) groundwater modeling platform. CoSANA was prepared to support GSP development and GSP implementation.

**Figure AR-6** is a map showing the distribution of model-calculated changes in groundwater storage between October 1, 2020, through September 30, 2021 (WY 2021). CoSANA calculates the volume of storage change within each model element, and the element-by-element change was normalized by dividing the volumetric change in storage by the area of each respective element and the results mapped in units of feet. Groundwater storage declined across most of the Basin. Annual storage declines greater than 0.5 feet occur in areas where there were significant reductions in recharge (for example, beneath surface water features) and areas characterized by the greatest extractions (**Figure AR-5**).

**Figure AR-7** shows water year type, annual groundwater extractions, annual change in groundwater storage, and the cumulative change in groundwater storage for WY 2015 through WY 2021. Annual extraction rates of 135,200 acre-feet per year (AFY) or greater resulted in storage declines, whereas annual extraction rates of 121,900 AFY or less resulted in storage accretion. The estimated sustainable yield for the Basin reported in the GSP ranges from 119,000 AFY to 125,700 AFY.

## 7 PLAN IMPLEMENTATION

### ☒ § 356.2 (b) (4)

*Each Agency shall submit an annual report to the Department by April 1 of each year following the adoption of the Plan. The annual report shall include the following components for the preceding water year:*

*(c) A description of progress towards implementing the Plan, including achieving interim milestones, and implementation of projects or management actions since the previous annual report.*

### 7.1 Progress Towards Interim Milestones for Chronic Lowering of Groundwater Levels

The GSP was adopted and submitted to DWR during the first quarter of WY 2022. Hence, WY 2021 groundwater levels represent conditions prior to GSP implementation and there are no Interim Milestones (IMs) for WY 2021. **Table AR-4** compares available WY 2021 groundwater elevations to SMCs at the final set of RMW-WLs established in the GSP for the Chronic Lowering of Groundwater Levels Sustainability Indicator in the Basin. For wells with at least one WY 2021 water level measurement (16 RMW-WLs), all but one (RMW-WL16) have groundwater elevations above their MTs. The GSP describes actions to take when water levels in representative monitoring wells decline below its MT (Section 15.8 *Action Plan Related to Minimum Threshold Exceedances*). Based on that guidance, the initial steps for the GSAs are to investigate the local area around RMW-WL16, evaluate the potential for outside contributing factors, and consider the need for increased or expanded monitoring.

**Table AR-4 Groundwater Elevations and Relevant Sustainable Management Criteria**

Well Name	Fall 2020 GWE (ft msl)	Spring 2021 GWE (ft msl)	MO (ft msl)	MT (ft msl)
RMW-WL1	-50	-46	-55	-65
RMW-WL2	-64	-51	-59	-69
RMW-WL3 <sup>a</sup>	--	--	-46	-56
RMW-WL4	--	-36	-24	-39
RMW-WL5 <sup>a</sup>	--	--	-70	-84
RMW-WL6	-66	-67	-51	-78
RMW-WL7	-22	-23	-28	-38
RMW-WL8	--	-36	-36	-48
RMW-WL9	--	-74	-75	-89
RMW-WL10	-26	-27	-22	-32
RMW-WL11	--	-29	-28	-38
RMW-WL12	105	104	106	85
RMW-WL13	-27	-24	-36	-46
RMW-WL14	--	252	250	232
RMW-WL15	131	130	141	119
RMW-WL16	242	249	269	259
RMW-WL17 <sup>a</sup>	--	--	116	89
RMW-WL18	--	198	195	185
RMW-WL19	--	171	171	161

**Abbreviations:**

ft msl = feet above mean sea level

GWE = groundwater elevation

MO = measurable objective

MT = minimum threshold

RMW-WL = Representative Monitoring Well for Chronic Lowering of Groundwater Levels

**Notes:**

(a) Not included in the RMW-WL network at the time of depth to water collection in Spring 2021.

## 7.2 Progress Towards Interim Milestones for Groundwater Storage

There are no groundwater storage IMs for WY 2021. As explained in the GSP, groundwater levels are a reasonable proxy for groundwater storage. Progress made during the reporting period is therefore represented by the discussion of water levels in **Section 7.1**.

## 7.3 Progress Towards Interim Milestones for Seawater Intrusion

Because significant and unreasonable effects from seawater intrusion are not present in the Basin and are not likely to occur, SMCs were not set for Seawater Intrusion. The Seawater Intrusion Sustainability Indicator is therefore not discussed herein.

## 7.4 Progress Towards Interim Milestones for Degraded Water Quality

The GSP was adopted and submitted to DWR during the first quarter of WY 2022. Hence, WY 2021 water quality sampling was limited. **Table AR-5** compares available WY 2021 water quality concentrations for Arsenic, Nitrate, and Total Dissolved Solids (TDS) to their respective SMCs at the final set of Representative Monitoring Wells for Degraded Water Quality (RMW-WQs) established in the GSP for the Degraded Water Quality Sustainability Indicator. All available data were below the SMCs. Because water quality results represent conditions prior to GSP implementation, there are no IMs for WY 2021.

**Table AR-5 Groundwater Quality and Sustainable Management Criteria**

Well Name	Arsenic (µg/L)			Nitrate as N (mg/L)			TDS (mg/L)		
	MO = 8	MT = 10	TT = 9	MO = 8	MT = 10	TT = 9	MO= 500	MT=1,000	TT = 750
RMW-WQ1		--			--			--	
RMW-WQ2		--			--			--	
RMW-WQ3		--			--			--	
RMW-WQ4		2.0			2.2			150	
RMW-WQ5		6.5			0.4			155	
RMW-WQ6		1.5			1.2			195	
RMW-WQ7		3.5			1.0			145	
RMW-WQ8		3.7			0.2			170	
RMW-WQ9		--			--			--	
RMW-WQ10		--			--			--	
RMW-WQ11		--			--			--	
RMW-WQ12		--			--			--	
RMW-WQ13		3.5			1.4			150	
RMW-WQ14		9.8			0.1			150	

**Abbreviations:**

mg/L = milligrams per liter

MO = Measurable Objective

MT = Minimum Threshold

N = Nitrogen

RMW-WQ = Representative Monitoring Well for Degraded Water Quality

TDS = Total Dissolved Solids

TT= Trigger Threshold

µg/L = micrograms per liter

**Notes:**

(a) Trigger Thresholds are used in place of Interim Milestones.

(b) For all RMW-WQs, Sustainable Management Criteria (SMCs) were set at the same level based on state and federal standards.

## 7.5 Progress Towards Interim Milestones for Land Subsidence

Land subsidence is of low concern in the Basin. Continuous vertical displacement data has been collected since July 2006 at a University NAVSTAR Consortium (UNAVCO) Global Positioning System (GPS) station (P275) located within the Basin in the vicinity of the groundwater depression. The displacement data indicates an average negative displacement of 0.018 ft/year during the period WY2015 through WY2021 (a net decline in land surface of about 0.1 ft). As explained in the GSP, groundwater levels are a reasonable proxy for land subsidence, and progress made during the reporting period is therefore represented by the discussion of water levels in **Section 7.1**.

## 7.6 Progress Towards Interim Milestones for Depletions of Interconnected Surface Water

**Table AR-6** compares available WY 2021 groundwater elevations to trigger thresholds and SMCs set at the RMW-ISWs established for the Depletions of Interconnected Surface Water Sustainability Indicator. For wells with at least one WY 2021 water level measurement (seven of the nine RMW-ISWs), all have groundwater elevations above their MTs with four RMW-ISWs at or above their MOs

**Table AR-6 Groundwater Levels in Interconnected Surface Water Representative Monitoring Wells and Sustainable Management Criteria**

Well Name	Fall 2020 GWE (ft msl)	Spring 2021 GWE (ft msl)	MO (ft msl)	MT (ft msl)	TT (ft msl)
RMW-ISW1	--	-13	-18	-23	-21
RMW-ISW2 <sup>a</sup>	--	--	-3	-6	-5
RMW-ISW3	--	4	-4	-10	-7
RMW-ISW4	--	-17	-14	-19	--
RMW-ISW5	--	--	83	78	--
RMW-ISW6	-26	-27	-26	-31	--
RMW-ISW7	--	255	257	247	252
RMW-ISW8	178	179	179	172	176
RMW-ISW9	--	--	171	164	167

**Abbreviations:**

ft msl = feet above mean sea level

GWE = groundwater elevation

MO = Measurable Objective

MT = Minimum Threshold

RMW-ISW = Representative Monitoring Well for the Depletions of Interconnected Surface Water

TT = Trigger Threshold

**Notes:**

- (a) Measurements recorded for RMW-ISW2 after 10 January 2020 are considered questionable as all values are increased by up to 60 feet compared to recent data.

## 7.7 Implementation of Projects and Management Actions (PMAs)

The GSP outlined six PMAs, which are briefly described below. Progress on PMA implementation represents activity levels prior to GSP finalization, approval, and adoption which occurred during the first quarter of WY 2022.

- **PMA #1 - OHWD Agricultural Flood Managed Aquifer Recharge (Flood-MAR).** As part of this project, winter diversions will be applied on up to 1,800 acres of dormant vineyards, orchards, and other farmlands for recharge. In WY 2021, a temporary diversion permit was granted.
- **PMA #2 - Sacramento Area Flood Control Agency (SAFCA) Flood-MAR.** This project includes augmenting Basin storage with excess winter American River flows released from Folsom Reservoir and delivered to the Basin by the FSC. Recharge operations will include “flooding” up to 2,000 acres of dormant fields and/or passive injection from dry wells located along FSC. In WY 2021, coordination to conduct a pilot study on the Laguna Del Sol property began.
- **PMA #3 - OHWD Cosumnes River Flow Augmentation.** This project will release water from the FSC into the Cosumnes River during late-October through December when the Cosumnes River typically does not flow continuously between reaches. PMA #3 has not yet been initiated.
- **PMA #4 – City of Galt Recycled Water Project.** This project provides secondary treated wastewater (recycled water) to more than 160 acres of nearby farmland for summer irrigation. The project will expand the program to apply more of the existing recycled water supply (secondary or tertiary treated as determined) to 640 acres of Basin farmland year-round. PMA #4 has not yet been initiated.
- **PMA #5 – Voluntary Land Repurposing.** This project involves land fallowing and potentially other methods to reduce groundwater extractions and use by agriculture. The land repurposing activity

decreases groundwater use by temporarily removing a portion of the approximately 11,000 total acres irrigated solely with groundwater. PMA #5 has not yet been initiated.

- PMA #6 - Groundwater Banking and Sale. This project will utilize the available storage in the Basin to store water that can be extracted later and sold to out-of-Basin users for dry year supply augmentation. This PMA depends on demand for dry year water supply augmentation, a partnering urban water agency, and construction of necessary pipelines and recovery wells. PMA #6 has not yet been initiated.

## 7.8 Stakeholder Outreach

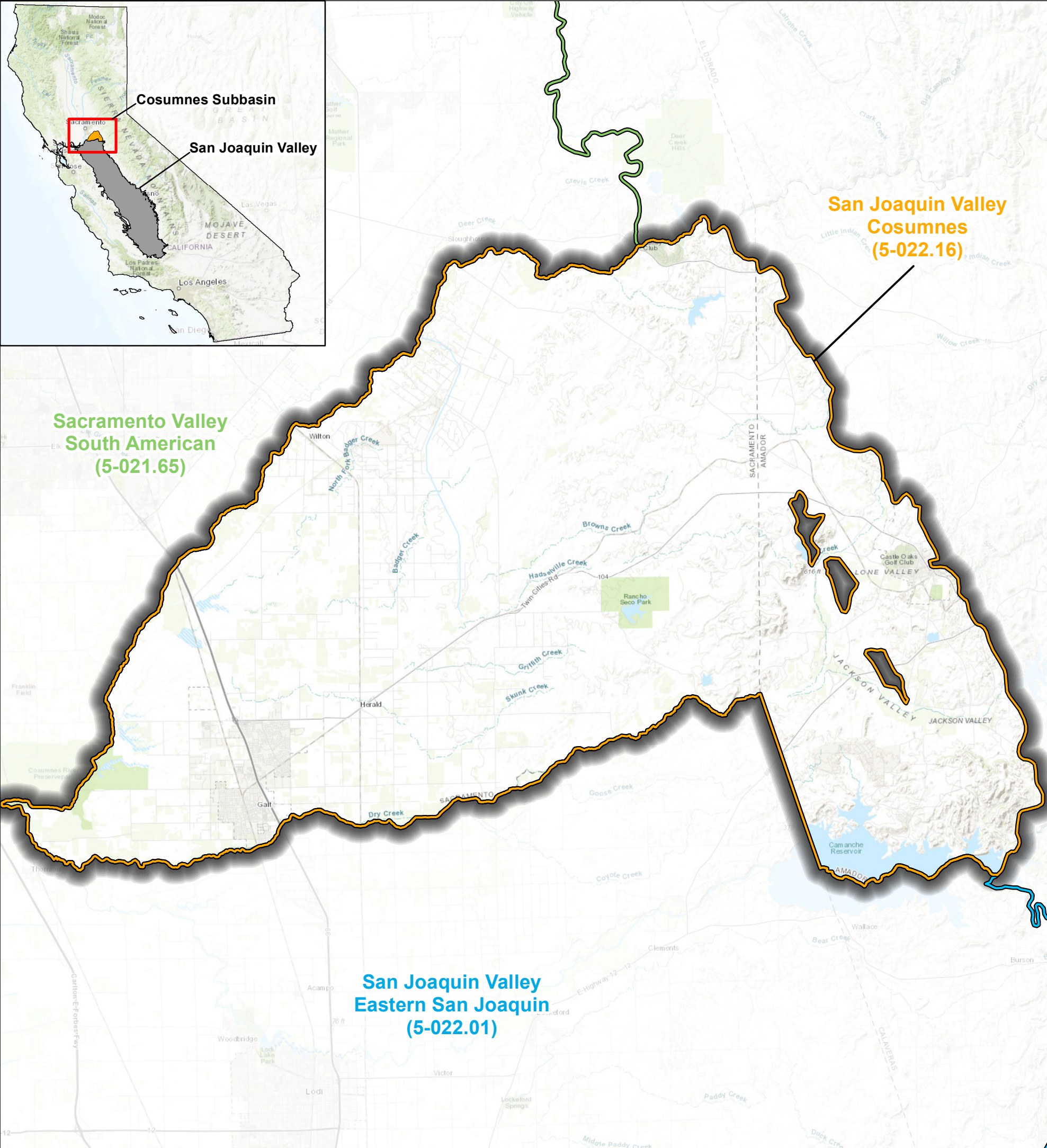
Prior to the formation of the CGA, the GSAs formed the Cosumnes Subbasin SGMA Working Group (Working Group) which facilitated stakeholder outreach. During the reporting period, the Working Group engaged stakeholders through Working Group/Technical Advisory Committee Meetings, Stakeholder/Technical Workshops, and direct outreach such as website and interested parties list maintenance, fact sheet development and distribution, stakeholder well and land access inquiries, and public presentations made by GSA members to their local governing bodies as part of regular Public City Council or Board meetings. Dates of the various stakeholder outreach activities during WY 2021 are included in **Appendix B**. Future stakeholder outreach will continue under the CGA and the GSAs will also continue to meet regularly in WY 2022.

## 8 REFERENCES

DWR, 2019. *Sustainable Groundwater Management Act 2018 Basin Prioritization Process and Results*. California Department of Water Resources, April 2019.

Robertson-Bryan, Inc. and WRIME, 2011, South Basin Groundwater Management Plan, Prepared for South Area Water Council, dated October 2011.





**Legend**

**Groundwater Subbasin**

Cosumnes Subbasin (5-022.16)

South American Subbasin (5-021.65)

Eastern San Joaquin Subbasin (5-022.01)

**Abbreviations**

DWR = California Department of Water Resources

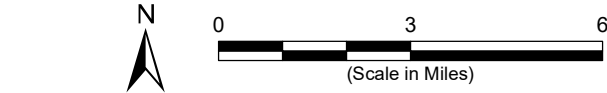
**Notes**

1. All locations are approximate.

**Sources**

1. Basemap is ESRI's ArcGIS Online world topographic map, obtained 28 January 2022.

2. DWR groundwater basins are based on the boundaries defined in California's Groundwater Bulletin 118 - Final Prioritization, dated February 2019.

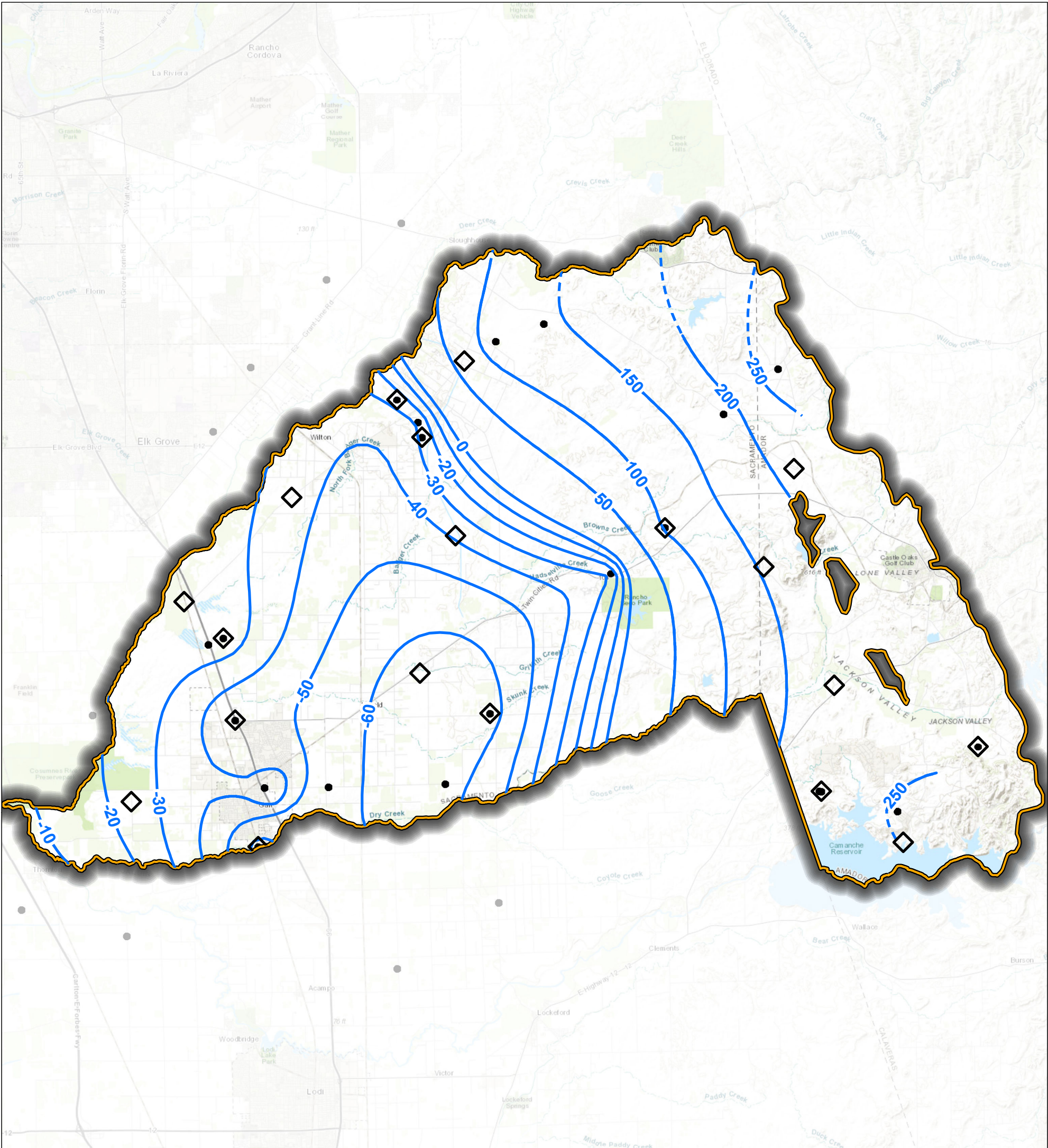


Cosumnes Groundwater Subbasin

Cosumnes Groundwater Authority  
Cosumnes Subbasin  
January 2022  
C20007.00  
**Figure AR-1**







**Legend**

- Well with Fall 2020 GWE
- ◊ RMW-WL

**Fall 2020 GWE Contour (ft msl)**

- dashed where uncertain

**Groundwater Subbasin**

- ◻ Cosumnes Subbasin (5-022.16)

**Abbreviations**

DWR = California Department of Water Resources  
ft msl = feet above mean sea level  
GSP = Groundwater Sustainability Plan  
GWE = Groundwater Elevation  
RMW-WL = Representative Monitoring Well for Chronic Lowering of Groundwater Levels

**Notes**

1. All locations are approximate.

**Sources**

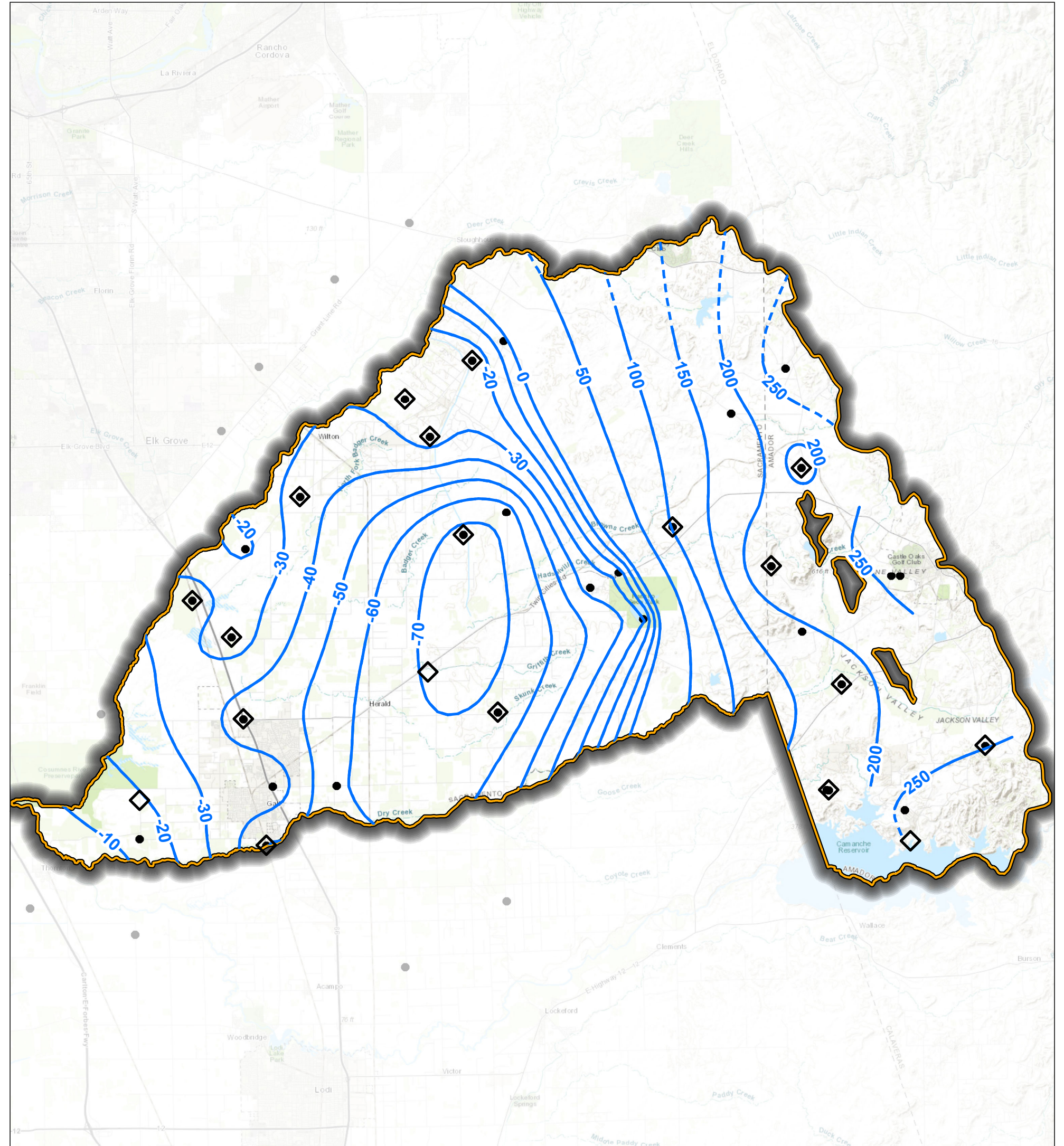
1. Basemap is ESRI's ArcGIS Online world topographic map, obtained 15 March 2022.
2. DWR groundwater basins are based on the boundaries defined in California's Groundwater Bulletin 118 - Final Prioritization, dated February 2019.
3. The GSP monitoring plan and network was not finalized until 2022, and therefore not all RMW-WLs have fall 2020 data.

**Groundwater Elevation - Fall 2020**

0 3 6  
(Scale in Miles)

Path: X:\C20007.00\Maps\2022\03\Figure AR-2\_Groundwater Elevations - Fall 2020.mxd





**Legend**

- Well with Spring 2021 GWE
- ◊ RMW-WL

**Spring 2021 GWE Contour (ft msl)**

— dashed where uncertain

**Groundwater Subbasin**

- ◻ Cosumnes Subbasin (5-022.16)

**Abbreviations**

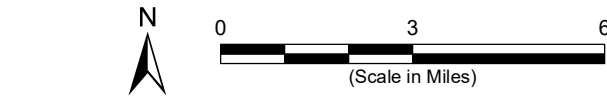
DWR = California Department of Water Resources  
ft msl = ft above mean sea level  
GWE = Groundwater Elevation  
GSP = Groundwater Sustainability Plan  
RMW-WL = Representative Monitoring Well for Chronic Lowering of Groundwater Levels

**Notes**

1. All locations are approximate.

**Sources**

1. Basemap is ESRI's ArcGIS Online world topographic map, obtained 15 March 2022.
2. DWR groundwater basins are based on the boundaries defined in California's Groundwater Bulletin 118 - Final Prioritization, dated February 2019.
3. The GSP monitoring plan and network was not finalized until 2022, and therefore Spring 2021 data was not collected from RMW-WL3, RMW-WL5, and RMW-WL17.



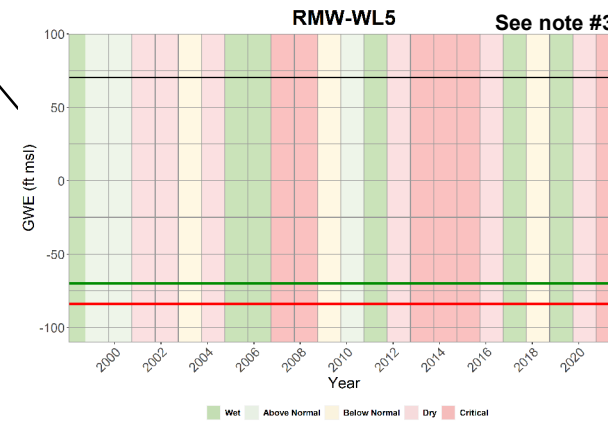
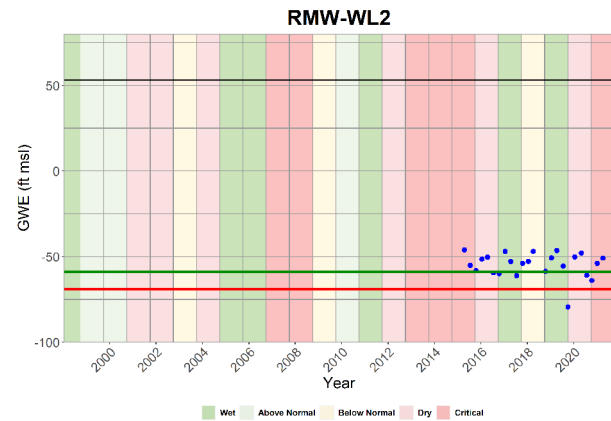
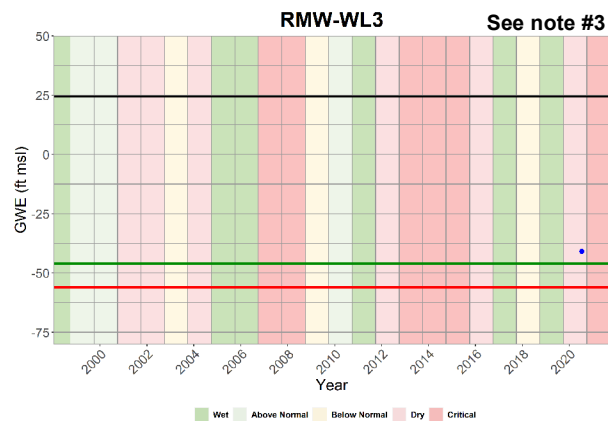
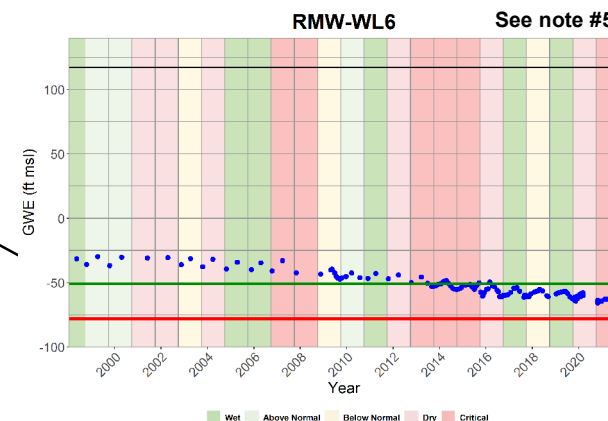
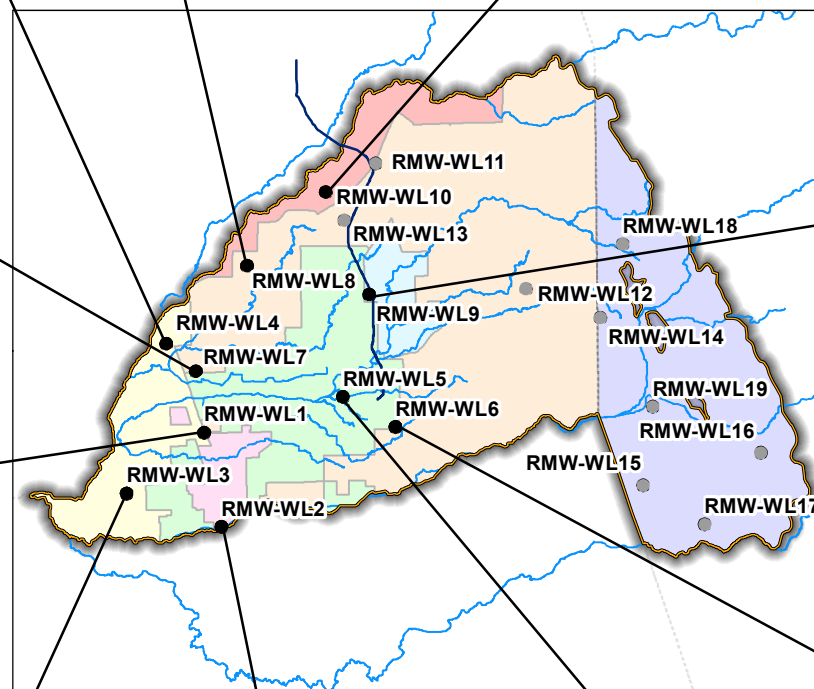
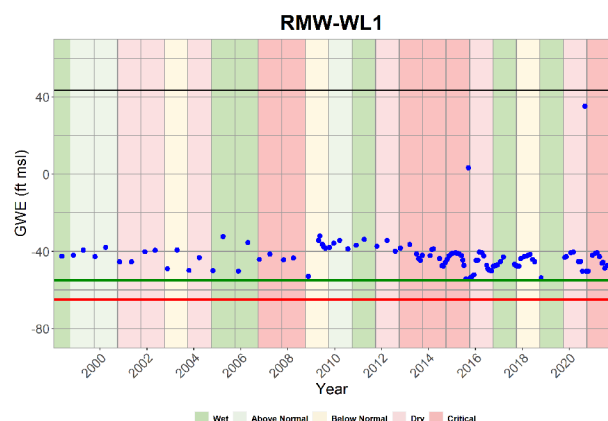
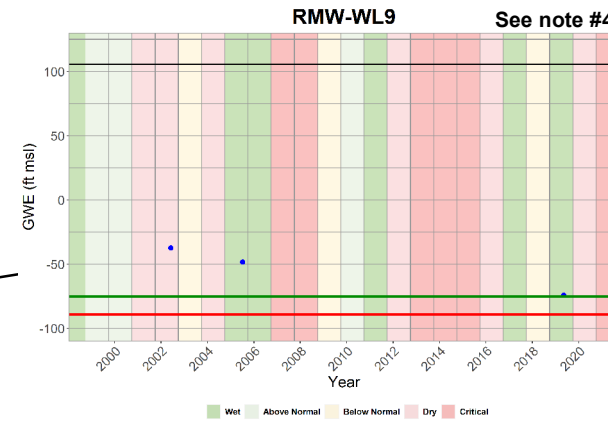
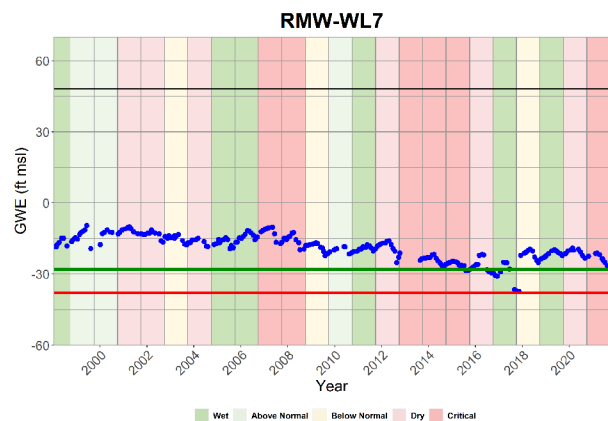
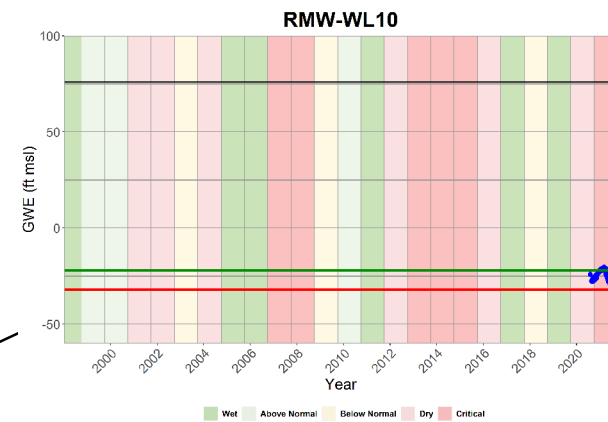
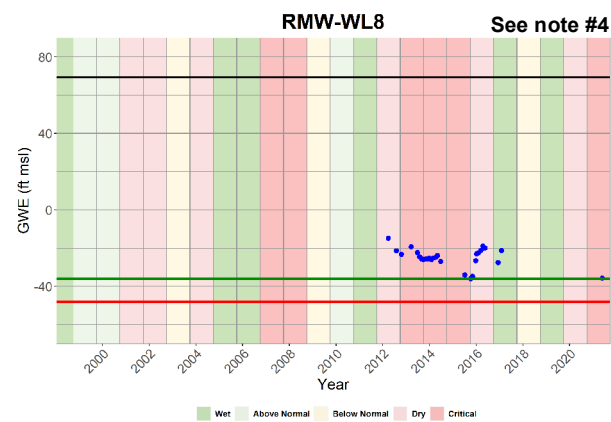
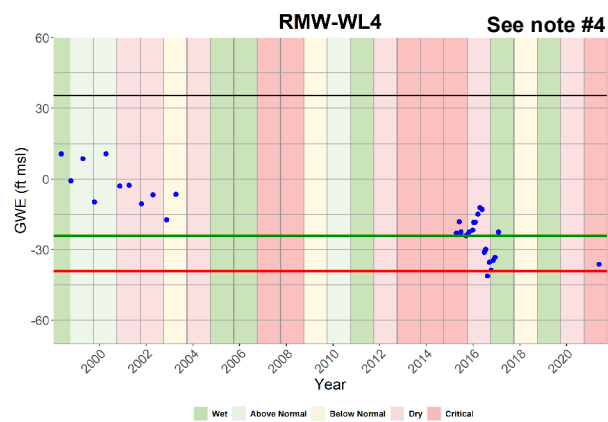
**Groundwater Elevation - Spring 2021**

Cosumnes Groundwater Authority  
Cosumnes Subbasin  
March 2022  
C20007.00

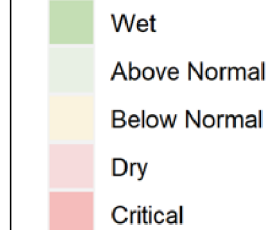
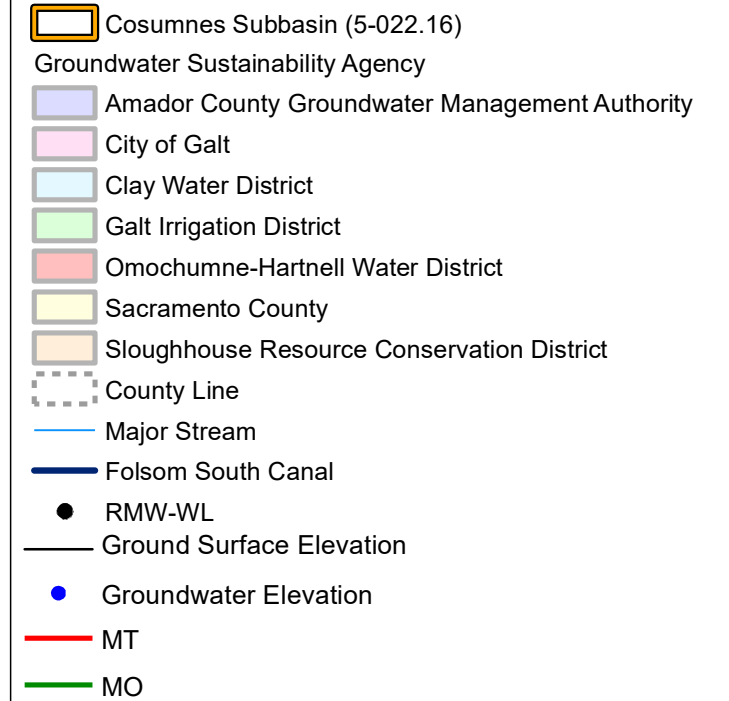


**Figure AR-3**





#### Legend

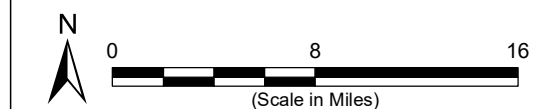


#### Abbreviations

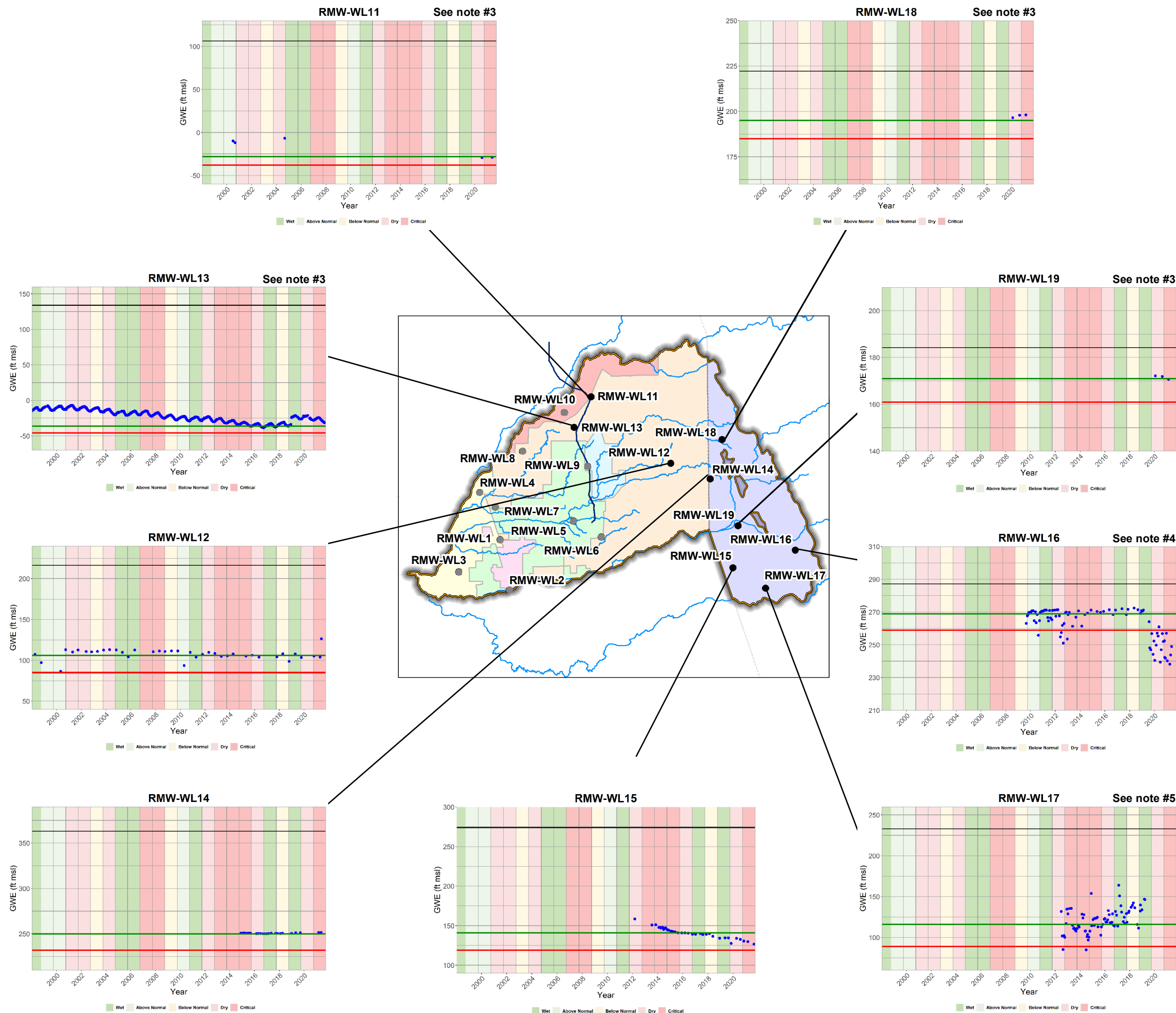
ft msl = feet above mean sea level  
GWE = groundwater elevation  
MO = Measurable Objective  
MT = Minimum Threshold  
RMW-WL = Representative Monitoring Well for Chronic Lowering of Water Levels

#### Notes

1. All locations are approximate.
2. See Figure AR-4b for RMW-WL11 through RMW-WL19.
3. Water levels were not measured in RMW-WL3 and RMW-WL5 during Water Year 2021.
4. Fall 2020 water levels were not measured in RMW-WL4, RMW-WL8 and RMW-WL9.
5. Since about 2015, the trend seems to have increased relative to the longer-term historical trend.



## Representative Monitoring Well - Hydrographs



#### Legend

- Cosumnes Subbasin (5-022.16)
- Groundwater Sustainability Agency
  - Amador County Groundwater Management Authority
  - City of Galt
  - Clay Water District
  - Galt Irrigation District
  - Omochumne-Hartnell Water District
  - Sacramento County
  - Sloughhouse Resource Conservation District
- County Line
- Major Stream
- Folsom South Canal
- RMW-WL
- Groundwater Elevation
- Ground Surface Elevation
- MT
- MO

#### Water Year Type

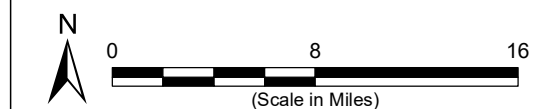
- Wet
- Above Normal
- Below Normal
- Dry
- Critical

#### Abbreviations

- ft msl = feet above mean sea level
- GWE = groundwater elevation
- MO = Measurable Objective
- MT = Minimum Threshold
- RMW-WL = Representative Monitoring Well for Chronic Lowering of Water Levels

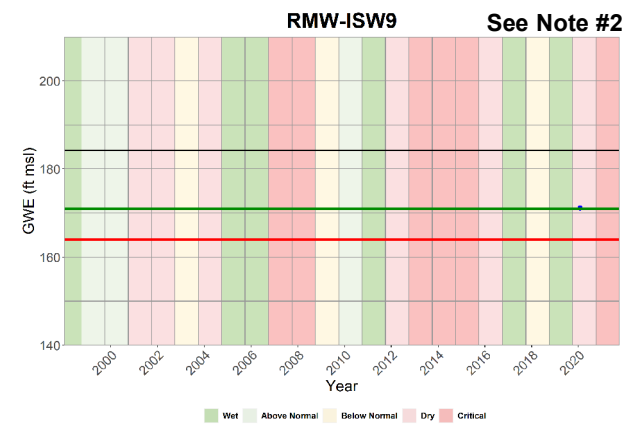
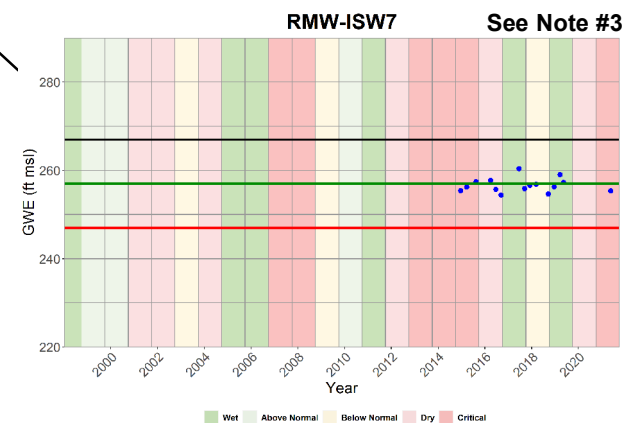
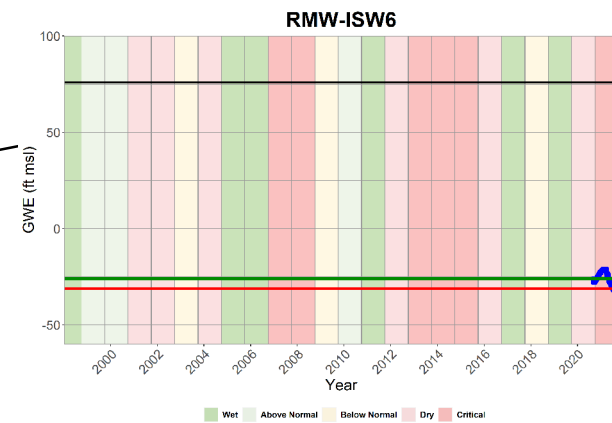
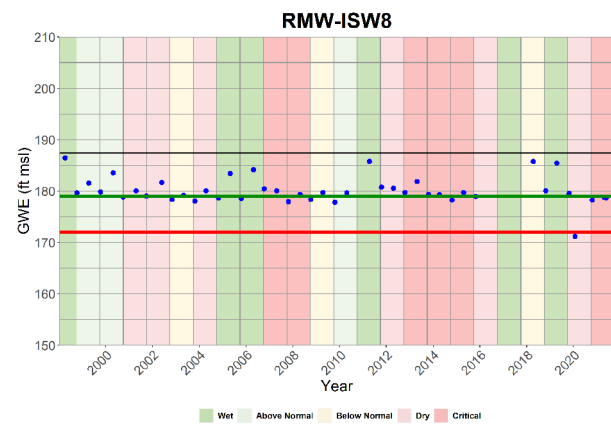
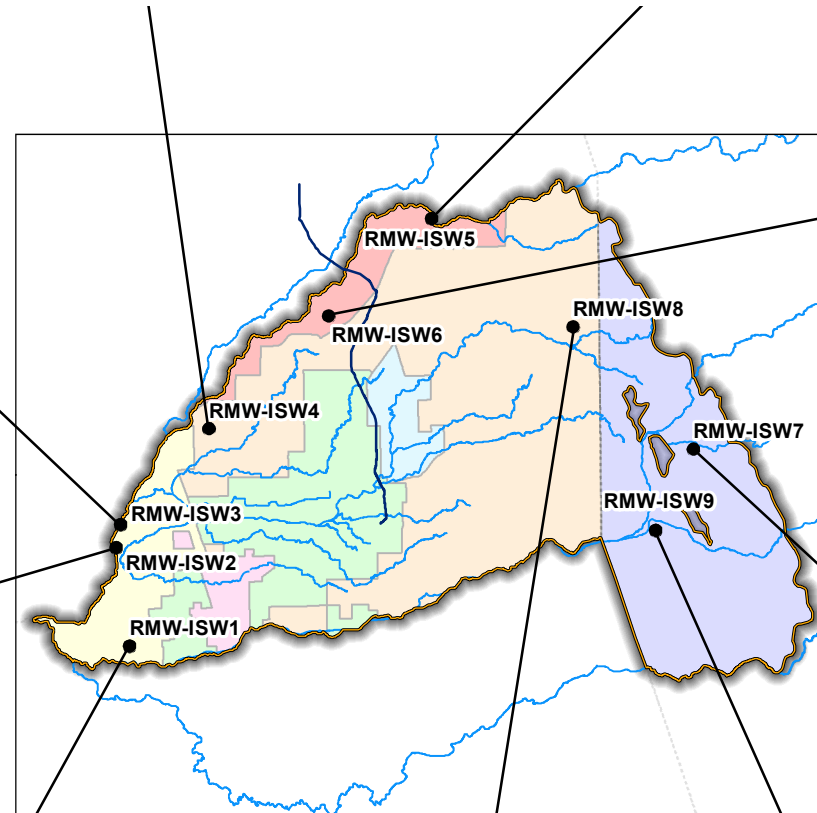
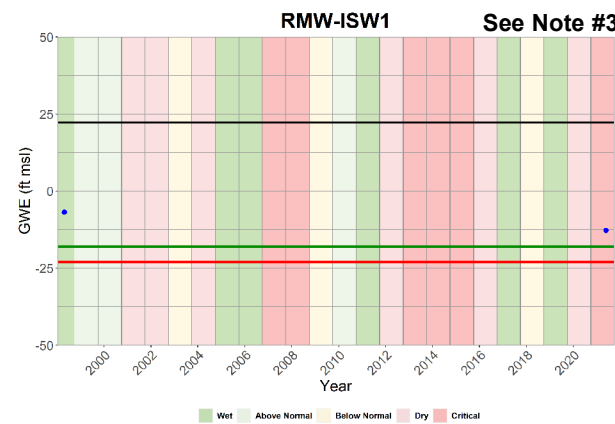
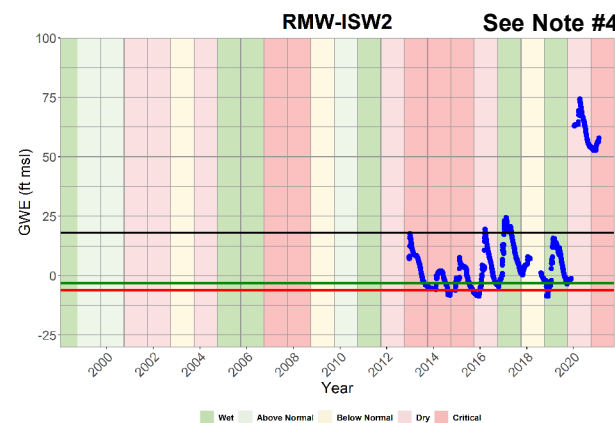
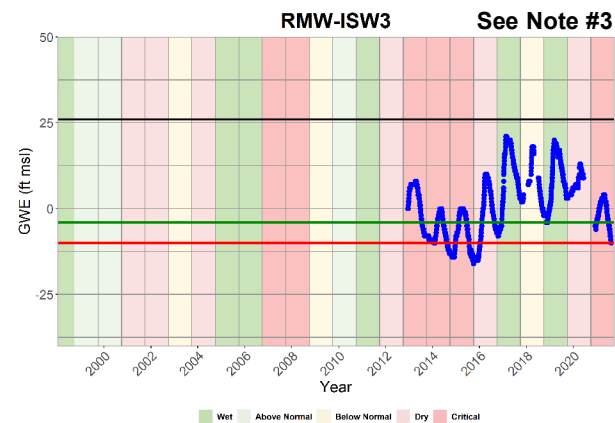
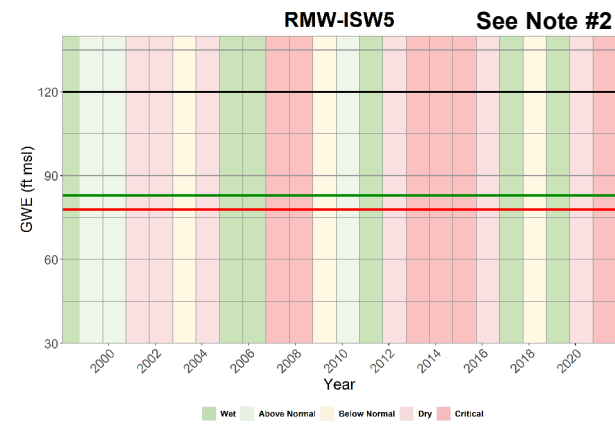
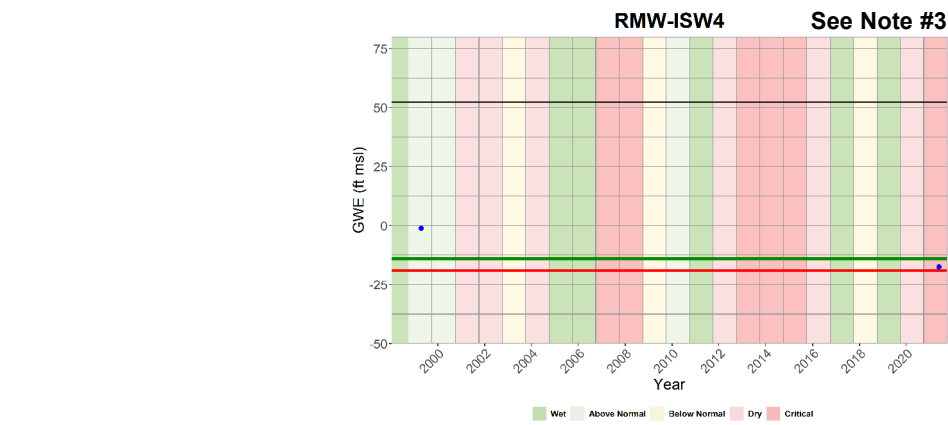
#### Notes

1. All locations are approximate.
2. See Figure AR-4a for RMW-WL1 through RMW-WL10.
3. Water levels were not measured in RMW-WL11, RMW-WL14, RMW-WL18, and RMW-WL19 during Fall Water Year 2021.
4. Change in water level trends starting in WY 2020.
5. Water levels were not measured in RMW-WL17 during Water Year 2021.



### Representative Monitoring Well - Hydrographs

Path: X:\C20007.00\Maps\2022\03\Figure AR-4. Hydrographs (c).mxd



#### Legend

- Cosumnes Subbasin (5-022.16)
- Groundwater Sustainability Agency
  - Amador County Groundwater Management Authority
  - City of Galt
  - Clay Water District
  - Galt Irrigation District
  - Omochumne-Hartnell Water District
  - Sacramento County
  - Sloughhouse Resource Conservation District
- County Line
- Major Stream
- Folsom South Canal
- RMW- ISW
- Ground Surface Elevation
- Groundwater Elevation
- MT
- MO

#### Water Year Type

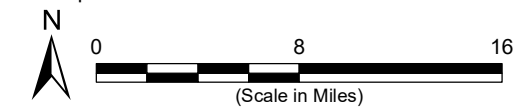
- Wet
- Above Normal
- Below Normal
- Dry
- Critical

#### Abbreviations

- ft msl = feet above mean sea level
- GWE = groundwater elevation
- MO = Measurable Objective
- MT = Minimum Threshold
- RMW-ISW = Representative Monitoring Well for Interconnected Surface Water

#### Notes

- All locations are approximate.
- Water levels were not measured in RMW-ISW5 or RMW-ISW9 during Water Year 2021.
- Water levels were not measured in RMW-ISW1, RMW-ISW3, RMW-ISW4, or RMW-ISW7 during Fall Water Year 2021.
- Measurements recorded for RMW-ISW2 after 10 January 2020 are considered questionable as all values are increased by up to 60 feet compared to recent data.



### Representative Monitoring Well - Hydrographs

**eki** environment  
& water

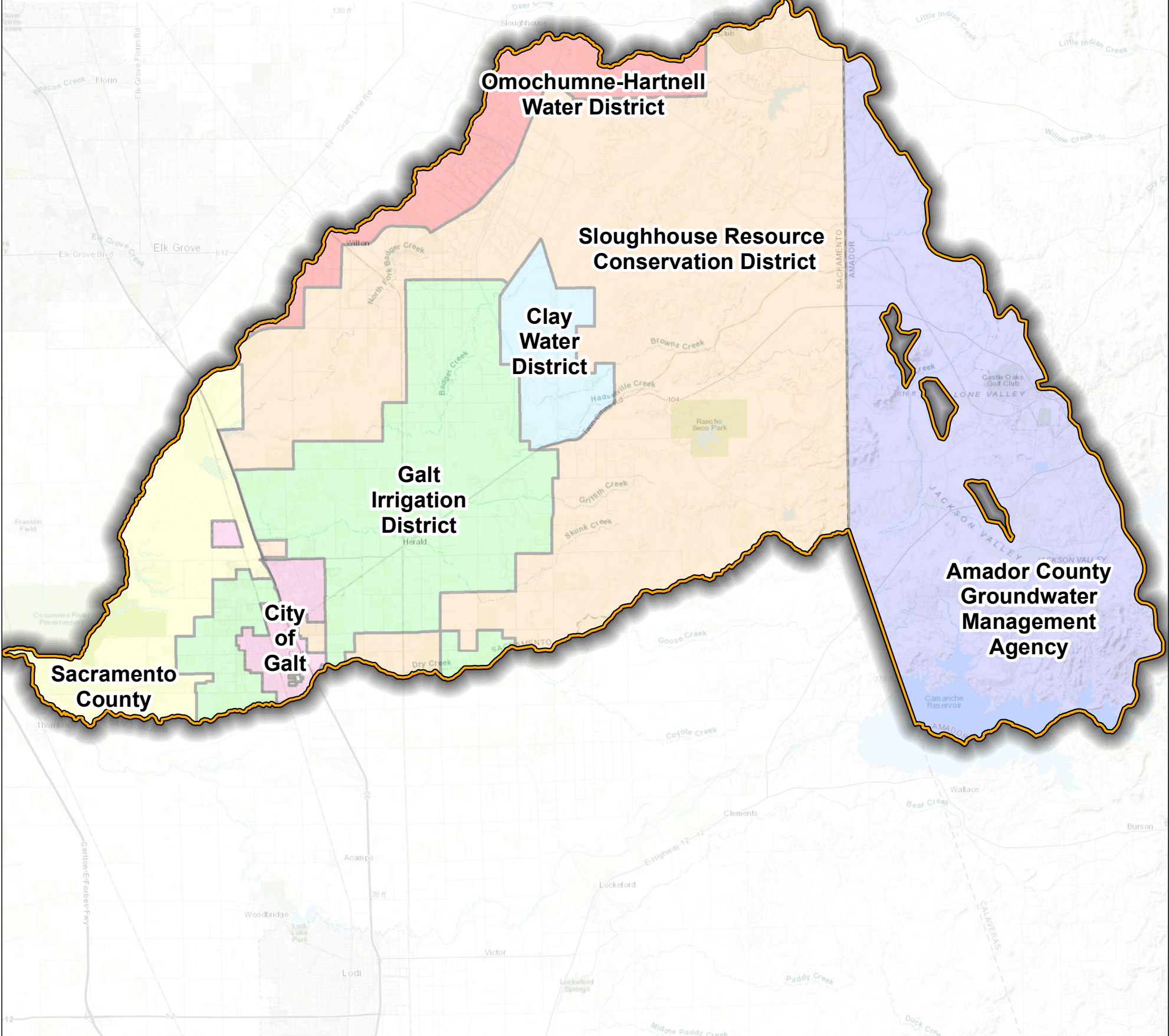
Cosumnes Groundwater Authority  
Cosumnes Subbasin  
March 2022  
C20007.00

**Figure AR-4c**



Groundwater Sustainability Agency	Total Estimated Extractions (AF)
Amador County Groundwater Management Authority	2,200
City of Galt <sup>(a)</sup>	5,100
Clay Water District	8,800
Galt Irrigation District	61,400
Omochumne-Hartnell Water District	7,800
Sacramento County	16,600
Sloughhouse Resource Conservation District	47,500
Total	149,400

**Notes**  
(a) City of Galt GSA includes 4,800 AF of metered extractions and about 300 AF of estimated extractions.  
(b) Total in Table AR-1 is different due to rounding subregional values to the nearest 100 AF.

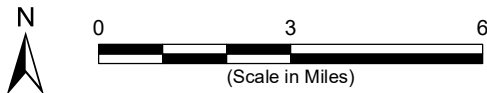


- Legend**
- Groundwater Subbasin**
- Cosumnes Subbasin (5-022.16)
- Groundwater Sustainability Agency**
- Amador County GMA
  - City of Galt
  - Clay WD
  - Galt ID
  - Omochumne-Hartnell WD
  - Sacramento County
  - Sloughhouse RCD

**Abbreviations**  
DWR = California Department of Water Resources  
GMA = Groundwater Management Authority  
ID = Irrigation District  
RCD = Resource Conservation District  
WD = Water District

**Notes**  
1. All locations are approximate.

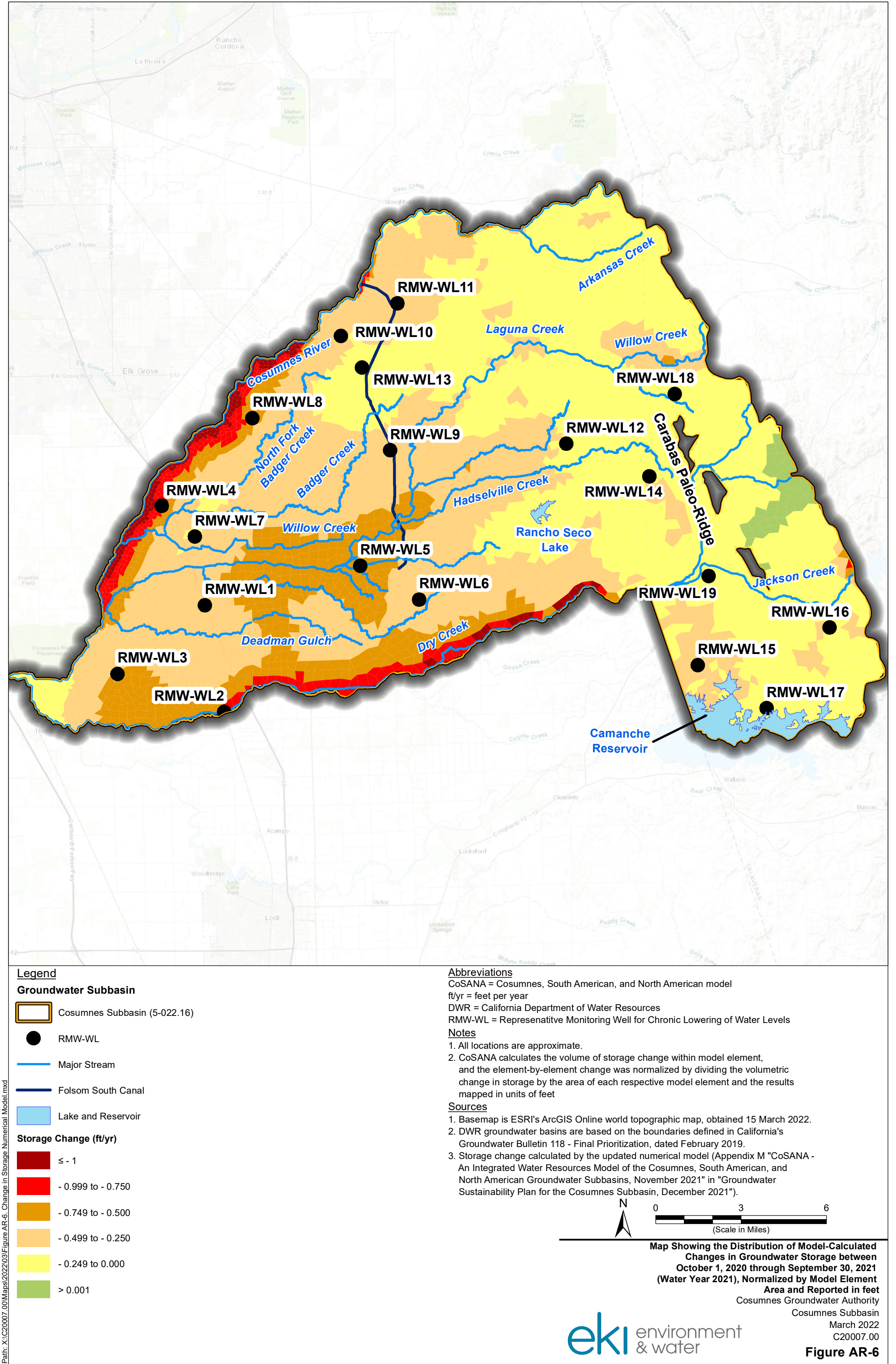
**Sources**  
1. Basemap is ESRI's ArcGIS Online world topographic map, obtained 11 March 2022.  
2. DWR groundwater basins are based on the boundaries defined in California's Groundwater, Bulletin 118 - 2018.



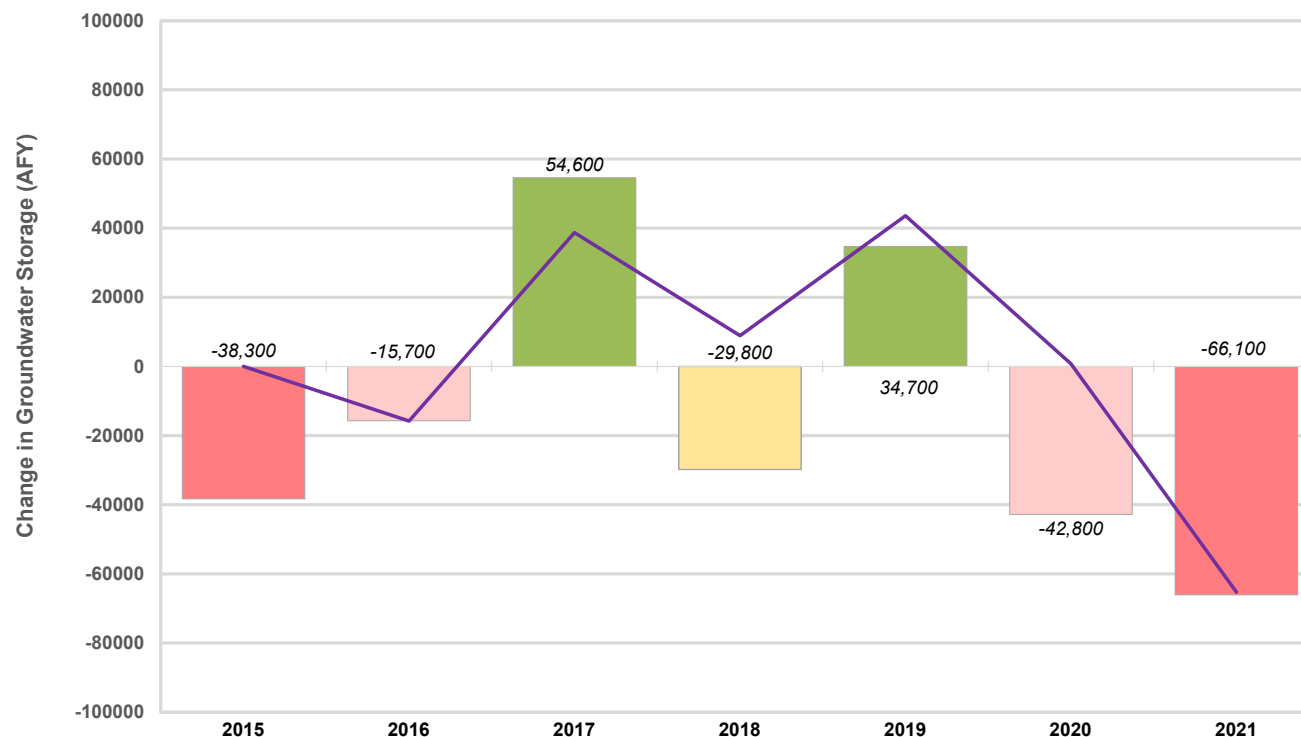
General Locations and Volumes of Annual Extractions Water Year 2021

Cosumnes Groundwater Authority  
Cosumnes Subbasin  
March 2022  
C20007.00



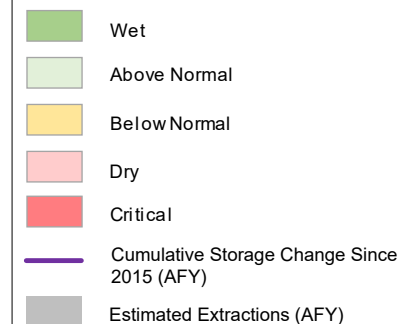






### Legend

#### DWR Water Year Type and Annual Groundwater Storage Change (AFY)



### Abbreviations

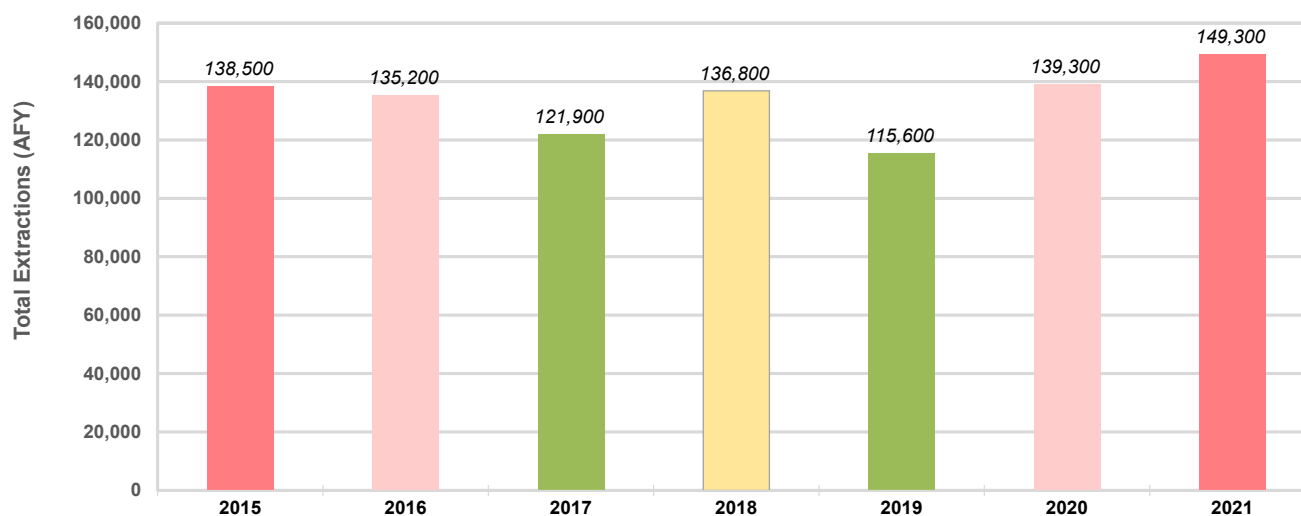
AFY = acre-feet per year  
DWR = California Department of Water Resources  
ET = evapotranspiration  
WY = Water Year

### Notes

1. Water Year is defined as the October of the previous year through September of the current year.
2. All values are rounded to the nearest 100 AF.

### Sources

1. DWR Water Year type for 2015 - 2020 is from DWR's Water Year Hydrologic Classification Indices for the San Joaquin Valley (<http://cdec.water.ca.gov/reportapp/javareports?name=WSIHIST>).
2. WY 2021 assigned the water year type based on previous years having similar annual precipitation and evapotranspiration.



### Annual Change in Groundwater Storage, Groundwater Use, and DWR Water Year Type

## APPENDIX A

### Annual Report Submittal Checklist

Groundwater Sustainability Plan Annual Report Elements Guide			
Basin Name	5-022.16 COSUMNES		
GSP Local ID			
California Code of Regulations - GSP Regulation Sections	Groundwater Sustainability Plan Elements	Document page number(s) that address the applicable GSP element.	Notes: Briefly describe the GSP element does not apply.
<b>Article 5</b>	<b>Plan Contents</b>		
<b>Subarticle 4</b>	<b>Monitoring Networks</b>		
<b>§ 354.40</b>	<b>Reporting Monitoring Data to the Department</b>		
	Monitoring data shall be stored in the data management system developed pursuant to Section 352.6. A copy of the monitoring data shall be included in the Annual Report and submitted electronically on forms provided by the Department.	17:19	
	Note: Authority cited: Section 10733.2, Water Code. Reference: Sections 10728, 10728.2, 10733.2 and 10733.8, Water Code.		
<b>Article 7</b>	<b>Annual Reports and Periodic Evaluations by the Agency</b>		
<b>§ 356.2</b>	<b>Annual Reports</b>		
	Each Agency shall submit an annual report to the Department by April 1 of each year following the adoption of the Plan. The annual report shall include the following components for the preceding water year:		
	(a) General information, including an executive summary and a location map depicting the basin covered by the report.	7:10	
	(b) A detailed description and graphical representation of the following conditions of the basin managed in the Plan:		
	(1) Groundwater elevation data from monitoring wells identified in the monitoring network shall be analyzed and displayed as follows:		
	(A) Groundwater elevation contour maps for each principal aquifer in the basin illustrating, at a minimum, the seasonal high and seasonal low groundwater conditions.	11	
	(B) Hydrographs of groundwater elevations and water year type using historical data to the greatest extent available, including from January 1, 2015, to current reporting year.	11	
	(2) Groundwater extraction for the preceding water year. Data shall be collected using the best available measurement methods and shall be presented in a table that summarizes groundwater extractions by water use sector, and identifies the method of measurement (direct or estimate) and accuracy of measurements, and a map that illustrates the general location and volume of groundwater extractions.	12	
	(3) Surface water supply used or available for use, for groundwater recharge or in-lieu use shall be reported based on quantitative data that describes the annual volume and sources for the preceding water year.	13	
	(4) Total water use shall be collected using the best available measurement methods and shall be reported in a table that summarizes total water use by water use sector, water source type, and identifies the method of measurement (direct or estimate) and accuracy of measurements. Existing water use data from the most recent Urban Water Management Plans or Agricultural Water Management Plans within the basin may be used, as long as the data are reported by water year.	14	
	(5) Change in groundwater in storage shall include the following:		
	(A) Change in groundwater in storage maps for each principal aquifer in the basin.	15	
	(B) A graph depicting water year type, groundwater use, the annual change in groundwater in storage, and the cumulative change in groundwater in storage for the basin based on historical data to the greatest extent available, including from January 1, 2015, to the current reporting year.	15	
	(c) A description of progress towards implementing the Plan, including achieving interim milestones, and implementation of projects or management actions since the previous annual report.	16:20	

## **APPENDIX B**

### **Stakeholder Outreach**

### Stakeholder/Technical Workshops

- Online Public Workshops/Webinars
  - Implementation and Funding (02 June 2021)
  - Draft GSP (26 August 2021)
  - Draft GSP (06 October 2021)
- Online Tribal Outreach Workshop for GSAs (15 December 2020)
- Online and In Person (Herald & Rancho Murieta) Public Workshop (24 March 2021)
- Herald Workshop (03 June 2021)
- Webinars on the Draft GSP (26 August 2021)
- In-Person (Wilton) Open House (16 September 2021)

### SWAG Meetings

- SWAG Meeting #3 (04 December 2020)
- SWAG Meeting #4 (26 February 2021)

### Direct Outreach

- Website and Interested Parties List maintenance (2015 - ongoing)
- Fact Sheets development/distribution (2017 - ongoing)
- Stakeholder well and land access inquiry (January 2020 – ongoing)
- Tribal Communication workshop (December 2020)
- Public Presentations made by GSA members to their local governing bodies as part of regular Public City Council or Board meetings (2015 - ongoing)

### Working Group/Technical Advisory Committee Meetings

- |                    |                     |
|--------------------|---------------------|
| • 21 October 2020  | • 14 May 2021       |
| • 18 November 2020 | • 19 May 2021       |
| • 15 December 2020 | • 16 June 2021      |
| • 20 January 2021  | • 21 July 2021      |
| • 17 February 2021 | • 18 August 2021    |
| • 17 March 2021    | • 15 September 2021 |
| • 21 April 2021    | • 06 October 2021   |

## **Agenda Item #7**

### **Cosumnes Groundwater Authority Board of Directors Meeting**

Agenda Date: March 21, 2022

Agenda Item #: 7

Agenda Item Subject: Selection of Semiannual GW Monitoring Service Provider

To: CGA Board of Directors  
From: Stephen Julian, CGA Staff

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#### **Background**

A Request for Proposals was finalized following the February Board meeting. The following entities were contacted or contacted CGA staff in regards to the RFP: Hargis and Associates, Inc.; BSK Associates; Larry Walker and Associates; Blaine Tech Services Inc.; MLJ Environmental; and Dudek.

#### **Attached**

[2022.2.18 - RFP - 2022 Monitoring.pdf](#)

[Hargis\\_Cosumnes\\_Prpsl\\_GW\\_Mon.pdf](#)

[LWA Submittal\\_Cosumnes Semi Annual GW Monitoring 03 16 22.pdf](#)

[MLJ\\_CGA\\_Proposal\\_22\\_0316\\_Final.pdf](#)

#### **Discussion**

The monitoring proposals were received from the following:

Hargis and Associates, Larry Walker and Associates, and MLJ Environmental.

#### **Staff Recommendation**

Select a contract to perform 2022 groundwater monitoring services.

**Board action needed.**



**Agenda Item #7**

**HARGIS + ASSOCIATES, INC.**  
HYDROGEOLOGY • ENGINEERING

80 Blue Ravine Road, Suite 106  
Folsom, CA 95630

March 16, 2022

VIA EMAIL

Mr. Stephen Julian  
Watershed Coordinator  
Cosumnes Groundwater Authority  
8970 Elk Grove Blvd  
Elk Grove, California 95624  
[sjulian@cosumnesgroundwater.org](mailto:sjulian@cosumnesgroundwater.org)

Re: Request for Proposals, Semiannual Groundwater Monitoring Events, 2022, for the Cosumnes Groundwater Authority

Dear Mr. Julian:

Hargis + Associates, Inc. (H+A) is pleased to submit this proposal to the Cosumnes Groundwater Authority (Authority) to provide technical services for groundwater monitoring and related services. This proposal has been prepared pursuant to the Authority's Request for Proposals for Semiannual Groundwater Monitoring Events, 2022 (RFP). H+A understands that the scope of work (SOW) under this solicitation is to provide services for scheduling, laboratory coordination, and well monitoring services. This proposal presents H+A's qualifications and project team; summarizes the SOW provided in the RFP; and provides a cost proposal.

**QUALIFICATIONS**

H+A is an employee-owned environmental consulting and engineering firm founded in 1979 with a commitment to providing responsive, high-quality, cost-effective services for our clients. We are headquartered in San Diego with offices in Folsom, California, and Phoenix and Tucson, Arizona. Our practice focuses on successful resolution of complex environmental investigation, compliance, and remediation projects for a wide-range of clients, providing responsive, practical, and innovative solutions. H+A employs a staff of approximately 40 hydrogeologists, geologists, engineers, environmental scientists, technicians, and project support personnel. H+A is a California "Certified Small Business". Please visit [www.hargis.com](http://www.hargis.com) for a full description of our services.

H+A possesses the required expertise and program management experience to deliver all elements of this SOW. Our team is well positioned to provide responsive and efficient client service and we are committed to technical excellence and safety. Our technical expertise and

**Other Offices:**  
San Diego, CA  
Mesa, AZ  
Tucson, AZ

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programmatic experience will provide the Authority with a strong team that has a local presence, outstanding credentials, and enthusiasm for the work.

H+A has extensive recent and past direct experience related to the requested groundwater monitoring services. Our experienced staff of hydrogeology professionals in our Folsom office have worked on projects involving the scheduling, laboratory coordination, and well monitoring services throughout California. We have assembled a team of exceptionally qualified professionals to successfully deliver the proposed monitoring services for the Authority. Our team includes key H+A individuals in our Folsom office who are dedicated resources for the planned SOW to ensure project continuity. H+A will be teaming with Confluence Environmental (Confluence) and Pace Analytical to conduct the semiannual monitoring events. An organization chart and resumes for key H+A team member are included as Attachment 1. Subcontractor qualifications are summarized in Attachment 2.

Combined, H+A and Confluence have extensive experience sampling a variety of wells including domestic, irrigation, remediation, and monitor wells. Additionally, H+A has knowledge and experience with well design and operation of the various types of wells throughout California and Arizona.

## **REFERENCES AND PROJECT EXPERIENCE**

H+A and Confluence have worked as a team on multiple groundwater monitoring projects in the Sacramento area. The following project description and references are provided as representative examples of the project team's technical experience and demonstrate our ability to successfully complete the Authority's requested services for this proposal.

- Sacramento Municipal Utilities District (SMUD) North City Landfill. Since 2019 H+A has been contracted to conduct oversight of quarterly water level measurements and compliance groundwater sampling of six wells located at the North City Landfill in Sacramento. H+A coordinates all aspects of the monitoring events including scheduling, site access, and laboratory coordination. H+A evaluates the results of sampling, and prepares summary reports for the North City Landfill for submittal to the Regional Water Quality Control Board on behalf of the Sacramento Municipal Utility District. H+A teams with Confluence who conducts field services for the project.
  - **Client Contact:**  
Keegan George, PE, Senior Civil Engineer, Environmental Services  
SMUD  
6201 S. Street, Mail Stop B209  
Sacramento, CA 95852-0830  
(916) 847-3086  
[Keegan.George@smud.org](mailto:Keegan.George@smud.org)



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- Beckman Coulter Site, Fullerton California. Since 2009 H+A has been the lead consultant on the project to support the Resource Conservation and Recovery Act (RCRA) closure of the former manufacturing site. As part of the RCRA closure, H+A has coordinated all aspects of semiannual groundwater sampling and reporting for the monitoring network consisting of over 100 wells. H+A teams with Confluence who conducts field services for the project. H+A manages all data and prepares semiannual monitoring reports.
  - **Client Contact:**  
Mr. Javed Hussain, Global Director EHS and Sustainability  
Videojet Technologies, Inc.  
1500 N. Mittel Blvd  
Wood Dale, IL 60191  
(909) 282-4027  
[javed.hussain@videojet.com](mailto:javed.hussain@videojet.com)
- Aerojet Rocketdyne, Sacramento, California. Since 2018 H+A has provided management and implementation of the Aerojet Groundwater Remedy drilling program and Site-Wide Groundwater Extraction and Treatment System (GET) operation and maintenance program. As part of these programs, H+A has monitored and collected samples from over 150 extraction wells related to the GET systems. Extraction wells monitored and maintained by H+A include large diameter and multi-level completion wells. H+A manages the drilling program and oversees well design and construction for the monitoring well program. Confluence conducts groundwater sampling and reporting for the large groundwater monitoring program for the site which includes over 2,000 monitoring wells.
  - **Client Contact:**  
Mr. Jaco Fourie, PG  
Aerojet Rocketdyne, Inc.  
P.O. Box 13222, MS 5519  
Sacramento, CA 95813-6000  
(916) 355-6169  
[Jaco.fourie@rocket.com](mailto:Jaco.fourie@rocket.com)

H+A has additional experience coordinating and conducting groundwater monitoring at privately owned domestic and irrigation wells:

- Chatham Brothers State Superfund Site, California. H+A has conducted routine groundwater, surface water, and indoor air monitoring for a monitoring network which includes privately owned domestic irrigation wells since the 1990's. H+A coordinates access with the private well owners for routine monitoring, and conducts all scheduling, sampling, laboratory coordination, and reporting activities.
- Olivenhain Municipal Water District, California. H+A conducted routine groundwater monitoring of six privately owned domestic and irrigation wells to evaluate groundwater conditions prior to and during the construction of a nearby reservoir. H+A coordinated

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Page 4

access with well owners, and conducted all scheduling, sampling, laboratory coordination, and reporting activities.

## **PROJECT UNDERSTANDING AND SCOPE OF WORK**

The SOW includes conducting groundwater monitoring of the Sustainable Groundwater Management Act (SGMA) monitoring network in the Cosumnes Subbasin in accordance with the 2021 Groundwater Sustainability Plan for the Cosumnes Subbasin (GSP). The SGMA Monitoring Network includes multiple Representative Monitoring Sites that include wells to monitor for chronic lowering of groundwater levels, degraded water quality, subsidence, and depletions of interconnected surface water. The SOW under this RFP includes monitoring a subset of the GSP Representative Monitoring Sites including:

- 12 Representative Monitoring Wells (RMW's) for chronic lowering of groundwater levels,
- 18 RMW's for degraded water quality, and
- 7 RMW's for depletions of interconnected surface water.

The SOW includes two 2022 monitoring events taking place in May and October 2022. The May event will include water level monitoring at 19 RMW's. The October event will include water level monitoring at 19 RMW's and water quality sampling at 8 RMW's.

The RFP provided a detailed SOW for this project divided into five tasks. The following sections provide a summary of the proposed SOW provided in the RFP while providing some additional perspective and assumptions pertaining to the SOW.

### **TASK 1. Well Scheduling**

Task 1 will involve confirming the well network with the Authority, and coordination with well owners for access and scheduling.

### **TASK 2. Laboratory Coordination**

Task 2 involves all laboratory coordination activities, including procurement of bottle ware and coordination of courier pickup. Pace Analytical an EPA and California certified laboratory, will be subcontracted by H+A. H+A will receive laboratory results and will conduct a data quality review of each laboratory report. If any issues are identified, H+A will coordinate revisions with the laboratory. Water quality samples will be collected from 8 RMW's in October including four irrigation wells, one domestic well, one monitoring well, and two public supply wells. Water quality samples from all 8 wells will be submitted for laboratory analysis of arsenic, nitrate + nitrite as N, and total dissolved solids. Water quality samples from the six non-water supply wells will also be submitted for major ions including sodium, chloride, sulfate, and others.

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### TASK 3. Well Monitoring

Task 3 includes all field monitoring activities for the May and October semiannual monitoring events. All monitoring activities will be conducted in accordance with the Department of Water Resources protocols for water level monitoring and water quality sampling, and following standard operating procedures listed in the GSP. All necessary sampling equipment including field meters, sampling tools, and submersible pump (when needed) will be provided.

The May event will include water level monitoring at 19 RMWs. Prior to the May event, wells that have not been previously monitored will be visited by representatives from Confluence and H+A to ensure that the well can be accessed for water levels and water quality (when required). If no new wells are added to the network, reconnaissance will not be needed.

The October event will include water level monitoring of 19 RMW's, and water quality sampling at 8 RMWs. Field parameters including temperature, electrical conductivity, dissolved oxygen, pH, oxidation-reduction potential, and turbidity will be monitored during water quality purging and sampling. All purge water is assumed to be non-hazardous and will be disposed of on-site. No discharge permits are anticipated.

### TASK 4. Field Data Management

H+A will review and compile all field and laboratory water quality data for quality assurance. Water level and water quality data will be tabulated and provided to the Authority using the prescribed Excel templates provided with the RFP. All field documentation and laboratory chain of custody will be provided to the Authority in pdf format.

### TASK 5. Project Management

Task 5 includes invoice review, staff scheduling, and coordination with the Authority, as necessary. Invoices will be submitted monthly by the 15<sup>th</sup> of the following month.

## **COST ESTIMATE**

H+A has prepared cost estimate based on estimated hours, labor rates, and equipment fees for each task. The total cost estimate for this SOW is \$15,800. A detailed cost estimate with unit costs and totals for each task is provided in Attachment 3. H+A will provide consulting services on a time-and-materials basis.

## **TERMS AND CONDITIONS**

H+A has reviewed and accepts the Authority's terms and conditions included with the RFP.



Mr. Stephen Julian  
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### **CLOSING**

H+A appreciates the opportunity to provide these consulting services to the Authority and will be available to resume work on the project immediately upon receipt of the authorization to proceed if awarded the project. H+A understands the importance of groundwater monitoring under SGMA and we look forward to assisting the Authority in reaching sustainability goals for the basin. If you have any questions, please do not hesitate to contact me.

Sincerely,

HARGIS + ASSOCIATES, INC.

Daniel Toffelmier  
Senior Hydrogeologist  
(480) 258-2395  
[dtoffelmier@hargis.com](mailto:dtoffelmier@hargis.com)

Attachments:

1. Organization Chart and Resumes
2. Subcontractor Qualifications
3. Cost Proposal

cc w/encl: Stacia Prazen, Hargis + Associates, Inc. (email)

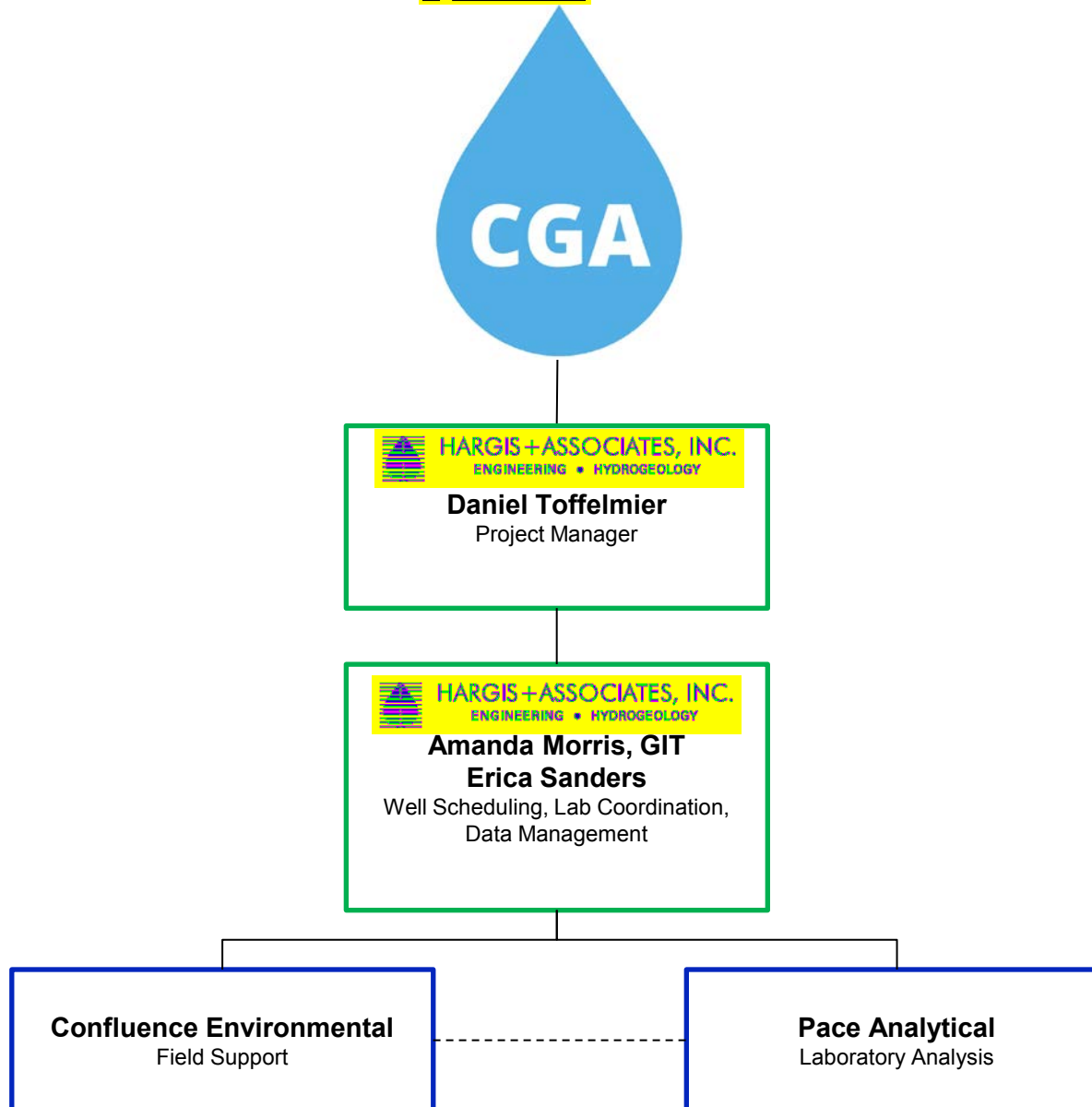
002\_03\_Cosumnes\_Prpsl\_GW\_Mon\_txt

Agenda Item #7



HARGIS+ASSOCIATES, INC.

ATTACHMENT 1  
ORGANIZATION CHART AND RESUMES





**DANIEL A. TOFFELMIER**  
Senior Hydrogeologist

*Services: Water Resources, Environmental, Mining and Litigation Support*

**Contact**



480-258-2395



dtoffelmier@hargis.com



<http://www.hargis.com>

**Summary of Experience**

Mr. Toffelmier has professional experience in hydrogeology since 2006 and geophysics since 2002. Mr. Toffelmier has provided environmental consulting services at numerous federal, state, and regionally regulated sites throughout the southwestern United States for the aerospace, technology, chemical, mining, petroleum distribution, and pesticide industries. Professional responsibilities include project management and supervision; field investigation management and support; client liaison; data analysis, interpretation, and application to regulatory guidelines. Mr. Toffelmier is experienced with numerous media collection and monitoring techniques (including CPT-MIP, PDB, low flow, direct push, Encore samplers, porous and non-porous surface sampling, wipe sampling, XRF, Geiger counter, PID, FID, and FLUTE ribbon) as well as the interpretation, remediation, and application of regulatory guidelines for numerous impacted media including soil gas (vapor intrusion and groundwater impacts), soil matrix (VOCs, PCBs [TSCA], DNAPL, metals, pesticides), and groundwater fate and transport. Mr. Toffelmier is also experienced in lithologic logging (USCS and CPT), subsurface investigation and groundwater well construction and development (using multiple drilling methods – Rotasonic, direct push, ARCH, HSA, and bucket auger), aquifer testing, data interpretation using ArcGIS, MAROS, ProUCL, and KT3D-H2O, report preparation, and budget summary analysis.

**Education**

MS Geological Sciences, Arizona State University, Tempe, Arizona, 2006

BS Physics, University of California Santa Cruz, Santa Cruz, California, 2002

**Professional Affiliations**

Association of Environmental Professionals

National Association of Geoscience Teachers

National Groundwater Association

Project Management Institute

**Employment History**

2006 – Current, Hargis & Associates, Inc., Senior Hydrogeologist, CA

**Areas of Expertise**

Soil and Groundwater Contamination Studies

- Managed the drilling program for a 5,500 acre site in the greater Sacramento Area. Projected annual and individual project budgets, managed and directed personnel, communicated with the client and oversight agencies including EPA, DTSC, and RWQCB. Program consists of installing monitor and extraction wells, performing aquifer testing, collecting groundwater samples, preparing data submittals, and abandoning monitor and extraction wells.
- Managed a quarterly groundwater monitoring program in the greater Sacramento area analyzing groundwater trends, performing client liaison, contractor coordination, report preparation, review, and submittal.
- Managed the field investigation and semi-annual groundwater monitoring of downgradient groundwater plume delineation and monitoring for a Site in Southern California. The monitoring program includes 100 monitoring points. Duties include coordination with and procurement of contractors and field staff, liaison with City and County officials, property access negotiation, city and county permit application, and oversight and interpretation of all field activities associated with the installation and sampling of multiple groundwater monitor wells.

## Selected Representative Professional Assignments

SMUD – North City Landfill, Sacramento, CA 2019 - current  
Aerojet, Rancho Cordova, CA 2019 – current  
Apache Nitrogen, Benson, AZ 2011 - 2014  
Beckman, Fullerton, CA 2011 - current  
Beckman, Porterville, CA 2014 – current  
Beckman, Palo Alto, CA 2011 – 2014  
ChemResearch (CRC), Phoenix AZ 2007 – 2014  
Delco, Goleta, CA 2015 – current  
East Central Phoenix, AZ 2012 - 2014  
Western Avenue, Goodyear, AZ 2010 - 2013  
Phoenix Goodyear Airport (PGA) South, Goodyear, AZ 2010 - 2012  
Hassayampa, Buckeye, AZ 2006 – 2015  
Honeywell, Phoenix AZ 2006 - 2009  
Montrose, Henderson, NV. 2006 – 2011  
Metro Water, Tucson, AZ 2007  
Selby, Selby, CA 2007

## Selected Publications

Toffelmier, D.A. and Tyburczy, J.A 2007. ~~“Electromagnetic Detection of a 410-km~~ Deep Melt Layer in the Southwestern United States”, *Nature*, June 21, 2007.

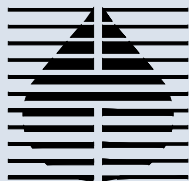
## Selected Professional Development Courses

Occupational Safety & Health Administration (OSHA) 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) Training and 8-hour Refresher Training

8-hour, HAZWOPER Supervisor

2 Day MODFLOW-USG Seminar

8 Hour CPR/First Aid



## Agenda Item #7

### Soil and Groundwater Contamination Studies (continued)

- Supervised, and participated in site assessment and remediation activities involving perchlorate and dioxin impacted soil and debris material in Northern California. Assessment and delineation included oversight of multiple excavations, test pits, and collection of hundreds of soil samples. Remediation included excavation and off-site disposal. Field data interpretation and perchlorate analysis was required to guide excavation and backfill activities in real time.
- Prepared numerous documents for submittal to DTSC and EPA including a RCRA Facility Investigations (RFI), Conceptual Site Models (CSM), Corrective Measures Studies and Implementations (CMS and CMI), Hazardous Waste Management Unit (HWMU) Closure Plan and multiple media-based Completion Reports.
- Managed, supervised, and participated in site assessment and remediation activities involving impacted soil, soil vapor, groundwater, and construction materials for a Site in Southern California. Assessment and delineation included multiple soil vapor, soil and groundwater sampling events, the installation of over 1,000 soil vapor points, the construction and sampling of hundreds of soil borings and the monitoring and installation of over 80 groundwater monitoring points. Oversaw the delineation, excavation and on-site treatment or off-site disposal of over 130,000 tons of VOC and PCB co-impacted soil. On-site treatment of VOC-impacted soil included targeted in-situ ZVI injections as well ex-situ evaporative desorption technology (EDT). PCB impacted soil was delineated, characterized, excavated, and transported off-site for disposal with TSCA considerations required. Soil vapor, groundwater impacts, and aquifer properties were assessed and monitored before, during, and after remediation.
- Managed, supervised, and helped facilitate remediated property transfer and redevelopment in Southern California. Coordinated with client and prospective developers as well as oversight agencies to develop a Land Use Covenant. Worked with developers to ensure the established soil management plan was utilized and adhered to during development activities.
- Supervised and participated in groundwater sampling (including PDB, hydropunch, and low flow methods as well as DNAPL considerations), soil sampling and lithologic logging (including utilization of FLUTE ribbon), monitor well construction (rotasonic methods), and aquifer testing. Performed data analysis and interpretation and assisted in report preparation for submittal of numerous documents to the Nevada Division of Environmental Protection (NDEP) including quarterly and annual groundwater data submittals, monitor well completion reports, and a CSM for a Black Mountain Industrial (BMI) complex site located near the Las Vegas Wash overlying Tertiary and Quaternary deposits and the Muddy Creek formation.
- Supervised and participated in field activities including groundwater monitor well construction (rotasonic methods), lithologic logging, soil characterization and sampling, groundwater characterization and sampling (including passive diffusion bag and low flow methods, and well development. Performed data analysis and interpretation and assisted in report preparation and submittal of numerous documents to the Arizona Department of Environmental Quality (ADEQ) including quarterly and annual groundwater data submittals and monitor well completion reports for various Water Quality Assurance Revolving Fund (WQARF) sites in central Arizona.
- Participated in field activities including soil characterization and sampling, groundwater characterization and sampling (including passive diffusion bag and low flow methods), soil vapor sampling and soil vapor and groundwater treatment system operation and maintenance. Performed data analysis and interpretation and assisted in report preparation and submittal of numerous documents to the EPA including annual groundwater data submittals and monitor well completion reports for an EPA Region 9 National Priorities list site in central Arizona.
- Supervised and participated in field activities including monitor well drilling and construction, groundwater characterization and sampling and assisted in report preparation for an aerospace manufacturing facility in central Arizona.





**AMANDA L. MORRIS**  
Hydrogeologist

*Services: Water Resources, Environmental, Mining and Litigation Support*

**Contact**

530-919-7513  
amorris@hargis.com  
<http://www.hargis.com>

**Summary of Experience**

Professional experience in hydrogeology since 2017. Ms. Morris provides environmental consulting services for groundwater remediation projects regulated by the California Environmental Protection Agency (EPA). She is a core player in all drilling activities including project management, on site logging geology, well design, well installation oversight, etc. She has experience in oversight of groundwater remediation system installation and operation including routine sampling and monitoring of extraction wells, troubleshooting system performance, and reporting system compliance with permit guidelines.

**Education**

B.S., Geology, University of Nevada, Reno, 2015

**Employment History**

2017 – Current, Hargis + Associates, Inc., Hydrogeologist, CA

**Professional Registration**

Geologist in Training Certificate, National Association of State Boards of Geology, 2020

**Areas of Expertise**

Soil and Groundwater Contamination Studies

- Conducted environmental sampling and monitoring activities including groundwater and soil vapor sampling, water level elevation measurement, and cone penetration testing.
- Responsible for oversight of remediation system vendors and contractors.
- Conducted monthly site-wide water level measurements at 150 groundwater extraction and monitoring wells.
- Installation of passive diffusion bags and bailers for groundwater sampling.

**Selected Representative Professional Assignments**

Aerojet Superfund Site, Rancho Cordova, CA, 2017 - Current  
Beckman Coulter Site, Palo Alto, CA, 2019-Current

Drilling Expertise (Aerojet & Beckman)

- Mud rotary, sonic, and direct push drilling coordination and oversight for urban and remote groundwater and soil vapor wells.
- Performed soil and bedrock classification during the drilling of monitor wells.
- Boring log creation.
- Designing and drafting of monitoring and extraction wells.
- Obtaining permits and access agreements from various municipalities.
- Project management and contractor coordination.
- Interpret Gamma Ray (e-logs) to correlate top and bottom of target formation.
- Manage databases related to drilling activities.
- Prepared data submittals, pumping test reports, and well construction reports.
- Aquifer analysis through AQTESOLV and HOBOWare programs.
- Coordination and oversight of well development, geophysical surveys, waste disposal, and soil gas sampling.



**ERICA SANDERS**  
Hydrogeologist

*Services: Water Resources, Environmental, Mining and Litigation Support*

**Contact**

480-845-7847  
esanders@hargis.com  
<http://www.hargis.com>

**Summary of Experience**

Ms. Sanders has professional experience in hydrogeology and geology since 2020. Current professional responsibilities include collecting samples and reporting parameters for groundwater, soil, and vapor contaminants. She has experience in the analysis and visualization of groundwater, soil, and vapor data through the use of ArcGIS, Surfer, Strater, and MS Excel. Additionally, she is experienced providing oversight for the drilling, designing, and installation of monitor wells, extraction wells, and soil vapor probes. She has experience in lithologic logging of soil samples collected through drilling techniques such as mud-rotary, direct-push, sonic, and hollow-stem auger.

**Education**

B.S., Geology, Northern Arizona  
University, Flagstaff, Arizona, 2020

**Selected Representative  
Professional Assignments**

Sacramento Municipality Utility District  
North City Landfill, Sacramento, CA,  
2021 - Current  
Aerojet Superfund Site, Rancho Cordova,  
CA, 2020 - Current

**Professional Development Courses**

Occupational Safety & Health  
Administration (OSHA) 40-hour  
Hazardous Waste Operations and  
Emergency Response (HAZWOPER)  
Training and 8-hour Refresher Training

**GIS and Other Software**

arcGIS, Strater, Surfer, MS Access

**Employment History**

2020 – Current, Hargis + Associates, Inc., Hydrogeologist, CA

**Areas of Expertise**

Groundwater, Soil, and Air Contamination

- Experience in collecting groundwater samples using purge and sample techniques.
- Collected and reported groundwater well data such as groundwater elevation, pH, electrical conductance, turbidity, dissolved oxygen, and oxidation-reduction potential.
- Installed and retrieved passive-diffusion bags for groundwater analysis of volatile-organic compounds.
- Conducted quarterly soil vapor sampling of probes ranging from 5 to 60 ft depths using Tedlar Bags and 1L SUMMA canisters.
- Analyzed over 50 twenty-foot soil borings for Perchlorate concentrations using an Ion-Selective Electrode.
- Collected ambient air samples using 14-day Radiello passive/diffusive samplers.
- Digitized and analyzed both groundwater and soil vapor contaminant data through the use of MS Excel.
- Developed digital conceptual models and maps depicting contaminant levels, groundwater elevation, and groundwater flow through ArcGIS, Surfer, and Strater.
- Produced quarterly technical reports reviewing groundwater and soil contaminant analysis.

Drilling Expertise

- Interpreted subsurface geology to create lithologic logs using drilling methods such as mud-rotary, sonic, and hollow-stem auger techniques.
- Prepared and reviewed pumping test reports and well construction reports.
- Oversight and documentation of well destruction, well development, geophysical surveys, waste disposal, and soil gas sampling.

Agenda Item #7



HARGIS+ASSOCIATES, INC.

ATTACHMENT 2  
SUBCONTRACTOR QUALIFICATIONS

**HARGIS + ASSOCIATES, INC.**  
**ATTACHMENT 2**  
**SUBCONTRACTOR QUALIFICATIONS**  
**SEMIANNUAL GROUNDWATER MONITORING EVENTS - 2022**  
**COSUMNES GROUNDWATER AUTHORITY**

<b>SUBCONTRACTOR</b>	<b>SERVICE PROVIDED</b>	<b>PRIMARY CONTACT</b>	<b>LOCATION</b>	<b>RELEVANT COMPANY EXPERIENCE</b>	<b>WEBSITE</b>
Confluence Environmental	Field support for water level monitoring and groundwater sample collection.	Eric Holmberg, Project Manager	6821 8th Street Rio Linda, CA 95673	<p>Has extensive groundwater sampling experience on some the most complex and highly scrutinized sites in California. Experience includes complicated site specific protocol as well as standardized EPA approved sampling procedures. Here are just some of the well and groundwater services we provide:</p> <ul style="list-style-type: none"> <li>- Standard 3 case volume purge to stabilization</li> <li>- EPA low flow</li> <li>- PDB sampling</li> <li>- Hydrasleeve sampling</li> <li>- Snap sampling device</li> <li>- Surface water sampling</li> <li>- discrete depth sampling</li> <li>- Barcad system sampling</li> <li>- Remediation system sampling</li> <li>- Any client directed protocol for sampling using a modified method</li> </ul>	<a href="https://www.confluence-env.com/">https://www.confluence-env.com/</a>
Pace Analytical	Analytical Laboratory	David Veratti, Southwest Account Executive	660 Bercut Drive, Suite C Sacramento, CA 95811	EPA and California Certified laboratory (CA #1186). Full-service environmental testing laboratories offering inorganic, organic and radiochemistry capabilities. National networks with a local presence. California See attached Statement of Qualifications	<a href="https://www.pacelabs.com/">https://www.pacelabs.com/</a>

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HARGIS+ASSOCIATES, INC.

ATTACHMENT 3  
COST ESTIMATE

**ATTACHMENT 3  
COST ESTIMATE FOR SEMIANNUAL GROUNDWATER MONITORING EVENTS - 2022  
COSUMNES GROUNDWATER AUTHORITY  
ELK GROVE, CA**

**Cost Assumptions:**

Confluence Environmental Inc. (oversight by H+A) to perform May and October 2022 groundwater monitoring  
Pace Analytical (CA certificate # 1186) to perform analysis of October groundwater samples

	UNIT COST	UNITS	TASK 1 WELL SCHEDULING	TASK 2 LABORATORY COORDINATION	TASK 3 WELL MONITORING	TASK 4 FIELD DATA MANAGEMENT	TASK 5 PROJECT MANAGEMENT	QUANTITY	TOTAL
<b>H+A LABOR</b>									
Level 10	\$210.00	Hrs	0.0	0.0	0.0	0.0	0.0	0	\$0
Level 9	\$190.00	Hrs	0.0	0.0	0.0	0.0	0.0	0	\$0
Level 8	\$170.00	Hrs	0.0	0.0	0.0	0.0	0.0	0	\$0
Level 7	\$155.00	Hrs	1.0	0.5	0.5	0.5	5.0	8	\$1,163
Level 6	\$135.00	Hrs	0.0	0.0	0.0	0.0	0.0	0	\$0
Level 5	\$125.00	Hrs	0.0	0.0	0.0	0.0	0.0	0	\$0
Level 4	\$115.00	Hrs	4.0	4.0	12.0	8.0	1.0	29	\$3,335
Level 3	\$100.00	Hrs	0.0	0.0	4.0	4.0	1.0	9	\$900
Level 2	\$85.00	Hrs	0.0	0.0	0.0	0.0	0.0	0	\$0
Level 1 (Intern)	\$75.00	Hrs	0.0	0.0	0.0	0.0	0.0	0	\$0
Drafting	\$95.00	Hrs	0.0	0.0	0.0	0.0	0.0	0	\$0
Clerical	\$55.00	Hrs	0.0	0.0	0.0	0.0	0.0	0	\$0
<b>Subtotal Labor</b>			<b>\$615</b>	<b>\$538</b>	<b>\$1,858</b>	<b>\$1,398</b>	<b>\$990</b>		<b>\$5,398</b>
<b>H+A EXPENSES</b>									
H+A Vehicle Usage (Field Truck)	\$80.00	Day	0	0	1	0	0	1	\$80
Lodging (GSA Rate)	\$111.00	Day	0	0	0	0	0	0	\$0
Subsistence (GSA Rate)	\$61.00	Day	0	0	0	0	0	0	\$0
Airfare	\$400.00	LS	0	0	0	0	0	0	\$0
Rental Vehicle	\$65.00	Day	0	0	0	0	0	0	\$0
Rental Vehicle - Gasoline	\$4.00	Gallon	0	0	0	0	0	0	\$0
Personal Vehicle Mileage Reimbursement	\$0.575	mile	0	0	0	0	0	0	\$0
Communications (no charge)	0%	Percent	\$0	\$0	\$0	\$0	\$0	N/A	\$0
Site Survey		LS	\$0	\$0	\$0	\$0	\$0	N/A	\$0
Express Mail and Courier Service		LS	\$0	\$0	\$0	\$0	\$0	N/A	\$0
Permits		LS	\$0	\$0	\$0	\$0	\$0	N/A	\$0
Other		LS	\$0	\$0	\$0	\$0	\$0	N/A	\$0
<b>Subtotal Expenses</b>			<b>\$0</b>	<b>\$0</b>	<b>\$80</b>	<b>\$0</b>	<b>\$0</b>		<b>\$80</b>
<b>EQUIPMENT &amp; VENDORS</b>									
Parameter Kit	\$100	Day	0	0	0	0	0	N/A	\$0
Water Level Meter	\$15	Day	0	0	0	0	0	N/A	\$0
Redi-Flow Pump and Hose Reel	\$250	Round	0	0	0	0	0	N/A	\$0
PPE and Site Supplies	\$55	Day	0	0	0	0	0	N/A	\$0
Laboratory (Pace Labs)	1	LS	\$0	\$2,500	\$0	\$0	\$0	N/A	\$2,500
Subcontractors (Confluence Environmental)	1	LS	\$0	\$0	\$7,200	\$0	\$0	N/A	\$7,200
<b>Equipment &amp; Subtotal (includes 6% markup)</b>			<b>\$0</b>	<b>\$2,650</b>	<b>\$7,632</b>	<b>\$0</b>	<b>\$0</b>		<b>\$10,282</b>
<b>Task Totals</b>			<b>\$615</b>	<b>\$3,188</b>	<b>\$9,570</b>	<b>\$1,398</b>	<b>\$990</b>	<b>N/A</b>	<b>\$15,800</b>



1480 Drew Avenue  
Suite 100  
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lwa.com

March 16, 2022

Stephen Julian  
Watershed Coordinator  
Cosumnes Groundwater Authority  
8970 Elk Grove Blvd.  
Elk Grove, CA 95624  
[sjulian@CosumnesGroundwater.org](mailto:sjulian@CosumnesGroundwater.org)

**Subject: Proposal for 2022 Semiannual Groundwater Monitoring Events**

Dear Mr. Julian:

Larry Walker Associates, Inc. (LWA) is pleased to submit this Proposal in response to Cosumnes Groundwater Authority's (Authority) Request for Proposals (RFP) for *Semiannual Groundwater Monitoring Events*. LWA has assembled a project team with demonstrated experience in well monitoring, laboratory coordination, field data management, water quality and groundwater level data analysis and project management.

The LWA team, including project manager, task support, and senior advisor are all located in the Davis, CA office. Our strength lies in our team's in-depth understanding and practical experience with local groundwater conditions and agencies, coupled with our proven ability to manage and execute monitoring and reporting projects with an acute sense of detail to the client's satisfaction. LWA will serve as the Prime Consultant with sole responsibility for collaboration and coordination with the Authority. Hallmarks of our experience include:

- Strong record of estimating project needs and performing work for the Authority and other local agencies;
- Familiarity with the project location and experience with the monitoring network;
- Familiarity with groundwater monitoring protocols required to successfully complete and deliver required samples in a post-COVID-19 world; and
- Expert knowledge of SGMA and other applicable regulatory initiatives in California.

The LWA Project Manager, Dr. Laura Foglia, and supporting staff are readily accessible and committed to working collaboratively with the Authority. Because LWA is a small firm, we are keenly cost-sensitive and have refined our work processes to perform tasks in the most efficient manner while remaining focused on quality and compliance.

As a Senior Executive of LWA, I am authorized to represent and execute a contract on behalf of the LWA Team. We look forward to the opportunity to support the Authority. Please feel free to contact our point of contact, Project Manager, Dr. Laura Foglia at (530) 753-6400 x 240 or [LauraF@lwa.com](mailto:LauraF@lwa.com) with any questions concerning this proposal.

Sincerely,

A handwritten signature in yellow ink that reads 'Thomas R. Grovhoug'.

Tom Grovhoug  
Senior Executive



March 16, 2022 | Cosumnes Groundwater Authority

PROPOSAL FOR

# Semiannual Groundwater Monitoring Events

PREPARED BY



**LARRY WALKER  
ASSOCIATES**  
science | policy | solutions





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**Appendix A. Key Personnel Resumes**



## 1.0 Firm Overview

In response to the Request for Proposal (RFP) for *Semiannual Groundwater Monitoring Events*, issued by Cosumnes Groundwater Authority (Authority), Larry Walker Associates, Inc. (LWA) has assembled a project team consisting of highly qualified personnel who have long-term experience with monitoring and regulatory compliance programs. As demonstrated throughout our proposal, LWA offers considerable experience, proven capabilities, and an in-depth understanding of the requirements of Joint Powers Authority (JPA) and Groundwater Sustainability Agencies (GSAs). Our staff have successfully conducted monitoring for water levels, water quality, and interconnected surface water and are familiar with the Cosumnes Subbasin and its affiliated municipalities and agencies.



science | policy | solutions

LWA is a privately owned corporation providing environmental engineering and management services throughout California. Headquartered in Davis, California, LWA has regional offices in Berkeley, Santa Monica, San Diego, and Ventura, as well as an office in Seattle, Washington. For more than 43 years, LWA has been a partner, innovator, and industry leader, assisting municipalities in navigating and solving complex and important environmental and public policy challenges. LWA's technical expertise and services include regulatory assistance, water quality and groundwater monitoring and data management, stormwater, watershed management, and groundwater management.

LWA has a proven record of leading successful collaborative work efforts to meet project objectives and goals. Hallmarks of our approach include bringing flexibility to the project plan while managing it to meet the stated end goals, integrating multidisciplinary experts into a cohesive working team, and providing an adaptive atmosphere that encourages interaction and communication amongst LWA, the client, and other stakeholders. LWA has leveraged our expertise to assist public works departments and municipal clients throughout California in developing solutions that meet their needs and comply with requirements of the USEPA, SWRCB, and Regional Water Quality Control Boards (RWQCBs). LWA has more than 55 employees providing a wide range of services for municipal groundwater programs statewide.

### Experience with Regional Clients

- Omochumne-Hartnell Water District
- Sloughhouse Resource Conservation District
- Amador County
- Sacramento County

## 1.1 Statement of Firm's Qualifications

LWA has the qualifications to evaluate and develop regulatory solutions to complex water quality issues. We have worked with staff from various GSAs and the USEPA to effect change in regulatory outcomes. LWA is actively involved in the **development and implementation of groundwater monitoring and compliance programs throughout California**. A description of our overall qualifications and capabilities directly relevant to the RFP Scope of Services is provided below.

**Water Quality Monitoring.** LWA's water quality monitoring experience is extensive and includes managing and implementing short-term and ongoing monitoring programs for agricultural coalitions in the Central Valley and Ventura County, municipal stormwater agencies, wastewater agencies, and watershed groups throughout California. Groundwater monitoring projects include monitoring well design, water quality and water level monitoring, compliance reporting, and installation and evaluation



of continuous water level sensors with telemetry and continuous water level data logger systems. LWA has led the development and implementation of several large multi-agency, multi-year monitoring studies to collect specific environmental information and the design of comprehensive water quality monitoring programs analyzing over 100 individual water quality parameters. Our monitoring expertise also encompasses the preparation of Quality Assurance Project Plans, site evaluation and selection, identification and selection of contract analytical laboratories, preparation of sampling and analysis plans and field logs, water and sediment toxicity sampling services, and preparation of electronic data deliverables.

**Data Management and Reporting.** Centralized management of environmental data and other information collected pursuant to State-issued Permits and Orders has become a priority for California's regulatory community over the past two decades, especially in light of the electronic data reporting requirements imposed upon environmental monitoring programs. LWA has a successful history of assisting its clients to submit/upload required data to third-party data clearinghouses at frequencies ranging from monthly to annually. LWA staff understands these third-party systems' unique data formatting and business rule requirements and how the requirements may drive adjustments to a client's internal, routine data management, analysis, and reporting needs. LWA staff have experience successfully submitting environmental data to the California Environmental Data Exchange Network (CEDEN), California Integrated Water Quality System (CIWQS), Storm Water Multiple Application and Report Tracking System (SMARTS), and the State Water Board's GeoTracker data management system.

**Regulatory Assistance.** LWA supports agriculture, stormwater, wastewater, watershed, and groundwater clients in evaluating, interpreting, and developing regulatory solutions for complex water quality issues. LWA is recognized across California as a leader in supporting clients to negotiate their Conditional Waivers of WDRs, WDRs, and NPDES Permits. We have worked with staff from various Regional Water Boards, the State Water Board, Department of Water Resources, and USEPA Region IX to change regulatory outcomes.

**Laboratory Coordination.** LWA is well qualified to handle laboratory coordination and has extensive history teaming with certified EPA laboratories to successfully complete sampling and analysis projects. LWA's experience includes drafting and confirming chain-of-custody with the client and laboratory, evaluation of the laboratory's quality control results (method blanks, laboratory control standards, matrix spike/matrix spike duplicates, replicates, surrogates and holding time), field quality control results (blank/duplicate samples), and sample results.

**Project Management.** Our management approach centers on early and frequent communication designed to keep projects on time and within budget. This includes the development of procedures for project control, quality control, internal accounting systems, and management. Our internal procedures promote high quality data gathering and efficient workflow that result in cost-effective and complete deliverables.

LWA recognizes that timely communication is the key to successful project delivery and budget control. Our communication process and style are proactive and "hands-on" from initial contacts and project meetings to data delivery. LWA's experience directly related to the RFP Scope of Services are provided below followed by a list of recently performed relevant projects, past performance, and accomplishments ([Table 1](#)). Descriptions for five examples of relevant work for public agencies are provided in [Section 6.1](#).



Table 1. History of Relevant Project Experience

Project List *Description Provided	Technical Expertise							Regulatory Expertise			
	Groundwater Quality Evaluation	Water Quality Sampling	Laboratory Coordination	Field Data Management	Project Management	Understanding of Well Design and Operation	DWR Protocols for Water Level and Sampling	Report Preparation and Submittal	Data Evaluation and Presentation	SGMA Expertise	Stakeholder Engagement
Groundwater Quality Monitoring and Reporting, St. Helena, CA*	•	•	•	•	•				•		
Groundwater Recharge, Omochumne-Hartnell Water District, CA*	•	•	•	•	•		•	•	•	•	•
South American Subbasin Groundwater Sustainability Plan, CA*	•	•	•	•	•	•	•	•	•	•	•
Monitoring and Regulatory Services, Sacramento Stormwater Quality Partnership, Sacramento, CA*		•		•	•	•	•	•	•	•	•
Groundwater Monitoring Network Technical Report and Contaminant Transport Assessment, Palm Springs, CA	•	•	•	•	•	•	•	•	•		•
Groundwater Monitoring Network Technical Reporting, East Bay Municipal District, CA	•	•	•		•			•	•		
Combined Sewer System Monitoring and Regulatory Support, Sacramento, CA	•	•	•	•	•	•	•	•	•		•
Irrigated Lands Regulatory Program WDR and TMDL Compliance, Northern California Water Association, CA	•	•	•		•	•	•	•	•	•	•
Conditional Waiver & TMDL Compliance, Ventura County, CA	•	•	•	•	•	•	•	•	•	•	•
Sacramento Valley Water Quality Coalition Irrigated Lands Regulatory Program WDR and TMDL Compliance, Sacramento, CA	•	•	•	•	•	•	•	•	•	•	•



## **2.0 Subcontractors**

Larry Walker Associates plans to complete this work without the use of subcontractors.

## 3.0 Key Personnel Experience

The LWA project team includes engineering and groundwater professionals with experience in the management, development, and implementation of similar projects. Our experience will provide the Authority with the expertise needed to navigate any potential regulatory and technical complexities of the project. The key personnel have the capacity to support 100% of the anticipated workload for the proposed project relative to their present workload. Highly qualified and experienced staff are assigned to this project, and additional staff are readily available to augment the team as needed.

### 3.1 Education and Certificates

As reflected in **Table 2**, LWA's project team will be led by Dr. Laura Foglia, who has been deeply involved in developing and implementing the GSP in the South American Subbasin. She has been collaborating with OHWD for more than seven years. Dr. Foglia has proven organizational and project management skills, as well as strong interpersonal and communication skills, to support stakeholder and regulatory coordination. She has a track record in leading project teams to accomplish specific technical tasks and address complex regulatory issues to develop pragmatic programs. As the primary and day-to-day point of contact to the Authority for the project, Mr. Applegate will oversee the work performed for each task, manage the contract, and ensure that work is completed on time and within budget. Dr. Foglia, the Project Manager, and Mr. Grovhoug, the Strategic Advisor, and will provide regulatory and technical insight from their extensive experience. Mr. Calderwood will be responsible for the on-time completion of assigned tasks and for coordinating all work products with the Assistant Project Manager and Project Manager. Mr. Grovhoug and Olin Applegate will provide regulatory and technical insight from their direct experience. Mr. Calderwood will be responsible for the on-time completion of assigned tasks and for coordinating all work products with the Assistant Project Manager. Additional staff is available to assist Mr. Calderwood with fieldwork if necessary.

The staff members have worked together for many years, including the projects provided to demonstrate experience in [Section 1.1](#), thereby offering a seamless and efficient team with complementary skills. Below are brief highlights of the relevant background, experience, and qualifications for LWA's key personnel. Resumes providing more details on the assigned staff's relevant academic training, professional licenses, certifications, and job assignments are provided in [Appendix A, Key Personnel Resumes](#).

**Table 2. Key Personnel Credentials and Project Role**

Key Staff and Role	Certificates & Education
<b>Laura Foglia</b> Project Manager	Ph.D., Environmental Engineering, 2006, ETH Zurich Switzerland;
<b>Olin Applegate</b> Assistant Project Manager	M.S., Hydrologic Science, 2014, University of California Davis
<b>Tom Grovhoug</b> Strategic Advisor	Civil Engineering, State of California, No. 27901 M.S., Civil Engineering, 1975, University of California, Davis
<b>Andrew Calderwood</b> Support Staff	EIT, CA, No. 171128 Ph.D., Physical Hydrology, Expected 2023, University of California, Davis



**LAURA FOGLIA**  
*Associate*

**Roles:**  
*Project Manager*

**Duties Include:**

- Project performance and execution
- Ensure regulatory and contract compliance
- Primary day-to-day point of contact, communication and coordination with the Cities
- Resource coordination, work plan and schedule, regulatory support, and other technical support as needed

**DR. FOGLIA** is an Associate Engineer with Larry Walker Associates (LWA), where she assists with projects in the areas of hydrological modelling, groundwater management assistance, and TMDL development. At LWA, she leads the groundwater services for the Ukiah Basin Groundwater Sustainability Agency, the development of Groundwater Sustainability Plans for Siskiyou County, and the Groundwater Sustainability Plan for the South American Subbasin Sacramento Central Groundwater Authority. She is also developing the pilot groundwater recharge project for the Scott Valley Irrigation District and the Omochumne-Hartnell Water districts. She also collaborated with SCGA to produce a continuous monitoring network for groundwater levels in the South American Subbasin. Since January 2016, Dr. Foglia is also an Adjunct Faculty Staff in the Land, Air, and Water Resources (LAWR) Department at the University of California, Davis, where she teaches a graduate class on model calibration. Sensitivity analysis and uncertainty evaluation and supervises students developing integrated hydrological models. Since her Ph.D., the main focus of her research is understanding interactions between surface water and

groundwater and how models and monitoring programs can support the characterization of this interaction. She has extensive experience teaching groundwater modelling and integrated hydrological modelling, with tailored material developed for short courses for stakeholders. She has relevant scientific publications on groundwater/surface water model development, assessment of data, evaluation of alternative models.

**MR. APPEGATE** is a Project Scientist at LWA with nine years of experience in the environmental sciences field. Mr. Applegate’s experience at LWA includes the development and implementation of groundwater monitoring and reporting programs, SGMA compliance, hydrogeologic technical evaluations, GIS and technical assistance to the Ventura County Agricultural Irrigated Lands Group (VCAILG), and TMDL compliance and assessment. He has ample experience organizing and leading monitoring efforts, communicating project and client needs to laboratories, overseeing the production of monitoring reports, and managing groundwater quality data. Before joining LWA, he led a sampling effort that examined the relationship between agricultural land use and groundwater quality. During this effort, he oversaw the sampling of hundreds of wells located throughout California’s Central Valley. Mr. Applegate has a B.S. in Environmental Policy Analysis and Planning and an M.S. in Hydrogeology from the University of California, Davis.

**OLIN APPEGATE**  
*Project Scientist*

**Roles:**  
*Assistant Project Manager*

**Duties Include:**

- Assist in project oversight, insights on results, and other input as needed
- Alternative point of contact as needed
- Provide regulatory and other technical support as needed
- Review project documents, plans, and reports



**TOM GROVHOUG**  
*Senior Executive*

**Roles:**  
*Strategic Advisor*

**Duties Include:**

- Coordinate needs for tasks and participate in meetings
- Lead and coordinate subcontractor support staff

**MR. GROVHOUG** is a Senior Executive at LWA and is a Professional Civil Engineer with a B.S. and M.S. in Civil Engineering. In his role as either Project Manager or Principal-in-Charge, he is responsible for project team leadership and management, budgeting, scheduling, regulatory agency communications, public presentations, and product quality. Mr. Grovhoug’s expertise includes collaborative policy development and water quality management working with regulators, municipal, agricultural and non-governmental organizations. His recent work includes mercury TMDL development in the Sacramento-San Joaquin Delta; development of a variance policy for the Central Valley of California; salinity and nitrate permitting strategies in surface and groundwater of the Central Valley;

and development of policies for nutrient management and regulation in surface waters of the Sacramento-San Joaquin Delta. He has participated in critical projects involving multiple diverse stakeholders at the county, district, and state levels as well as water users and regulatory agencies, including several projects in the Central Valley to support Basin Plan Amendments and the development of a groundwater management zone archetype study in the Alta Irrigation District study area. He currently provides regulatory support to Sacramento County Regional Sanitation District and to the Central Valley Clean Water Agencies (CVCWA). He is a technical advisor for GSP development in the Ukiah Valley and Siskiyou County.

**ANDREW CALDERWOOD**  
*Project Engineer*

**Roles:**  
*Support Staff*

**Duties Include:**

- Coordinate needs for tasks and participate in meetings
- Lead and coordinate subcontractor support staff

**MR. CALDERWOOD** is a Project Engineer with LWA and has four years of experience in the groundwater field. Mr. Calderwood holds a Bachelor of Science in Civil and Environmental Engineering from the University of California, Davis. He is completing his doctoral studies at UC Davis in Physical Hydrology, focusing on surface-water groundwater interactions to aid regional and local water resources management. His Ph.D. studies combine field data collection on the local and regional scale with multiple types of numerical groundwater-surface water modeling to advance the field of surface-water groundwater characterization while analyzing the benefit of management actions to improve local groundwater-surface water conditions. He has experience in groundwater investigations, surface water quality and

hydraulics modeling, and groundwater modeling. Since joining LWA in 2020, he has been integral to technical work associated with Groundwater Sustainability Plans (GSPs) within Siskiyou County, California. He is responsible for engaging a multi-stakeholder client, which comprises a watershed-scale integrated hydrogeologic model development, future scenario generation and climate change assessment, management action design under uncertainty, and preparing the draft GSP. He also assists water resources clients with the recharge permit application and reporting, along with field study, data cleaning, and recharge benefit analysis.





## 4.0 Project Budget

The cost for LWA to provide the services described in the above Scope of Work is provided in **Table 3** below. The cost proposal is consistent with LWA's Scope of Work described in this proposal and itemizes all costs, including the per hour costs per staff person for each task identified.



Table 3. Project Budget

Employee	Laura Foglia	Olin Applegate	Andrew Calderwood	Total Task Hours	Equipment, Transport, Consumables, PPE	Total Task Cost
Classification	Associate Engineer	Project Scientist II-B	Project Scientist I-A			
Task	\$279/hr	\$192/hr	\$180/hr			
<b>Task 1. Well Scheduling</b>		3	10	13		\$2,376
<b>Task 2. Laboratory Coordination <sup>(1)</sup></b>		2	7	9	\$23 <sup>(2)</sup>	\$1,667
<b>Task 3. Well Monitoring</b>		1	68 <sup>(3)</sup>	69	\$1,156 <sup>(4)</sup>	\$13,600
<i>May Event: Groundwater Level/ISW Wells</i>			25	25	\$330 <sup>(5)</sup>	\$4,820
<i>October Event: Groundwater Quality Wells and Groundwater Level/ISW Wells</i>			36	36	\$753 <sup>(6)</sup>	\$7,255
<b>Task 4. Field Data Management</b>		2	10	12		\$2,184
<b>Task 5. Project Management</b>	4	12		14		\$2,862
<b>Total</b>	<b>4</b>	<b>20</b>	<b>95</b>	<b>119</b>	<b>\$1,179</b>	<b>\$24,425</b>

1. This proposal assumes that the Authority has selected a laboratory for the project. Laboratory costs for analyzing water quality samples and any additional fees associated with the completion of laboratory reports are not included in this proposal.
2. Estimated mileage at current IRS rate to pick up sample bottles (included under the assumption that the Authority will select a laboratory).
3. Seven hours of labor were included for the initial visit of up to six new wells added to the network.
4. Estimated mileage at current IRS rate to visit up to six new wells added to the network.
5. Estimated mileage at current IRS rate to visit all wells; water level electronic sounder (\$90 total, which includes three days @ \$30/day).
6. Estimated mileage at current IRS rate to visit all wells; water level electronic sounder (\$120 total, which includes four days @ \$30/day); multi-parameter field meter (\$200 total which includes 2 days @ \$100/day); submersible pump (\$50 total which includes 1 day @ \$50/day); ice and PPE (\$20).

## 5.0 References

References for highly relevant and recent similar work are provided in [Table 4](#). LWA's reputation directly results from our professional, highly qualified staff and our commitment to fostering long-term relationships built on trust with our clients. Having successfully delivered similar projects to other public agencies, LWA can readily provide additional references who can attest to our expertise, professional commitment, and proven processes that deliver projects on time, within budget, and to the satisfaction of our clients.

**Table 4. References**

Client	Project Name	Client Contact Information
<b>City of St. Helena</b>	Groundwater Quality Monitoring and Reporting and Regulatory Assistance	Name: Mark A. Rincon-Ibarra, PE Job Title: Public Works Director Address: 1572 Railroad Ave., St. Helena, CA 94574 Phone: (707) 968-2629 Fax: Not available Email: <a href="mailto:mrincon@cityofsthenela.org">mrincon@cityofsthenela.org</a>
<b>Ukiah Valley Basin Groundwater Sustainability Agency</b>	Ukiah Valley Basin Groundwater Sustainability Plan Development	Name: Amber Fisette Job Title: Deputy Director of Transportation Address: 340 Lake Mendocino Drive, Ukiah, CA 95482 Phone: (707) 234-2838 Fax: Not available Email: <a href="mailto:fisettea@mendocinocounty.org">fisettea@mendocinocounty.org</a>
<b>GEI Consultants on behalf of South American Subbasin</b>	South American Subbasin Groundwater Sustainability Plan Development	Name: John Woodling, PG, C.HG, CEG Job Title: Principle Geologist Address: 2868 Prospect Park Dr #400, Rancho Cordova, CA 95670 Phone: (916) 631-4563 Fax: Not available Email: <a href="mailto:jwoodling@geiconsultants.com">jwoodling@geiconsultants.com</a>



6.0 Additional Information

LWA is actively involved in developing and implementing well monitoring throughout California. In this capacity, we have worked closely with various public agencies to perform the same tasks outlined in the RFP Scope of Services.

6.1 Relevant Projects

Below are five examples of relevant projects performed for public agencies in California. Additional recent and related projects are listed in **Table 2** in **Section 1.1**.

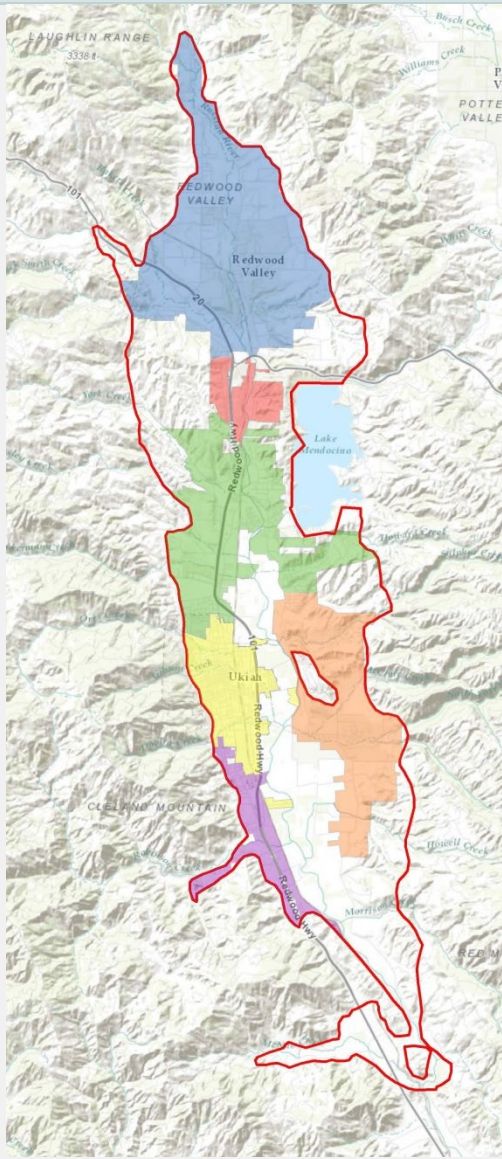
Project 1. St. Helena Groundwater Quality Monitoring and Reporting and Regulatory Assistance	
Client Name	City of St. Helena
Dates of Service	2005-Present
DESCRIPTION	
<p>The St. Helena Wastewater Treatment and Reclamation Plant (WWTRP) produces disinfected secondary effluent. During dry weather, the City’s Water Reclamation Requirements allow the discharge of treated effluent to an 88-acre land application area adjacent to the treatment plant. The Regional Water Board required the City to perform monitoring to assess whether the current application rates were having adverse water quality impacts, including elevated groundwater nutrient concentrations and elevated groundwater levels. Results from these studies can be used to determine appropriate discharge practices.</p> <p>LWA managed the installation of a groundwater monitoring network at the WWTRP in 2017 and performed subsequent groundwater monitoring and reporting. The groundwater monitoring network consists of seven wells drilled in the Shallower Groundwater Formation. The work performed includes overseeing drilling wells, monitoring water elevation, sampling and testing for water quality (analytes of concern are total coliform, <i>e. coli</i>, nitrate, chloride, pH and total dissolved solids), modeling and groundwater reporting. Wells were monitored monthly for the first six months and will be monitored quarterly moving forward.</p> <p>LWA created a Sampling and Analysis Plan (SAP) to guide monitoring personnel through each sampling event and communicate data quality expectations to laboratories selected to perform analyses. LWA installed pressure transducers in the monitoring wells to better characterize groundwater elevation for subsequent reporting and monitoring. Groundwater movement and fate were assessed using a numerical simulation. The numerical model can estimate the direction, speed, and volumetric flow of groundwater beneath and downgradient of the land application area. Additionally, the impact of wastewater discharges on groundwater flow and level has been characterized. LWA prepared Interim and Final Groundwater Monitoring Reports and provided Quarterly Groundwater Monitoring Reports. The Reports document the groundwater fate and transport modeling findings, the analysis of groundwater elevation and quality results representative of the data for background and downgradient wells at the WWTP. Additionally, predictions were made regarding the allowable effluent nitrogen concentrations such that the downstream groundwater would not increase above ten mg/L. LWA also prepared a nutrient balance for the irrigation field.</p>	
<div>RELEVANCE TO RFP<ul style="list-style-type: none"><li>✓ Coordination with client, subcontractors, stakeholders, and Regional Water Board</li><li>✓ Evaluate water quality</li><li>✓ Subsurface investigations</li><li>✓ Groundwater modeling of: flow, fate and transport, impacts, and levels</li><li>✓ Water management planning</li></ul></div>	



LWA has also been providing regulatory consulting to the City of St. Helena since 2005. Tasks include compliance concern evaluations, compliance reporting, monthly self-monitoring report assistance, water rights reports assistance, sanitary sewer management plan preparation and audits, annual reporting, NPDES permit application and reissuance, pollution prevention planning and reporting, effluent monitoring, spray field management, and general regulatory guidance.

Project 2. Ukiah Valley Basin Groundwater Sustainability Plan Development	
Client Name	Ukiah Valley Basin Groundwater Sustainability Agency
Dates of Service	2018-Present

DESCRIPTION



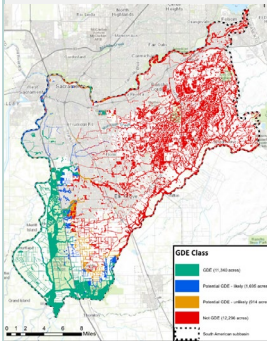
Beginning in 2018, LWA has led a consultant team to work with the Ukiah Valley Basin Groundwater Sustainability Agency (UVBGS) in developing a groundwater sustainability plan (UVBGSP) for the Ukiah Valley groundwater basin. LWA assists UVBGS with evaluating the most cost-and resource-effective plan toward groundwater sustainability in compliance with Sustainable Groundwater Management Act (SGMA) requirements.

A key component of LWA’s effort is the development of the Integrated Hydrological Model for the entire Upper Russian River watershed. The model was developed and calibrated using current groundwater heads and streamflow measurements and is now used to simulate future climate scenarios as well as management scenarios, such as the impact of wastewater and recycled water on groundwater recharge, changes in surface water releases, etc. LWA’s efforts include program management and client coordination; facilitation and outreach; analysis of existing data and evaluation of enhancements to the data collection network; supporting UVBGS with applications for Technical Support Services with the Department of Water Resources; evaluation and improvement of the existing groundwater numerical flow model and water budget; coordination with neighboring subbasins and parallel efforts; development of sustainability goals, measurable objectives and management scenarios; development of UVBGSP implementation plan; and preparation of draft and final UVBGSP.

Extensive communication with UVBGS members and Ukiah Valley stakeholders ensures that groundwater management remains at the local level while sustainably managing groundwater resources.

**Project 3. South American Subbasin Groundwater Sustainability Plan Development**

Client	Sacramento Central Groundwater Authority
Dates of Service	2019-Present

**DESCRIPTION**

LWA is leading a consultant team to work with the Sacramento Central Groundwater Authority (SCGA) in developing a Groundwater Sustainability Plan (GSP) for the South American Subbasin (SASb) on behalf of five local Groundwater Sustainability Agencies (GSAs).

LWA assists the SASb GSAs in completing a cost- and resource-effective plan toward groundwater sustainability in compliance with the 2014 California Sustainable Groundwater Management Act (SGMA). Local knowledge, public outreach, and extensive experience with implementing regulatory policies will help ensure that groundwater management remains at the local level, while simultaneously ensuring the sustainable management of groundwater resources.

LWA's efforts include:

- **Project Management and Administration:** As outlined in the Proposition 1 Grant proposal for the Subbasin's GSP development, LWA manages a consultant team, including management of the schedule and budget, coordination with a GSP Working Group, engagement with stakeholders, and assisting SCGA in meeting grant requirements.
- **Stakeholder Communication and Engagement:** LWA is assisting in the development and implementation of the Communication and Engagement Plan for the project to ensure effective stakeholder engagement, public notification of GSP development activities, public outreach meetings, and GSP planning workshops.
- **Develop Sustainable Management Criteria:** LWA is providing direction and technical support to establish sustainable management criteria (SMC) for five pertinent sustainability indicators, including water quality, subsidence, groundwater levels, groundwater storage, and surface water depletions.
- **Update Existing Management Actions:** LWA is working with SASb GSAs to update and enhance existing management actions for compliance with SGMA. Steps to ensure efficient management outcomes include considering alternative management scenarios using available modeling tools, stakeholder input, and identifying existing groundwater remediation projects and actions. Additionally, LWA plays a key role in ensuring effective interbasin coordination.
- **Improvements to the Monitoring Network:** LWA is compiling available data and information regarding existing monitoring wells and stream gauges and is advising the SASb GSAs on monitoring network options to track conditions and measure success in avoiding undesirable results in the Subbasin.
- **Development of the GSP:** LWA is working closely with the representatives of the SASb GSAs to ensure production of a GSP that addresses local concerns and meets SGMA Regulations. LWA is working with SCGA and DWR to address public comments and concerns.

**RELEVANT SERVICES**

- ✓ Leverage past planning efforts to cost-effectively fulfill groundwater planning requirements in compliance with SGMA
- ✓ Evaluate surface water/groundwater interaction and completion of GDE technical studies using cutting-edge data collection and hydrological models
- ✓ Develop Sustainable Management Criteria (SMCs)
- ✓ Utilize modeling tools to evaluate alternative management scenarios and develop an effective implementation plan





- **Model Development Assistance:** LWA will provide a technical review of a new model for the North American, South American, and Cosumnes Subbasins (CoSANA).

**Evaluation of GDEs and Surface Water Depletion:** LWA will leverage its expertise and experience in other groundwater basins in addressing surface water/groundwater interactions. LWA will develop SMCs for the protection of groundwater-dependent ecosystems (GDEs) and local surface waters. LWA's work will include the development of surface water depletion and GDE technical studies and the identification and development of management scenarios and model runs needed to evaluate actions for the protection of GDEs and surface water depletions.

#### Project 4. Groundwater Recharge Project Omochumne-Hartnell Water District

Client	Omochumne-Hartnell Water District
Dates of Service	2017

#### DESCRIPTION

Omochumne-Hartnell Water District (OHWD) received funding in 2011 to implement a groundwater banking project through a Proposition 84 Integrated Regional Water Management (IRWM) grant submitted by the Regional Water Authority (RWA). As part of an on-call contract, Larry Walker Associates, Inc. (LWA) assisted OHWD in repurposing the existing grant into an off-season irrigation project to enhance aquifer recharge to the underlying groundwater aquifer and the South American and Cosumnes groundwater basins.

LWA has worked on or is currently working on the following activities on behalf of the Water District:

- Ongoing stakeholder coordination
- Putting together RFPs to irrigation system design and monitoring well installation
- Mapping and GIS shapefiles creation
- Site selection and characterization of the recharge site locations
- Regulatory permitting assistance
- Calculations for water application rates
- Overseeing groundwater monitoring network installation and ongoing monitoring implementation

LWA is providing overall project management for the planning, design, engineering, and construction of surface water diversion pumps and conveyances along the lower Cosumnes River and any irrigation design modifications that would allow for groundwater recharge on the identified land parcels.

LWA assisted with installing new or identifying existing monitoring well(s) or monitoring well network(s) in the vicinity of the irrigation flooding to provide a means to assess and quantify groundwater impacts. LWA will directly provide the environmental documentation and compliance with all federal and state environmental regulations necessary to accomplish the work.

#### RELEVANT SERVICES

- ✓ Evaluate surface water/groundwater interaction and completion of GDE technical studies using cutting-edge data collection and hydrological models
- ✓ Utilize modeling tools to evaluate alternative management scenarios and develop an effective implementation plan



### Project 5. Sacramento Stormwater Quality Partnership

Client	City of Sacramento
Dates of Service	1994-Present

#### DESCRIPTION

Larry Walker Associates, Inc. (LWA) has assisted the Sacramento Stormwater Quality Partnership and Co-Permittees with permit-related issues and water quality monitoring since 1992, even before establishing the Partnership. Under separate contracts with the County and City of Sacramento, LWA has provided expertise in NPDES permit-related matters. LWA coordinated or performed the following activities on behalf of the Partnership:

- Permit renewal negotiations,
- Antidegradation analysis,
- Monitoring element of the Stormwater Quality Improvement Plan
- Field monitoring studies
- Water quality objective assessments,
- Database management,
- Preparation of annual data monitoring reports, and
- Communication with Partnership and collaborators.

#### RELEVANCE TO RFP

- ✓ Coordination with client, subcontractors, stakeholders, and Regional Water Board
- ✓ Evaluate water quality
- ✓ Subsurface investigations
- ✓ Groundwater modeling of: flow, fate and transport, impacts, and levels
- ✓ Water management planning

LWA managed the urban runoff monitoring efforts, including oversight of Permittee-led field crews and monitoring equipment, as well as coordinated storm selection with the Coordinated Monitoring Program to ensure that the permit's river monitoring components were fulfilled. LWA led efforts to upgrade sampling equipment at the discharge monitoring sites and a detention basin monitoring site to improve flow measurement and remote sampling control. LWA has also performed urban runoff loading assessments using statistical regression models and a continuous simulation model in 1992, 1996, 2005, 2009, and 2013. Regulatory assistance included attending meetings and preparing summaries and comments of regulatory initiatives. LWA, CDM and PER field staff coordinated equipment and personnel mobilization for monitoring events and performed sample splitting and shipment. LWA developed the Water Quality Assessment Report that was included in the 2013 ROWD, summarizing more than 20 years of Partnership data and providing recommendations for future monitoring program development. LWA supports the Partnership with TMDL implementation, including monitoring investigations. In 2014-2015, LWA assisted the City of Citrus Heights, a member agency, with developing the monitoring portion of the Proposition 84 grant proposal and led the efforts to monitor the pre-and post-project conditions using advanced sensor equipment and low-flow measurement installations. The project was also used to satisfy the Sacramento Stormwater Quality Partnership Delta Methylmercury TMDL control study requirements. LWA provides technical supported related to the Central Valley Regionwide NPDES permit issuance. This work includes an evaluation of Reasonable Assurance Analysis (RAA) requirements and development of a modeling infrastructure that can be used as the basis for monitoring planning, evaluation of proposed management actions, and analysis of receiving water quality trends. LWA currently serves on the Delta RMP Technical Advisory Committee (TAC) for the Partnership.





## 6.2 Understanding of Services and Approach

### 6.2.1.1 Task 1. Well Scheduling

LWA will confirm the well network details with the Authority and schedule the day and time of well monitoring with the landowners. The well monitoring route will be developed to minimize travel time between sites to the extent possible. In the event that the pace of monitoring is quicker than expected, attempts will be made to contact well owners while the field technician is in the field to accommodate monitoring of additional wells on the same day.

### 6.2.1.2 Task 2. Laboratory Coordination

LWA is well qualified to handle laboratory coordination and has extensive history teaming with certified EPA laboratories to complete sampling and analysis projects successfully. Prior to sampling, LWA will receive the appropriate sampling bottles for the first monitoring event and confirm the layout and style of the chain-of-custody (COC) with the laboratory. Blank water will also be received from the laboratory. There is no foreseeable reason to involve a courier pickup of samples if the laboratory is in the general sample collection region (~30 miles).

This proposal assumes that the Authority has selected a laboratory for the project. Laboratory costs for analyzing water quality samples and any additional fees associated with the completion of laboratory reports are not included in this budget. LWA has longstanding relations with a well-qualified laboratory capable of completing this project. If the Authority desires, LWA will utilize this laboratory for this monitoring project. In this event, courier service, as well as sample bottle and blank water drop-off will be provided at no cost, and costs associated with receiving the sample bottles will be removed from the proposed budget.

Sample collection will include environmental samples and quality control samples. Samples from eight wells will be analyzed for Arsenic, Nitrate + Nitrite as N, and Total Dissolved Solids. Six of these wells are non-public water system wells which will also be analyzed for major ions, including Sodium, Chloride, Sulfate, and others. LWA will receive laboratory results in a standard laboratory report format and a standard EDD. A review of the results will include evaluating the laboratory's quality control results (method blanks, laboratory control standards, matrix spike/matrix spike duplicates, replicates, surrogates and holding time), field quality control results (blank/duplicate samples), and sample results.

If issues arise during the review, LWA will communicate with the laboratory to understand and clarify the issue and obtain corrected results if needed. A calibrated field meter will be used to measure field parameters (temperature, electrical conductivity (@25C), dissolved oxygen, pH, oxidation-reduction potential, and turbidity) during well purging. The parameters will be allowed to stabilize during purging so that the variation of each parameter is within the predefined limits. When purging three casing volumes is not practical, the parameters shall be stable for three successive measurements collected at least three minutes apart.

### 6.2.1.3 Task 3. Well Monitoring

LWA staff are skilled in the efficient use of well purging and sampling equipment. Monitoring for water levels will be conducted in May and is anticipated to include monitoring of water levels at 12 water level wells and 7 interconnected surface water wells. Monitoring of water levels and water quality will be conducted in October and is anticipated to include monitoring of water levels at 12 water level wells and 7 interconnected surface water wells and collecting water quality samples from 8 wells (one of which is also a water level well). Immediately following project initiation, LWA staff will schedule visits to wells that have not been previously monitored to ensure that the well is accessible and that water levels and



water quality (where required) can be monitored. Based on the information presented in the Groundwater Sustainability Plan for the Cosumnes Subbasin (December 2021), one water level well has not been monitored, and five water quality wells have not been monitored.

Field staff will perform all data collection and monitoring according to Section 17.2 Protocols for Data Collection and Monitoring of the Groundwater Sustainability Plan for the Cosumnes Subbasin (December 2021) and DWR's Monitoring Protocols, Standards, and Sites BMPs (December 2016). For water levels, depth to water will be measured with a clean electronic sounder with an accuracy of 0.01 ft. For water quality, wells will be purged prior to sample collection. One well included in the water quality network is a monitoring well with no permanent pump. For this well, a clean submersible pump will be used. The seven remaining wells are irrigation, public supply, or domestic wells and have dedicated pumps. Samples from these wells will be collected as close to the wellhead as possible. Field duplicates and field blank samples will be collected and analyzed for quality control purposes. One blank sample and one duplicate sample are recommended to be collected for each analyte during water quality sampling.

Field parameter measurements will be collected using a clean field meter that has been calibrated on the day of sampling and recorded on the field sheets provided by the Authority. Samples from all wells will be collected in prelabelled lab-specified bottles using appropriate sample collection techniques. After collection, sample bottles will be dried, sealed in zip closure polyethylene bags, and placed in a cooler for storage. At the end of each sampling day, samples will be delivered to the laboratory following COC guidelines; it is anticipated that the laboratory will be in the general vicinity of sample collection. As previously noted, LWA commonly works with a well-qualified laboratory capable of completing this project. If the Authority desires, LWA will utilize this laboratory for this monitoring project. In this event, courier service for sample drop-off will be provided at no cost.

LWA has extensive history conducting monitoring and reporting projects and understands the value and long-term cost savings provided by the installation of continuous water level sensors with telemetry or continuous water level data logger systems. During coordination with the Authority, LWA can guide the project benefits and cost tradeoffs associated with installing these systems.

#### **6.2.1.4 Task 4. Field Data Management**

All data collected in the field will be reviewed for accuracy prior to submission to the Authority. The field and water quality data will be provided to the Authority in the prescribed Excel templates (Table 4 and 5, as referenced by the RFP).

#### **6.2.1.5 Task 5. Project Management**

The Assistant Project Manager will manage the overall project to oversee the process of sampling and analysis – people, equipment, materials, and data – from one task to another. As such, the project management task includes (1) regular project updates and communication with the Authority, (2) communication with LWA field personnel before and during sample collection, and (3) regular communication with the laboratory, as necessary, to track sample analysis completion. Also included in the Project Management task are senior-level leadership and guidance. While not included in the proposed budget, LWA has vast expertise in meeting the regulatory requirements associated with monitoring and reporting projects and can provide assistance as necessary to the Authority.

## Appendix A. Key Member Resumes

- Laura Foglia
- Olin Applegate
- Tom Grovhoug
- Andrew Calderwood



## Laura Foglia, Ph.D.

Associate Engineer

### EDUCATION

Ph.D. in Environmental  
Engineering, 2006, ETH Zurich  
Switzerland

M.S., Physics, 1999,  
University of Milan, Italy

### YEARS OF EXPERIENCE

With LWA: 8 years  
With UC Davis: 10 years  
With Technical University  
Darmstadt: 3 years

### PROFESSIONAL AFFILIATIONS

American Geophysical Union  
European Geophysical Union  
IAHS, International Association  
of Hydrological Sciences  
Secretary of International  
Commission of Groundwater,  
IAHS

Dr. Foglia is a Senior Engineer with Larry Walker Associates (LWA) where she assists with projects in the areas of hydrological modelling, groundwater management assistance, and TMDL development. At LWA, she is leading the groundwater services for the Ukiah basin Groundwater Sustainability Agency and for Siskiyou County for the development of their Groundwater Sustainability Plans. She is also involved in the development of the pilot groundwater recharge project for the Omochumne-Hartnell Water districts, and she collaborated on a project with SCGA to develop a continuous monitoring network for groundwater levels in the South American Subbasin. Dr. Foglia worked with Prof. Steffen Mehl on behalf of Sacramento County Water Agency for the development of the testimony regarding the potential impact of the California WaterFix project on the groundwater resources in the South American Basin. She was involved in the first Pilot Project in 2009 that promoted by the Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) coalition, a collaborative basin planning effort aimed at protecting vulnerable and essential water resources. Since January 2016, Dr. Foglia is also an Adjunct Faculty Staff in the Land, Air, and Water Resources (LAWR) Department at University of California, Davis where she teaches a graduate class on model calibration.

#### *Ukiah Valley Basin Groundwater Sustainability Plan*

Dr. Foglia is engaged with the Ukiah Valley Groundwater Sustainability Agency for the development and implementation of their GSP. The plan for the Ukiah valley was submitted in January 2022 and it focuses on river/aquifer interactions, groundwater dependent ecosystems, and decrease in water levels as possibly most important undesirable results. Dr. Foglia is managing the project and playing an active role in the development of the numerical model.

#### *Siskiyou County Groundwater Sustainability Plan*

Dr. Foglia is working with Siskiyou county staff and with UC Davis for the development and implementation of the GSPs for three basins: Scott valley, Shasta valley and Butte Basin. All the basins are defined as medium priority and their plans has been submitted in January 2022. As in Ukiah, the main focus is on understanding river/aquifer interactions, and groundwater dependent ecosystems. Dr. Foglia is managing the project and playing an active role in the stakeholders engagement process as well as in the development of the numerical model.

#### *Scott Valley Groundwater Study, Scott Valley, CA*

As part of the LAWR Department at UC Davis, Dr. Foglia provided research services for the Scott Valley groundwater/surface water management project, funded by the North Coast Regional Water Quality Board. The aim of the project is to assist the Scott Valley community with the development of a groundwater management plan that can lead to better streamflow conditions mainly during the summer months, preserving the water needed for agriculture activity. Dr. Foglia assisted with the development of a new GIS-



based, irrigation driven, conceptual model for the analysis of the soil and water balance in the Scott Valley watershed. She worked closely with the stakeholders, communities, and landowners.

***Sacramento County Water Agency California WaterFix Groundwater Modeling Impact Assessment Support***

Dr. Foglia teamed with Prof. Steffen Mehl to support the Sacramento County Water Agency in the Evaluation of the potential impact of the California WaterFix project on the groundwater system in South American Subbasin. Existing models for the entire Central Valley (CVHM) and for the Delta region (CVHM-D) have been extensively used and results analyzed to demonstrate whether the potential impact of the project on water resources (mostly river/aquifer interactions) has been properly considered by the Petitioners. A testimony and a surrebuttal testimony have been submitted as results of this study.

***Omoichumne-Hartnell Water District: on-call engineering services***

Dr. Foglia is managing the in-call engineering services contract with OHWD. Work includes the repurpose of an existing Proposition 84 grant Integrated Regional Water Management to design an off-season irrigation project to enhance aquifer recharge to the underlying groundwater aquifer and the South American and Cosumnes groundwater basins. The project includes repurpose of the grant, development of the RFPs for the construction services, groundwater monitoring design, stakeholder coordination.

***Omoichumne-Hartnell Water District and Sloughhouse Resource Conservation District Basin Boundary adjustment***

Dr. Foglia, together with the LWA team, assisted Omoichumne-Hartnell Water District (OHWD) and Sloughhouse conservation district (SRCD), in putting together and submitting a jurisdictional and scientific basin boundary adjustment request for the Cosumnes Subbasin's northern boundary, located along the Cosumnes River, to DWR in 2016. The project involved the development of technical material as well as the preparation of stakeholders meetings to support the boundary adjustment request.

***CV-SALTS Salt & Nitrate Sources Pilot Implementation Study, Central Valley, CA***

Dr. Foglia managed and performed analysis of salt loads in the Central Valley aquifers for the completion of a Salt and Nitrate Sources Pilot Implementation Study on behalf of the Central Valley Salinity Coalition (CVSC) to help develop a Basin Plan Amendment (BPA) to address the issue of salt and nutrient management in California's Central Valley. The resulting methodology provided a defensible means to relate downstream impacts to upstream sources in watersheds. The objectives were to develop and document procedures and methodologies to quantify the significant salt and nitrate sources in the Central Valley and to pilot test them by applying them in three areas to validate the region-wide applicability.

***Work History***

Larry Walker Associates, Inc., Senior Engineer. 2007-present

Adjunct Professor, Land Air and Water Resources, UC Davis. Jan. 2016 - present

Technical University of Darmstadt, Germany, Assistant Professor w/o tenure track, research group of Prof. Christoph Schueth. March 2013-Dec. 2015

Department of Land, Air and Water Resources Davis, Post-Doctoral associate, Prof. Tim Ginn. 2007-2009, Prof. Thomas Harter. Aug. 2011-June 2013



**LARRY WALKER  
ASSOCIATES**

science | policy | solutions

**Agenda Item #7**

## Olin Applegate

### Project Scientist II

#### EDUCATION

M.S., Hydrologic Science, 2014,  
University of California Davis

B.S., Environmental Policy  
Analysis and Planning, 2010,  
University of California Davis

#### YEARS OF EXPERIENCE

With LWA: 7 years  
With other Firms: 2 years

#### SPECIALIZED TOOLS

ArcGIS, Spatial Analyst

#### PROFESSIONAL AFFILIATIONS

Member, Groundwater  
Resources Association of  
California

Mr. Applegate is a Project Scientist and hydrologist with work experience at LWA in the groundwater, agriculture, watershed, and stormwater service areas. Mr. Applegate's experience at LWA includes assisting clients with SGMA compliance, Regional Water Board negotiation during Waste Discharge Requirements renewals, stormwater permit compliance, TMDL compliance assessment, NPDES permit assistance, completion of groundwater technical reports, monitoring and reporting programs, and water quality assessments. Mr. Applegate provides a range of services including data management and analysis, participation in monitoring and special studies, compliance and communication with Regional Waterboards, and regulatory analysis. Prior to LWA, Mr. Applegate modeled impacts to groundwater quality from agricultural production in the Central Valley.

#### Groundwater and Agriculture

##### *South American Subbasin GSP Development, 2020 - Present*

Assisted with GSP development for the South American Subbasin. Work included adapting the previously submitted Alternative Plan into a successful GSP that meets DWR SGMA requirements. Served as the task manager for technical work including water quality analysis and monitoring well network development. Additional technical work was performed to identify groundwater dependent ecosystems via satellite imagery analysis, and to monitor the dynamics of interconnected surface-water depletion.

##### *Sierra Valley Subbasin GSP Development, 2020 - Present*

Assisted with GSP development for the Sierra Valley Subbasin to satisfy DWR SGMA requirements. Work included subbasin groundwater quality analysis, subsidence characterization, development of Sustainable Management Criteria (SMC), and design and expansion of the groundwater monitoring network. Extensive technical work was conducted by Mr. Applegate to understand groundwater quality dynamics in the subbasin and to put forth robust SMCs that ensure significant and unreasonable effects do not degrade the subbasin. Mr. Applegate coordinated work efforts between multiple firms during the project, and acted as liaison to communicate with DWR staff regarding regulatory requirements and planning efforts.

##### *City of Palm Springs, WDR Technical Studies 2017- Present*

In response to Colorado Regional Board requirements Mr. Applegate is completing a series of technical reports that examine the impact to groundwater from the City's WWTP percolation ponds. Work includes completion of a groundwater technical report that characterizes groundwater quality in the region of the WWTP, as well as a fate and transport investigation of nitrogen. Mr. Applegate analyzed groundwater dynamics



monitored from wells surrounding the WWTP to determine if the network accurately monitors the impacts from recharge. Further assessments included a non-parametric analysis of groundwater quality data, and multiple effluent loading scenarios to determine if the percolation ponds cause impairments in the receiving groundwater.

***Ventura County Agricultural Irrigated Lands Group, 2015 – Present***

Assisted the Ventura County Agricultural Irrigated Lands Group in responding to Waste Discharge Requirements pertaining to monitoring and reporting of discharges from irrigated agricultural lands. Mr. Applegate assisted in updating the Monitoring and Reporting Plan, aided in the production of the Annual Monitoring Report, and completed GIS work required for analysis and reports. Completion of the Annual Monitoring Report included the analysis of 10 TMDLs.

***City of Santa Paula, 2017-2018***

In response to LA Regional Board requirements Mr. Applegate developed the Groundwater Monitoring and Reporting Program for the City of Santa Paula's Wastewater Recycling Facility. Work included evaluation of existing subbasin assimilative capacity and baseline groundwater quality, identification of existing regional monitoring programs and data, assessment of land use, and the identification of existing wells to satisfy groundwater monitoring requirements.

**Wastewater**

***Western Riverside County Regional Wastewater Authority, Local Limits Analysis 2020***

Mr. Applegate served as the assistant project manager for industrial local limits sampling from the WRCRWA facility. Mr. Applegate conducted the sampling of water quality and biosolids, and coordinated with laboratories to ensure the project's analytical and reporting requirements were met.

**Stormwater**

***Coordinated Integrated Monitoring Program, Upper San Gabriel River, Los Angeles County, 2019 – Present***

Served as the assistant project manager providing MS4 permit support to the USGR Enhanced Watershed Management Program Group. Responsibilities include organizing and leading TMDL and stormwater monitoring efforts, analysis of water quality results, reporting of monitoring efforts, coordinating with subconsultants, laboratories, and field crews, oversight of semi-annual and annual data reports

***Sacramento Stormwater Quality Partnership, Sacramento, 2014 – 2016***

Preparation of monitoring stations including the installation of in-situ continuous water quality field probes, weirs, and auto-samplers. Compiled and managed water quality and flow data, and compiled channel geometry data.

**Relevant Experience Prior To Larry Walker Associates**

**Papers**

Applegate, O., Harter, T. 2014. Impact of Dairy Farming on Groundwater Salinity in California's Central Valley - A Mass Balance Approach. M.S. Thesis. University of California Davis. 2014.



#### EDUCATION

M.S., Civil Engineering, 1975,  
University of California, Davis

B.S., Civil Engineering, 1973,  
University of California, Davis

#### REGISTRATIONS

Civil Engineering, State of  
California, No. 27901

#### YEARS OF EXPERIENCE

With LWA: 38 years  
With other Firms: 7 years

#### PROFESSIONAL AFFILIATIONS

Member, Water Environment  
Federation

Member, California Water  
Environment Association

Associate Member, California  
Association of Sanitation  
Agencies

Member, National Association  
of Clean Water Agencies

Member, Association of  
California Water Agencies

Member, Groundwater  
Resources Association

Member, Northern California  
Society of Environmental  
Toxicologists and Chemists

Member, SWRCB Nutrient  
Policy Stakeholder Advisory  
Committee

As a Senior Executive and Past President of LWA, Mr. Grovhoug supports the leadership of the company and the overall quality of technical work performed by the firm. His work for numerous municipal and private clients over the past 40 years at LWA has focused on water quality and water resource issues: watershed and groundwater management and planning, engineering analysis, permitting, monitoring, and policy development. In his frequent role as either a project manager or project advisor, he is responsible for project team leadership and management, client communications, budgeting, scheduling, regulatory agency communications, public presentations, and product quality.

Mr. Grovhoug is a registered civil engineer with broad experience in the planning, permitting and development of a variety of water management projects, including work with numerous stakeholder groups in the development of Basin Plan amendments, water quality objectives, modeling studies and water quality monitoring programs. He is an expert in the federal Clean Water Act, California Porter Cologne Act, Basin Planning, NPDES permitting and waste discharge requirements.

He has worked on a wide range of projects over the past 40 plus years on behalf of California clients, including antidegradation analyses, economic analyses, water quality impact assessments, and numerous special studies. His expertise includes collaborative policy and management plan development working with regulators, municipal, agricultural and non-governmental organizations on a variety of projects.

#### Wastewater

***Sacramento Regional County Sanitation District, Development of Delta Drinking Water Policy and Basin Plan amendment (2002-2013)***

***NPDES permit renewal assistance, Sacramento Regional County Sanitation District, project manager and/or strategic advisor. Led team to address NPDES permit Compliance issues, develop and implement negotiation strategies, and perform a wide range of regulatory policy services (1990 to 2022)***

***Permitting and Regulatory Advocacy Special Project, Central Valley Clean Water Association, project manager. Led team working on NPDES permit issues, compliance strategies and regulatory policy development (2004-2022)***

***NPDES permit renewal assistance, for the cities of Manteca, Grass Valley, Tracy, Yuba City, Roseville, Vacaville and numerous other California Central Valley and Bay Area municipalities, project manager or advisor. (1990-2022)***

***Harvest Water Program Technical and Permitting Services, Sacramento Regional County Sanitation District, project manager. Led assessment of water quality benefits of Harvest Water***





*effort to provide recycled water to agricultural users in Southern Sacramento County, supported application for Proposition 1 Water Storage Investment Program funding, assisted in development of permitting strategy for program. (2017-2022)*

*Nutrient Policy Development for the Sacramento-San Joaquin Delta Sacramento County Regional Sanitation District, project manager. Provided Technical and Policy support, collaborated with stakeholders and Central Valley Water Board staff. Participated in Technical Advisory Group (2013-2022)*

*Biostimulatory and Biointegrity Policy Development, Central Valley Clean Water Association (CVCWA), project manager. Provided technical and policy support for policy development for Wadeable Streams, Inland Surface Waters of California. Member of Stakeholder Advisory Group (2012-2022)*

*Biostimulatory and Biointegrity Policy Development, California Association of Sanitation Agencies (CASA), project manager. Provided technical and policy assistance to support the policy development effort for wadeable Inland Surface Waters of California (2013-2015)*

*Freshwater Mussels Special Project, Central Valley Clean Water Association, project manager. Worked with regulators, stakeholders and consultant team to develop NPDES permitting and policy strategies for implementation of USEPA 2013 ammonia criteria, including development of site-specific ammonia criteria for the Central Valley (2014-2019)*

*Variance Policy and Streamlined Salinity Variance for Central Valley, Central Valley Clean Water Association (CVCWA), project manager. Led effort to perform technical analyses to support the development of a Basin Plan amendment to adopt the Variance Policy and Streamlined Salinity Variance. Assessed management scenarios for control of salinity in Sacramento-San Joaquin Delta to meet water quality objectives (2012-2013)*

*Regulatory Strategy to support implementation of the Nutrient Management Strategy for San Francisco Bay, Bay Area Clean Water Agencies (BACWA), project manager. Led development of policy analyses, prepared memoranda, and coordinated with BACWA representatives and staff of the San Francisco Bay Water Board. (2013)*

*Delta Drinking Water Policy, Sacramento Regional County Sanitation District, project manager. Provided technical and policy support for the development of the policy and an associated successful Basin Plan amendment. Worked with regulators and stakeholders to assess need for new water quality objectives for total organic carbon and pathogens using water quality modeling tools and evaluation of management scenarios (2002-2013)*

## **Groundwater**

*Groundwater Sustainability Plan (GSP) for the South American Subbasin, project administered by Sacramento Central Groundwater Authority (SCGA), project manager. Led consultant team to develop a GSP to fulfill requirements of Sustainable Groundwater Management Act (SGMA). Used modeling tools to evaluate future project scenarios to determine effectiveness in achieving sustainability of groundwater subbasin. (2020-2021)*

## Andrew Calderwood, EIT

### Project Engineer I-A

#### EDUCATION

Ph.D., Physical Hydrology,  
Expected 2023,  
University of California Davis,  
Davis, CA

B.S., Civil and Environmental  
Engineering, 2019,  
University of California Davis,  
Davis, CA

#### REGISTRATIONS

EIT, CA,  
No. 171128

#### YEARS OF EXPERIENCE

With LWA: 1 year  
With other Firms: 4 years

#### PROFESSIONAL AFFILIATIONS

GRAC, Member  
ASCE, Member

#### SPECIALIZED TOOLS

Primary: Python, R, QGIS,  
Secondary: ArcGIS, AutoCAD

Mr. Calderwood is a Project Engineer in the groundwater and water resources fields at LWA. He has almost 4 years of experience in the monitoring and assessment of groundwater conditions relevant to recharge site implementation and regional groundwater planning. He is the Task Lead for the development and continued update of integrated hydrologic models in the support of Groundwater Sustainability Plan Implementation, along with the application of integrated hydrologic modeling to facilitate project management action scenario testing. He facilitates recharge project permit renewal and reporting, including field monitoring for the duration of the project.

#### Groundwater

##### ***Groundwater Basin GSP, Butte Valley. 2021 - Present. Siskiyou County, CA.***

Technical task lead for Chapter 2 of the GSP, including developing the MODFLOW model for the basin and basin water budget. Engaged in developing the GSP for the medium-priority Butte Valley Groundwater Basin due in January 2022. The plan deals mainly with groundwater recharge and pumping dynamics and subsurface outflow to an adjacent basin while providing sustainable criteria for the other five undesirable results.

##### ***Groundwater Basin GSP, Shasta Valley. 2021 - Present. Siskiyou County, CA.***

Technical task lead for Chapter 2 of the GSP, including the continued development of the loosely coupled MODFLOW - PRMS model for the basin and basin water budget. Engaged in developing the GSP for the medium-priority Shasta Valley Groundwater Basin due in January 2022. The plan deals mainly with surface water and groundwater interaction and streamflow depletion while providing sustainable criteria for the other five undesirable results.

#### Water Resources

##### ***Groundwater Recharge Projects, Omochumne-Hartnell Water District. 2020 – Present. Wilton, CA.***

Task lead for the Omochumne-Hartnell Water District (OHWD) Groundwater Recharge project maintaining recharge monitoring equipment and preparing measured data for board review. The project includes monitoring soil moisture, temperature and EC, groundwater elevation, evapotranspiration and applied water. He manages the temporary diversion permit reporting to the State Board to quantify and justify water diverted for groundwater recharge, along with aiding the renewal of the temporary diversion permit.



## **Publications**

Calderwood, A. J., Pauloo, R. A., Yoder, A. M., & Fogg, G. E. (2020). "Low-cost, open source wireless sensor network for real-time, scalable groundwater monitoring." *Water*, 12(4), 1066.  
<https://doi.org/10.3390/w12041066>

## **Presentations & Workshops**

American Geophysical Union, Fall Conference 2021, New Orleans, LA, December 14, 2021, *Influence of hydrogeologic structure on long-term sustainable groundwater elevations for a moderate-altitude rain-fed groundwater basin under climate change*, Andrew Calderwood, Bill Rice, Bradley Simms, Cab Esposito, Thomas Harter and Laura Foglia.

Groundwater Resources Association of California, Western Groundwater Conference Fall 2021, Burbank, CA, September 14, 2021, *Using groundwater-surface water modeling to compare groundwater recharge design alternatives to improve stakeholder decision making on multi-benefit projects*, Andrew Calderwood, Maribeth Kniffin and Laura Foglia.

## **Work History**

### ***University of California Davis, Graduate Student Researcher, 2019-present***

Worked with python and R to acquire, clean and prepare large hydrologic datasets to develop a groundwater-surface water model using MODFLOW. Installed in-channel pressure transducers to capture stream stage and stream wave arrival times and managed various soil sensors to monitor on-farm groundwater recharge

### ***University of California Davis, Research Assistant, 2017-2019***

Managed pressure transducers in a variety of groundwater wells and installed telemetry equipment to support a near real-time groundwater monitoring dashboard. Updated and organized continuous groundwater level data while analyzing seasonal and long-term trends to understand the impact of evapotranspiration on shallow groundwater.



March 16, 2022

Stephen Julien  
stephen@cosumnesgroundwater.org  
Cosumnes Groundwater Authority  
Elk Grove, CA 95624

Dear Mr. Julien:

MLJ Environmental is pleased to provide the attached response to the Cosumnes Groundwater Authority Request (CGA) for Proposals – 2022 Semiannual Groundwater Monitoring Events. MLJ Environmental has the experience and technical skills to complete the work as outlined in the RFP including scheduling, laboratory coordination, and well monitoring services. Our experience in the Central Valley and Central Coast, including experience sampling the wells in the Cosumnes Subbasin for the Southeast Sacramento County Agricultural Water Authority, demonstrates our ability to collect water quality sample and groundwater levels within the requirements prescribed in the RFP and ensure high quality data to meet the needs of the CGA.

We look forward to discussing this with you further and appreciate your consideration.

Sincerely,

A handwritten signature in black ink on a yellow rectangular background. The signature appears to read "Melissa Turner".

Melissa Turner  
Vice President, MLJ Environmental  
[mturner@mljenvironmental.com](mailto:mturner@mljenvironmental.com)  
O: 530-756-5200 C: 916-607-5602



## Proposal for Semiannual Groundwater Monitoring Events

*Submitted to:*

**Cosumnes Groundwater Authority**

8970 Elk Grove Blvd

Elk Grove, CA 95624

March 16, 2022

*Submitted by:*

**MLJ Environmental**

1480 Drew Ave Suite 130

Davis, CA 95618

530.756.5200

[mljenvironmental.com](http://mljenvironmental.com)





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## General Firm Information

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### Firm Experience

MLJ Environmental is submitting this proposal to conduct semiannual groundwater monitoring on behalf of the Cosumnes Groundwater Authority. MLJ Environmental currently provides well monitoring services for multiple Central Valley ILRP Agricultural Coalitions including East San Joaquin Water Quality Coalition (ESJWQC), the San Joaquin County and Delta Water Quality Coalition (SJCDWQC), and the Westlands Water Quality Coalition (WWQC). In addition, MLJ Environmental has conducted well monitoring in the Central Coast for the Central Coast Groundwater Coalition (CCGC) and for the Southeast Sacramento County Agricultural Water Authority as part of the Cosumnes Subbasin Well Monitoring.

#### *MLJ ENVIRONMENTAL's groundwater experience includes the following agencies:*

- *San Joaquin County & Delta Water Quality Coalition*
- *East San Joaquin Water Quality Coalition*
- *Westlands Water Quality Coalition*
- *Westside San Joaquin River Watershed Coalition*
- *Sacramento Valley Water Quality Coalition*
- *Central Coast Groundwater Quality Coalition*
- *Central Valley Groundwater Monitoring Collaborative*

MLJ Environmental can provide all groundwater quality monitoring and reporting services without utilizing any subcontractor other than Caltest Laboratory. MLJ Environmental works directly with Caltest including the management and payment of invoices. MLJ Environmental has a long history of working with various laboratories within California, and they consistently provide high quality service and are on-time with results. When issues arise, these laboratories are willing to review and correct laboratory reports, or even reanalyze samples at no cost.

### SOUTHEAST SACRAMENTO COUNTY AGRICULTURAL WATER AUTHORITY – COSUMNES SUBBASIN WELL MONITORING

In 2021, MLJ Environmental performed well monitoring for the Southeast Sacramento County Agricultural Water Authority (SSCAWA) in the Cosumnes Subbasin. MLJ Environmental scouted locations, worked with the groundwater technical consultants (EKI), and worked out the logistics to perform sampling in both May and October 2021. The samples were analyzed by Caltest Laboratory and field sheets shared with EKI and SSCAWA. MLJ Environmental coordinated with the laboratory, landowners, and technical consultants to provide the required data and associated documentation.

### SAN JOAQUIN COUNTY AND DELTA WATER QUALITY COALITION

MLJ Environmental has been providing technical services to the San Joaquin County and Delta Water Quality Coalition (SJCDWQC) since 2004 to ensure compliance with the Irrigated Lands Regulatory Program (ILRP). MLJ Environmental has helped negotiate the current WDRs and has been the technical lead on many of the required documents including the Annual Groundwater Monitoring Report, Groundwater Quality Management Plan, and the Groundwater Quality Assurance Project Plan (QAPP). MLJ Environmental provides has participated in the development of the Groundwater Assessment Report and the Groundwater Quality Trend Monitoring Work Plan and performs the groundwater

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sampling of 41 wells, as part of annual compliance monitoring. In addition, MLJ Environmental performs quality assurance oversight, data management, data storage, and analysis of the results.

SAN JOAQUIN COUNTY AND DELTA WATER QUALITY COALITION	
<b>Years Performed</b>	2004 – present
<b>Firm Role</b>	Lead contractor for monitoring and reporting program, technical lead
<b>Team Member / Responsibility</b>	Melissa Turner / Senior Program Manager
	Anthony Brillante / Groundwater Sampling Coordinator
	Jennifer Glenn / Groundwater Data Management
<b>Project Contact</b>	Michael Wackman   916.716.1358   michael@wackmanconsulting.com
	Fax Number: Not Available
<b>Contact Address</b>	3290 North Ad Art Rd   Stockton, CA   95215

## CENTRAL COAST GROUNDWATER COALITION

Working with the Central Coast Groundwater Coalition, MLJ Environmental has perhaps the best understanding of anyone in the state of the needs of groundwater trend monitoring programs, and the effort required to sample hundreds of wells across a large geographical region. In addition, MLJ Environmental developed all of the tools necessary to implement a monitoring program including groundwater monitoring Quality Assurance Project Plans (QAPP), Sampling and Analysis Plans, and databases for storing data on wells and well owners, including demographic information, exact location, water quality, exceedance notifications consistent with those used by the Central Coast Regional Water Quality Control Board. From 2013 through 2020, MLJ sampled over 2,600 wells including both domestic and irrigation wells.

CENTRAL COAST GROUNDWATER COALITION	
<b>Years</b>	2013 – 2020
<b>Firm Role</b>	Lead contractor for groundwater monitoring and reporting program, providing oversight of subcontractors for groundwater technical services.
<b>Team Member / Responsibility</b>	Melissa Turner / Senior Program Manager
	Anthony Brillante / Groundwater Sampling Coordinator
	Jennifer Glenn / Groundwater Data Management
<b>Project Contact</b>	Parry Klassen   559.646.2224   klassenparry@gmail.com
	Fax Number: Not Available
<b>Contact Address</b>	Address no longer available

## EAST SAN JOAQUIN WATER QUALITY COALITION

As the technical lead to the East San Joaquin Water Quality Coalition, MLJ Environmental has worked on the first WDR for a third-party group in the Central Valley and provided technical oversight with the development of the first Groundwater Assessment Report and GQTMP Work Plan in the Central Valley. MLJ conducts both surface and groundwater monitoring for the ESJWQC, manages various laboratories and associated data, reports to the Regional Water Board on water quality exceedances, maintains and implements both the surface and groundwater management plans, and is working with the ESJWQC and other coalitions to develop Groundwater Protection Formulas, Values and Targets. MLJ Environmental performs annual groundwater monitoring for the ESJWQC which includes 38 wells and reports on these results in a Groundwater Annual Monitoring Report. Sampling occurs in a variety of wells including some wells that are part of local Groundwater Sustainability Plans. Sampling techniques include traditional purging as well as passive sampling using HydraSleeves.



<b>EAST SAN JOAQUIN WATER QUALITY COALITION</b>	
<b>Years Performed</b>	2004 – present
<b>Firm Role</b>	Lead contractor for monitoring and reporting program
<b>Team Member / Responsibility</b>	Melissa Turner / Senior Program Manager
	Anthony Brillante / Groundwater Sampling Coordinator
	Jennifer Glenn / Groundwater Data Management
<b>Project Contact</b>	Caitie Diemel   209.522.7278   caitiec@stanfarmbureau.org
	Fax Number: Not Available
<b>Contact Address</b>	1201 L. St   Modesto, CA   95354

## Project Team and Relevant Experience

MLJ Environmental is an environmental consulting company located in Davis, CA. MLJ Environmental has been providing technical services since 2003. The three partners in the company, Michael Johnson, Ph.D., Francisca Johnson, Ph.D., and Melissa Turner, M.S., are joined by 29 employees in providing technical support to clients. Although MLJ Environmental works with both point source and non-point source dischargers including cities, counties, non-profits, and agricultural coalitions.

The MLJ Environmental project team includes Ms. Melissa Turner, Mr. Richard Newens, Mr. Anthony Brillante, and Ms. Jennifer Glenn (See Appendix I for individual resumes).

## STAFF RESPONSIBILITIES

Melissa Turner is the Senior Program Manager and oversees day-to-day activities associated with the project. Ms. Turner ensures that monitoring is completed according to standard operating procedures and assesses corrective actions as necessary. She will communicate with the CGA regarding the status of monitoring, timelines, and overall budget. Anthony Brillante is the Groundwater Sampling Coordinator (Environmental Scientist III) and will determine the logistics of sampling, coordinate with landowners and agencies for access to wells, ensure that representative samples are collected, and perform both water collection and water level measurements. Mr. Brillante will ensure that field sheets and chains of custody are filled out completely and accurately and coordinate the delivery of samples to the laboratory within hold time and at within temperature requirements. Jennifer Glenn is a Data Analyst II and will ensure that the data received by Caltest are accurate and complete per the project specifications. Ms. Glenn will ensure communication between the laboratory and samplers to ensure the proper analysis is performed and invoices are billed correctly. Ms. Glenn will assist with field paperwork and scheduling for efficient tracking of samples.

All resumes for key personnel are attached in Appendix I.

## SUBCONSULTANTS AND CONTRACTED LABORATORIES

MLJ Environmental will send samples for water quality analysis (nitrate+nitrite as N, total dissolved solids, arsenic, cations, and anions) to Caltest Laboratory located in Napa, CA. Caltest is ELAP accredited and has a long-standing relationship with MLJ Environmental. Caltest provides a courier to pickup samples from the MLJ Environmental office in Davis, CA at no additional fee.

## Level of Effort

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MLJ Environmental staff will perform well monitoring and submit samples requiring water quality analysis to Caltest Laboratory (Napa, CA). The cost estimate includes expenses for vehicles, sampling equipment, meters and laboratory analysis. Based on information provided by EKI, MLJ Environmental staff will collect water levels from 25 wells and water quality plus water levels from 6 wells. A single field duplicate and field blank sample are included in the estimate.

Sampling will occur in May and October 2022. We have estimated 4 days to collect the water levels and water quality samples. Water levels can be collected by a single person; however, two samplers are needed to collect the water samples and purge the wells. Due to Covid-19, MLJ Environmental sends out samplers in separate vehicles; vehicle charges are included in the Other Direct Costs in Table 1 and detailed in Table 2. There is a single well which will require the rental of a submersible pump. We have estimated that it may take up to 6 hours to purge this well; therefore, this well will be sampled by itself and the other 5 wells on a different day.

### Task 1. Well Scheduling

MLJ Environmental will receive well network details from the CGA and use this information to upload the well network into our Monitoring Information System (MIS). The MIS allows the samplers to record information regarding when each well will be sampled and the estimated drive time between each well. This system allows the sampling coordinator to record ancillary information regarding the best time to contact the well owner and any other pertinent information regarding well access and scheduling. This information is also used to pre-populate Chain of Custody forms and field sheets reducing potential transcription errors in the field.

### Task 2. Laboratory Coordination

MLJ Environmental will be responsible for coordinating with Caltest Laboratory to receive bottles, coordinate courier pickup of samples and receive laboratory results. Caltest will provide a laboratory report (pdf) and Electronic Data Deliverable (EDD) once the analysis is complete. MLJ Environmental will check that all the samples were received and analyzed prior to sending the results to CGA. If any issues are found with the report, MLJ Environmental will coordinate with Caltest to revise the report prior to submitting to CGA.

### Task 3. Well Monitoring

It is expected that all wells will be monitored over 4 days in May and then again in October. Prior to the first event in May, MLJ Environmental will visit wells that have not been previously visited to ensure that the well can be accessed for water levels and water quality (when water quality samples are required). MLJ Environmental will prepare all necessary sampling equipment including field meters, sampling tools and submersible pump (when needed) following standard operating procedures. Water levels will be collected on Day 1 and 2 and water quality samples collected on Day 3 and 4.

### Task 4. Field Data Management

MLJ Environmental will provide the CGA copies of the completed COC and field sheets. The field and water quality data will be provided in the two prescribed Excel templates for water quality and water level provided by CGA. MLJ Environmental will double check the entered field data to ensure accuracy.

## Task 5. Project Management

Ms. Melissa Turner will coordinate with the CGA regarding timing and logistic of sampling and status of project deliverables. Time includes attending meetings as necessary and communicating via email and/or phone calls. Invoices will be submitted monthly by the 15<sup>th</sup> of the following month.

## Budget

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The cost estimate included in Table 1 provides an annual cost for all tasks associated with this project: Well Scheduling, Laboratory Coordination, Well Monitoring, Field Data Management, Project Management, and Sampling Expenses. Table 2 includes details on Other Direct Costs (sampling expenses) and laboratory analytical costs. MLJ Environmental charges on a time and materials basis.

## Total Cost Estimate

The cost estimate for the project includes all direct and indirect costs. MLJ Environmental does not charge overhead. Table 1 lists the cost estimates for tasks specified in the scope of work.

Table 1. Budget for Monitoring Wells in the Cosumnes Subbasin in May and October 2022.

Task	Subtask	Project Role	Hourly Rate	Hours	Cost
Task 1. Well Scheduling	Well Network Updates and Schedule	Data Analyst	\$135.00	6.00	\$810.00
Task 1. Well Scheduling	Well Network Updates and Schedule	Staff Scientist III	\$135.00	40.00	\$5,400.00
Task 2. Laboratory Coordination	Tracking/Filing Reports	Staff Scientist III	\$135.00	4.00	\$540.00
Task 2. Laboratory Coordination	Data Completeness Review	Staff Scientist III	\$135.00	4.00	\$540.00
Task 3. Well Monitoring	Reconnaissance	Staff Scientist III	\$135.00	6.00	\$810.00
Task 3. Well Monitoring	Sampling including Preparation / Cleanup	Staff Scientist III	\$135.00	39.50	\$5,332.50
Task 3. Well Monitoring	Sampling including Preparation / Cleanup	Staff Scientist II	\$115.00	21.00	\$2,415.00
Task 4. Field Data Management	Field Data Management	Staff Scientist III	\$135.00	8.00	\$1,080.00
Task 4. Field Data Management	Laboratory Data Management	Data Analyst	\$135.00	6.00	\$810.00
Task 5. Project Management	Project Management	Senior Program Manager	\$165.00	8.00	\$1,320.00
Other Direct Costs <sup>1</sup>	Sampling Supplies including Submersible Pump				\$4,450.00
Analytical Costs <sup>1</sup>	Caltest Laboratory Costs				\$8,527.20
TOTAL					\$32,034.70

<sup>1</sup> See Table 2 for details regarding ODCs and Analytical Costs.

**Agenda Item #7***Table 2. Budget Details Associated with Table 1 for Other Direct Costs and Analytical Costs.*

Budget Details	Sampling Day	Rate	Count	Cost
<b>Other Direct Costs</b>				
Water Level Meter	1,2,3,4	\$50.00	4.00	\$200.00
Turbidimeter	3,4	\$50.00	2.00	\$100.00
YSI	3,4	\$75.00	2.00	\$150.00
Truck	1,2,3,4	\$135.00	6.00	\$810.00
Gas	1,2,3,4	\$50.00	6.00	\$300.00
Ice	3,4	\$25.00	2.00	\$50.00
Filters	3,4	\$30.00	3.00	\$90.00
Submersible Pump (GeoTech)	4	\$185.00	1.00	\$185.00
Tubing	4	\$0.58	500.00	\$290.00
Miscellaneous (batteries, rite n rain paper, calibration liquid)				\$50.00
<b>Subtotal per event</b>				<b>\$2,225.00</b>
<b>Total Cost for 2 events</b>				<b>\$4,450.00</b>
<b>Analytical Costs (Caltest Laboratory)</b>				
Nitrate + Nitrite	3,4	\$42.00	8.00	\$336.00
Arsenic	3,4	\$31.08	8.00	\$248.64
Total Dissolved Solids	3,4	\$46.20	8.00	\$369.60
Major Anions/Cations	3,4	\$341.70	8.00	\$2,733.60
Metal Digestion (required if samples are turbid)	3,4	\$23.52	8.00	\$188.16
Laboratory Management Fee (10%)				\$387.60
<b>Subtotal per event</b>				<b>\$4,263.60</b>
<b>Total Cost for 2 events</b>				<b>\$8,527.20</b>

## MLJ Environmental Rate Sheet – 2022

MLJ Environmental will submit monthly invoices by the 15<sup>th</sup> of each month for the work performed in the prior month.

### LABOR CLASSIFICATIONS

### RATE PER HOUR

Principal .....	210
Senior Program Manager .....	165
Database Administrator.....	165
Senior Scientist.....	155
Program Manager .....	155
Senior Developer .....	150
Senior Project Manager .....	145
Database Programmer .....	140
Data Specialist .....	140
Junior Project Manager .....	135
GIS Specialist .....	135
Web Developer/Cloud Architect .....	135
Senior Staff.....	135
Staff Scientist III / Data Analyst II .....	135
Staff Scientist II / Data Analyst.....	115
GIS Technician.....	115
Staff Scientist.....	90
Administrative Assistant.....	75

### OTHER DIRECT CHARGES

Personal Vehicle Mileage .....	\$0.56/mile*
Travel and Subsistence .....	Actual Cost
4-Wheel Drive Truck Rental.....	\$135.00 per day
Truck Rental Less than 6 hours.....	\$22.50 per hour
Van Rental .....	\$115.00 per day
Van Rental Less than 6 hours.....	\$20.00 per hour
Meter Rentals .....	\$30 - \$90 per day
Black and White Printing.....	\$0.05 each
Color Printing.....	\$0.50 each
Scanning.....	\$0.50 each
• Large Document Reproduction, Binding, etc. Subcontracted .....	Actual Cost + 10%
• Rented Vehicles, Tools, and Other Equipment (including fuel, etc.) .....	Actual Cost + 10%
• Express Delivery and Courier Services for Projects.....	Actual Cost + 10%
Online Database Access for Projects .....	Actual Cost + 10%

\*Based on current IRS 2021 rates. May be adjusted per IRS notifications.

# Appendix I - Resumes

## Melissa Turner, M.S.

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### Vice President and Senior Program Manager, MLJ Environmental

#### DEGREE(S)

M.S., Animal Biology. University of California, Davis.

B.S., Wildlife, Fisheries and Conservation Biology. University of California, Davis.

#### BACKGROUND

Melissa Turner currently manages both surface and groundwater water quality projects including sampling design, project implementation, database design and implementation, quality assurance procedures, and report writing. Since 2004, Ms. Turner has worked with a variety of databases in both Access and SQL including the initial Surface Water Ambient Monitoring Program (SWAMP) comparable databases which eventually became part of the California Environmental Data Exchange Network (CEDEN), membership database tracking invoicing and enrollment with Irrigated Lands Regulatory Program (ILRP) Coalitions, survey information for management practices and nitrogen applications, water accounting and tracking and field survey information.

As Vice President of MLJ Environmental, she is a Senior Program Manager with experience managing a variety of projects as both the technical lead as well as providing technical assistance as a subcontractor. She is engaged in various stakeholder processes including the Delta Regional Monitoring Program and the Central Valley Regional Monitoring Collaborative.

#### RELEVANT EXPERIENCE

Ms. Turner is the Senior Program Manager of multiple groundwater monitoring projects including groundwater monitoring for ILRP compliance in the Central Valley and managed a multi-year project along the Central Coast for the Central Coast Groundwater Coalition (CCGC). Ms. Turner oversees the groundwater monitoring, data collection and management, and annual reporting of groundwater results and trends.

Ms. Turner manages the Central Valley Groundwater Monitoring Collaborative (CVGMC) Data Management System and works closely with the other technical consultants Ludhorff and Scalmanini Consulting Engineers (LSCE) and Provost & Prichard. The CVGMC is a group of agricultural coalitions and other stakeholders across the Central Valley working collaboratively under a Memorandum of Agreement (MOA) to protect groundwater quality. The CVGMC was created to comply with the various Waste Discharge Requirements of the participating Central Valley Irrigated Lands Regulatory Program (ILRP) agricultural coalitions, including monitoring and characterizing regional groundwater quality conditions and trends. The CVGMC Data Management System (DMS) is a central repository of information that ensures consistency of data across the participants in the CVGMC. The data are stored and managed according to specified procedures creating confidence in the data used for trends assessment. The DMS is also being used to bring in other publicly available data which are qualified in

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#### Relevant Experience

*Effective program and project management*

*Understanding of regulations*

*Program development and planning*

*Technical expertise*

*Data Compilation / Interpretation*

*Stakeholder interaction and communication*

*Groundwater monitoring*

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#### **Agenda Item #7**

order to be used in region wide groundwater assessments. The CVGMC produced its first 5 Year Trend Report for the CVGMC region in November 2021.

Ms. Turner manages the monitoring and reporting programs for five agricultural coalitions in the San Joaquin Valley including overseeing various staff managing surface and groundwater collection, analysis, and data management. Ms. Turner regularly meets with Regional Water Board staff to update them on Coalition monitoring, data interpretation, and outreach, and represents the coalition in several technical discussions focused on laboratory analysis, monitoring design, quality control and data management.

## Anthony Brillante, B.S.

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### Groundwater Sampling Coordinator, MLJ Environmental

#### DEGREE(S)

B.S., Geology. California State University at Sacramento.

#### BACKGROUND

Anthony Brillante has worked for MLJ Environmental since July 2014. Mr. Brillante has performed field sampling, data analysis, and report synthesis for water quality projects in the Central Valley and Central Coast of California. Currently, Mr. Brillante is assisting with the comprehensive groundwater quality management plans for agricultural coalitions in the Central Valley to meet State and Regional Water Quality Control Board requirements. Mr. Brillante is seasoned in field work with demonstrated experience in leading sampling teams, asserting value in team environments and report writing. Prior to joining MLJ Environmental, he was a groundwater field technician for Confluence Environmental and a Project Geologist for Terranear in New Mexico.

#### RELEVANT EXPERIENCE

#### Groundwater Sampling Coordinator, East San Joaquin Water Quality Coalition, San Joaquin County and Delta Water Quality Coalition, Westlands Water Quality Coalition, and Central Coast Groundwater Coalition (2014-Present)

Mr. Brillante is responsible for field sampling, data analysis, and report synthesis for surface and groundwater water quality projects in the Central Valley and Central Coast of California; including those pertaining to the Irrigated Lands Regulatory Program. He directs groundwater sampling logistics including coordinating with pertinent laboratories, well scheduling, coordinating with various stakeholders, and coordinating multiple teams simultaneously. Mr. Brillante is proficient in industry standards for field sheets, Chain-of-Custody procedures, equipment maintenance and usage, and sample collection and preservation. He completes groundwater sample collection from a variety of wells including irrigation, domestic, and monitoring wells.

#### Confluence Environmental, Sacramento, CA (2013-2014)

Mr. Brillante worked as a field technician from 2013 to 2014. He performed wellhead repair and excavated soil vapor extraction wells. Mr. Brillante collected surface and groundwater samples for Aerojet using a variety of sampling methods. He did quarterly water level measurement events including domestic, irrigation, and public supply wells. Additionally, he implemented safety policies for inclement weather including heavy precipitation and extreme heat.

#### Terranear, PMC, Los Alamos, New Mexico (2009-2011)

Mr. Brillante worked as a Project Geologist from 2009 to 2011. He conducted groundwater sampling and analysis for various projects and clients, including groundwater characterization

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#### Relevant Experience

*Groundwater Sampling*

*Groundwater Water Level Procedures*

*Quality Control / Quality Assurance*

*Data Compilation / Interpretation*

*Coordination / Communication*

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#### **Agenda Item #7**

at Los Alamos National Laboratory. Mr. Brillante was responsible for water level data collection and analysis of alluvial wells in the Los Alamos region.

#### **Central Valley Regional Water Quality Control Board, Sacramento, California (2006-2009)**

Mr. Brillante reviewed and filed Underground Storage Tank reports as a student assistant from 2006 to 2009. He also participated in Regional Water Quality Control Board meetings.

## Jennifer Glenn, M.S.

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### Environmental Scientist II, MLJ Environmental

#### DEGREE(S)

M.S., Agricultural and Environmental Science.  
University of California, Davis.

B.S., Chemistry. University of Florida, Gainesville.

B.S., Environmental Science. University of Florida,  
Gainesville.

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#### Relevant Experience

*Groundwater Data Management*

*Quality Control / Quality Assurance*

*Data Compilation / Interpretation*

*Coordination / Communication*

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#### BACKGROUND

Jennifer Glenn began working with MLJ Environmental in 2017. Previously, Ms. Glenn worked as a chemist for a private agricultural laboratory. While at the University of California, Davis, she was a Graduate Student Researcher and investigated the biogeochemical cycles of carbon and nitrogen in rice and corn crops in the Sacramento San Joaquin Delta.

Ms. Glenn is responsible for processing and reporting data for surface water monitoring programs for several coalitions under the Irrigated Lands Regulatory Program (ILRP). Ms. Glenn manages the groundwater quality trend monitoring program data for 13 agricultural coalitions. Ms. Glenn works on data entry and QA/QC for Nitrogen Management Plan and Irrigation and Nitrogen Management Plans for East San Joaquin Water Quality Coalition, San Joaquin County and Delta Water Quality Coalition, Westside San Joaquin River Watershed Coalition, and Grassland Drainage Area Coalition.

#### RELEVANT EXPERIENCE

##### **Irrigated Lands Regulatory Program Coalition Monitoring, East San Joaquin Water Quality Coalition, San Joaquin County and Delta Water Quality Coalition, and Westlands Water Quality Coalition**

Ms. Glenn is responsible for numerous monitoring and reporting activities for each Coalition including laboratory management and reporting. She submits exceedance reports to the Regional Water Board when monitoring data indicate that one of the constituents is present in concentrations above the ILRP trigger limits. She understands each Coalition's regulatory requirements and deadlines to ensure that laboratory reports and analysis meet those requirements.

##### **Central Coast Groundwater Quality Coalition**

Ms. Glenn manages the groundwater data under the ILRP for the Central Coast Groundwater Coalition. She verifies groundwater well sampling information and runs QA/QC checks according to the CCGC QAPP. She formats well results and imports/exports results and relevant well information into internal databases and GeoTracker. Ms. Glenn maintains queries necessary for communicating results to members and tracking of exceedances of the nitrate Maximum Contaminant Level. Additionally, she assists with aspects of membership management and aids in writing and management of quarterly reports and compliance evaluation reports.

### **Groundwater Data Management, Central Valley Groundwater Monitoring Collaborative, Sacramento Valley Water Quality Coalition, and San Joaquin County and Delta Water Quality Coalition**

Ms. Glenn manages the groundwater quality trend monitoring program data for each Coalition. She verifies and runs QA/QC checks for the groundwater data according to each program's QAPP. This includes formatting water quality results, communicating with laboratories, and importing/exporting results and relevant well information into internal databases and GeoTracker. For select coalitions, Ms. Glenn collaborates with project managers to communicate results to members and track exceedances of the nitrate Maximum Contaminant Level. She also assists in report writing for groundwater Annual Monitoring Reports.

### **Nitrogen Management Plans and Irrigation and Nitrogen Management Plans, East San Joaquin Water Quality Coalition, Grassland Drainage Area Coalition, San Joaquin County and Delta Water Quality Coalition, and Westside San Joaquin River Watershed Coalition**

Ms. Glenn is involved in data entry and data management of nitrogen data. She verifies data and completes QA/QC checks to ensure consistency and reliability. She assists with member outreach by aiding with creation of Nitrogen Use Evaluation packets to inform members of their nitrogen efficiency.

### **Chemist, Denele Analytical, Inc.**

Ms. Glenn was responsible for developing and managing a new laboratory facility to process agricultural and environmental samples including water (wastewater, potable, and irrigation), soils, and plant tissue using state approved methodologies. She developed an understanding of a wide range of analytical instruments, laboratory methods, and Laboratory Information Management Systems which ensures that communication with contract laboratories is efficient and productive.

## **Agenda Item #8**

### **Cosumnes Groundwater Authority Board of Directors Meeting**

Agenda Date: March 21, 2022  
Agenda Item #: 8  
Agenda Item Subject: Governance and Outreach

To: CGA Board of Directors  
From: CGA Staff

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#### **DWR Facilitation Support Services Application Update**

- We are awaiting final approval from the Department of Water Resources to bring on Consensus Building Institute (CBI) for facilitation support. CBI will support staff with meeting preparation, committee development and meetings, and outreach.

#### **Board Policies**

- The California Special District Association (CSDA) has sample policies to guide Board operations. Counsel has prepared the attached policies for Board consideration.

#### **CGA Committees**

- Citizen Advisory Committee:
  - Based on Board direction, Staff has prepared the attached formation documents for the Citizen Advisory Committee.
- Projects Committee:
  - The Board has discussed forming a committee to develop a Cosumnes Subbasin Priority Project List to guide implementation of the Cosumnes Subbasin GSP. The CAC application could be easily adjusted if the Board decides to take that approach.

#### **Attached**

- [Draft Board Policies \(link\)](#)
- Citizen Advisory Committee Overview
- Citizen Advisory Committee Application
- Citizen Advisory Committee Code of Conduct

#### **Staff Recommendation**

- Adopt the drafted Board Policies.
- Approve the Citizen Advisory Committee Overview, Application, and Code of Conduct and direct staff to solicit applications to potential committee members.
- Form a Projects Committee, comprised of appointees from each GSA, to develop the Cosumnes Subbasin Priority Projects List.

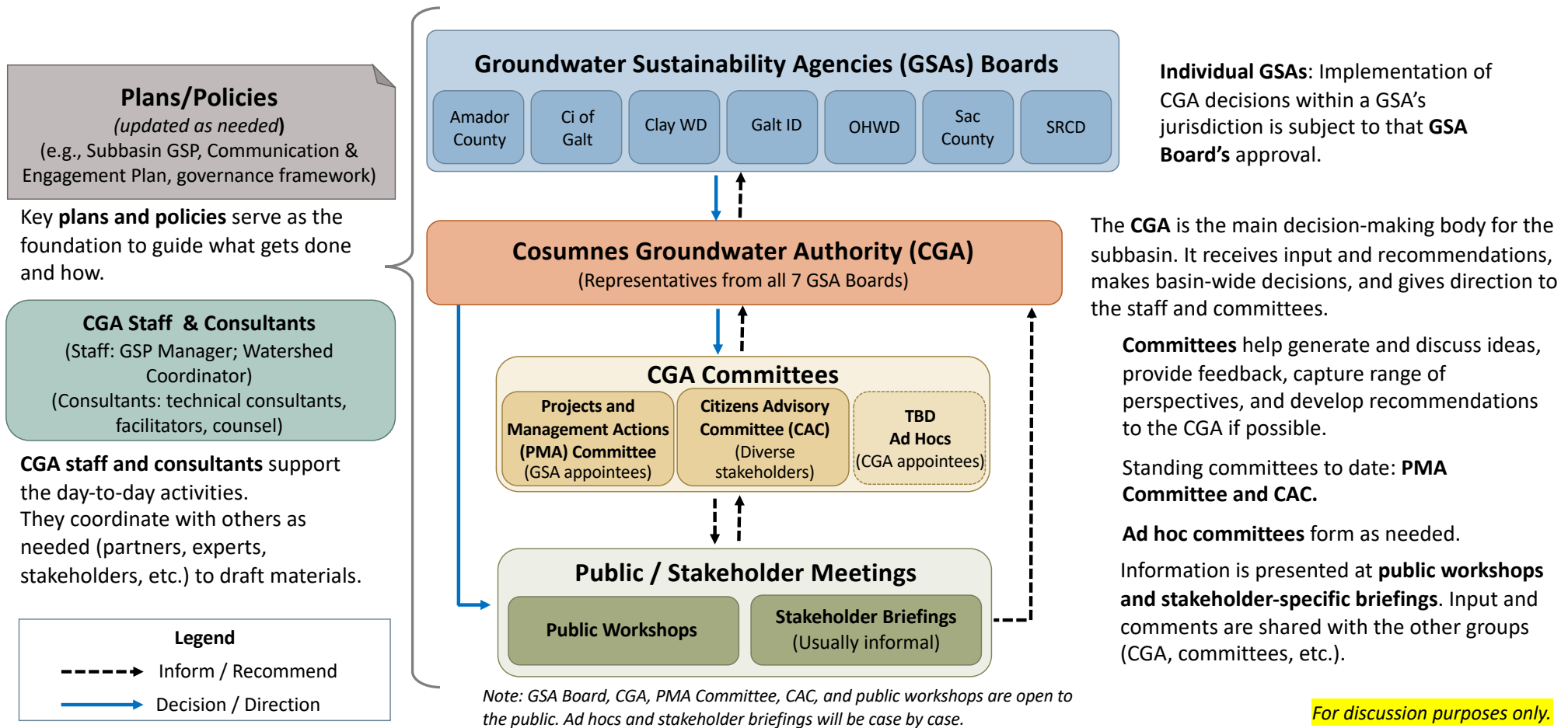
**Board action needed.**



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# Cosumnes Groundwater Authority (CGA) Governance and Decision-Making Process

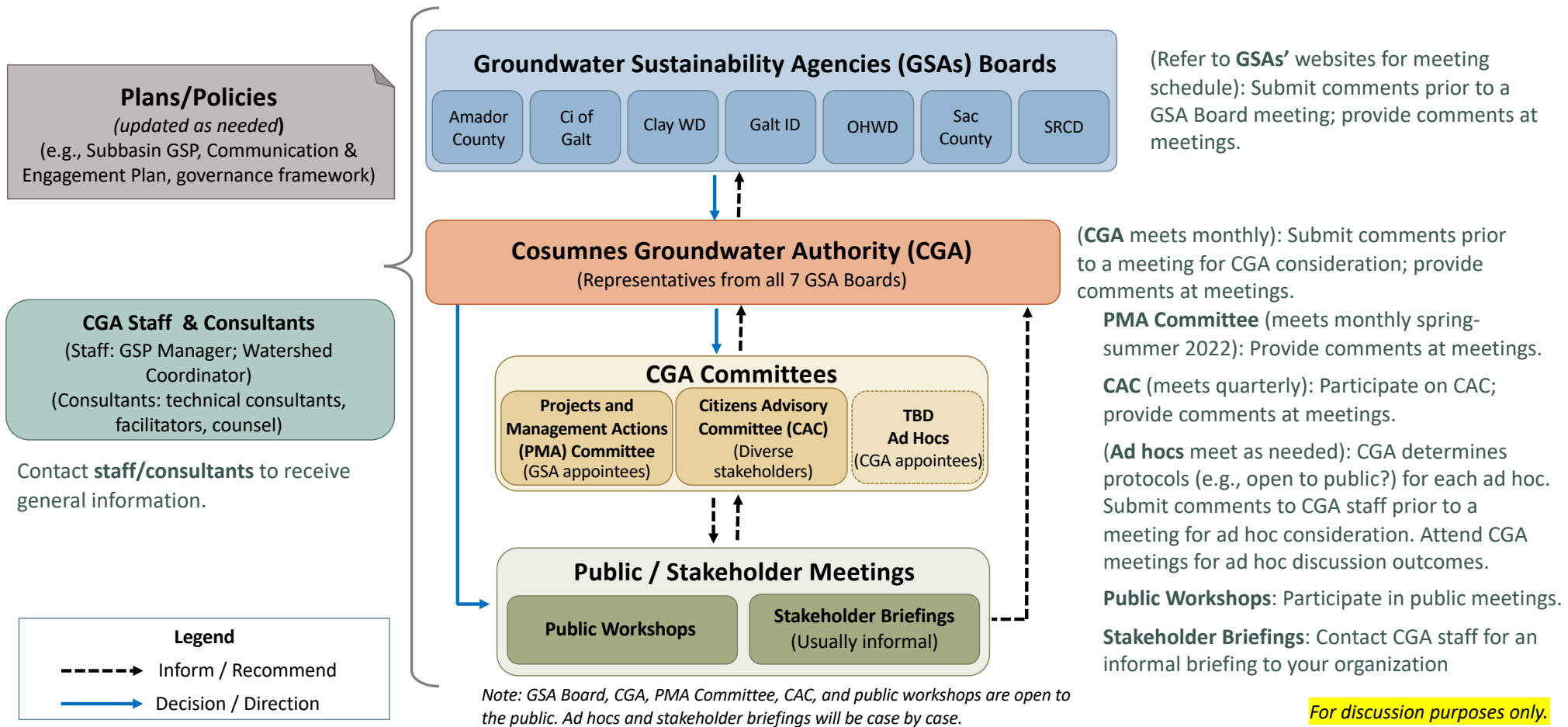


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# Stakeholder & Public Engagement

## How to Be Involved and Provide Input



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## Other Notable Opportunities for Stakeholder & Public Engagement

### Overall GSP Implementation

- Annual Reports
- 5-Year Evaluation/Updates
- (Tentative) Spring 2022 – Stakeholder outreach conversations to inform early phases of GSP implementation
  - Potentially entails looping back to previously interviewed stakeholders, engaging key voices who have not been actively involved, etc.

### Projects

- CEQA public comment periods

### Management Actions

- Funding – Prop 26 / Prop 218 public comment periods

**\*\*Not an exhaustive list!\*\***

**POLICY TITLE: Board Actions and Decisions**  
**POLICY NUMBER: 1000**

**1000.1** The CGA JPA agreement provides for governance by a CGA Board of Directors, comprised of representatives and alternates appointed by its member agencies. The Board of Directors is the decision-making body of CGA, and can take action to bind CGA, but is independent of the separate member agencies.

Actions by the Board of Directors include but are not limited to the following:

1. Adoption or rejection of regulations or policies
2. Adoption or rejection of a resolution;
3. Approval or rejection of any contract or expenditure
4. Approval or rejection of any proposal which commits Authority funds or facilities, including employment and dismissal of personnel
5. Approval or disapproval of matters that require or may require the Authority or its employees to take action and/or provide services.

**1000.2** Consistent with the CGA JPA Agreement, the Board of Directors takes these actions following a majority vote.

**1000.3** The Board may also give directions that are not formal action. Such directions do not require formal procedural process. Such directions include the Board's directives and instructions to staff that are not final actions binding the agency.

**POLICY TITLE: Meeting Materials and Agendas**  
**POLICY NUMBER: 1010**

**1010.1 Agenda preparation.** The Authority's Secretary, in cooperation with the Board President, shall prepare an agenda for each regular and special meeting of the Board of Directors in accordance with the Brown Act. Any Director may contact the CGA Administrator and request an item to be placed on the agenda no later than 5:00 P.M. on the day that is 48 hours prior to the closing of the agenda for the next meeting date.

**1010.2 Agenda descriptions.** All Board agendas shall include an unambiguous description of each item on the agenda to be discussed, including closed session items. The CGA Administrator shall ensure that the description gives notice to the public of the essential nature of business to be considered.

**1010.3 Circulation of Agenda & Materials.** Agendas will be posted no less than 72 hours prior to regular Board meetings, and no less than 24 hours prior to special Board meetings. Supporting materials prepared by staff and consultants will generally be circulated at the same time as the agenda, but in any case will be available to members of the public at the same time that they are available to all or a majority of the Board.

**1010.4 Public Submissions of Materials.** Public comments submitted on an agenda item are part of the written record of each meeting. Written comments that are received more than 24 hours in advance of a meeting will be made available on the Authority's website. Written comments that are received less than 24 hours prior to the meeting will be made available for public review at the meeting, and posted online as soon thereafter as is reasonably feasible for staff.

**1010.5 Public comment.** For regular meetings the Board shall provide the public with an opportunity to address not only any item on the agenda but any item within the subject matter jurisdiction of the Authority. For special meetings, the Board shall provide the public with an opportunity to address any item on the agenda. The Board may not prohibit public criticism, but shall control the order of the proceedings, including placing reasonable time limits on public comment. The Board may not require members of the public to give names or sign a register as a condition of attendance or speaking.

**1010.6 Closed sessions.** The Board may conduct a closed session during a noticed meeting for certain matters, as identified on the agenda, where it is necessary to conduct business in private. Major reasons for permissible closed sessions, as authorized by the Brown Act, include real property transactions, labor negotiations, and pending litigation. The Board shall allow public comment on any closed session item before going into closed session.

**1010.7 Items not on the agenda.** The Board shall not discuss or take action on any item that does not appear on the posted agenda except that the Board may act on items not on the agenda to address emergency situations, subsequent need items, and hold-over items from a continued previous meeting held within the prior five days. The Board may also respond to public comments and make announcements.

**POLICY TITLE: Board Meeting Conduct**  
**POLICY NUMBER: 1020**

**1020.1 Agenda timing.** All Board meetings shall commence at the time stated on the agenda and shall be guided by same. The placement of an item on the agenda shall not be deemed a requirement that the items proceed in any particular order. The Board President, with concurrence of a majority of the Board, may alter the order in which agenda items shall be considered for discussion and/or action by the Board.

**1020.2 Conduct of meetings.** The following concepts shall be applied to Board meetings:

- a. The meetings shall be conducted in an open and fair manner.
- b. The public shall be given ample opportunity to participate in the meetings.
- c. The meetings shall proceed in a manner that enables the Board to consider problems to be solved and make wise decisions intended to solve the problems.
- d. The Board may receive, consider and take any needed action with respect to reports of accomplishment of Authority operations.
- e. Noticed public hearings shall be conducted in an orderly fashion, with the Board President establishing the order of the proceedings.
- f. The Board may weigh and determine the credibility of evidence and public comment.

**1020.3 Public comment.** Public comment on items on the agenda, and general public comment at a regular Board meeting for matters within the jurisdiction of the Board of Directors, shall be as followed:

- a. Three minutes may be allotted to each speaker. The Board president may allow additional per speaker and per subject comment necessary for a full and fair proceeding necessary for a full and fair proceeding.
- b. No disruptive conduct shall be permitted at any Board meeting. Persistence in disruptive conduct shall be grounds for summary termination, by the Board President, of that person's privilege of address.

**1020.4 Disruption of meetings.** Willful disruption of any of the meetings of the Board shall not be permitted. If the President finds that there is willful disruption of any meeting of the Board, he/she may do the following:

- a. Notify the disrupting parties to immediately stop the conduct and that they will be asked to leave the meeting if the behavior continues.
- b. If the behavior continues after notice, order the disrupting parties out of the room and conduct the Board's business without them present.



**POLICY TITLE: Brown Act Compliance – Open Meeting Requirements**  
**POLICY NUMBER: 1030**

**1030.1 The Brown Act.** The Legislature adopted the Brown Act, commonly referred to as California's "Open Meetings Laws" in 1964. The Brown Act is contained in Government Code section 54950 et seq. The Brown Act is broadly construed and compliance is constitutionally mandated.

**1030.2 Compliance with Brown Act.** All meetings of the Board of Directors shall comply with the Brown Act.

**1030.2.1** Meetings occur whenever the majority of the Board of Directors meets to discuss Authority business.

**1030.2.2** Member of the Board includes newly elected and appointed officials prior to assuming office.

**1030.2.3** All Board meetings shall be open and freely accessible to the public, including those with disabilities.

**1030.2.4** Meetings through the use of intermediaries, serial communications, or emails are prohibited.

**1030.2.5** The Board shall only take action during a properly noticed meeting.

**1030.3 Committees.** Committees created by formal action of the Board shall comply with the Brown Act.

**POLICY TITLE:** Rules of Order for Conduct of Board and Committee Meetings  
**POLICY NUMBER:** 1040

**1040.1 General.** Action items shall be brought before and considered by the Board, by motion in accordance with this policy. These rules of order are intended to be informal and applied flexibly. The Board prefers a flexible form of meeting and, therefore, does not conduct its meetings under formalized rules (i.e., Robert's Rules of Order).

**1040.2 Obtaining the Floor.** Any Director desiring to speak should address the President and, upon recognition by the President, may address the subject under discussion.

**1040.3 Motions.** Any Director, including the President, may make or second a motion. Once the motion has been seconded, it shall be opened for discussion among the Board, and then for public comment.

**1040.4 Calling for the Vote.** If the public in attendance has had an opportunity to comment on the proposed action, any Director may move to immediately bring the question being debated to a vote, suspending any further debate. The motion must be made, seconded, and approved by a majority vote of the Board.

**1040.5 Secondary Motions.** Ordinarily, only one motion can be considered at a time and a motion must be disposed of before any other motions or business are considered.

**1040.6 Decorum.** The President shall take whatever actions are necessary and appropriate to preserve order and decorum during Board meetings, including public hearings. The President may remove any person or persons making personal, impertinent or slanderous remarks, refusing to abide by a request from the President, or otherwise disrupting the meeting or hearing. The President may also declare a short recess during any meeting.

**POLICY TITLE: Attendance at Meetings**  
**POLICY NUMBER: 1050**

**1050.1** Members of the Board of Directors are expected to and shall attend all regular and special meetings of the Board unless there is good cause for absence.

**1050.2** To be counted as present for any meeting, Board Members must be present for the duration of the meeting.

**1050.3** Good cause for absence, including late arrivals or early departures, includes temporary illness or other unavoidable circumstances of which the President of the Board is notified prior to the meeting. Good cause also includes Board authorized meeting absences such as attendance at a conference directly related to the functions and interests of the Authority or at the meeting of another public agency in order to participate in an official capacity.

**1050.4** A Board Member who will be absent for good cause may notify the President by electronic transmission (email), telephone communication, or letter. The President shall notify the CGA Administrator and the Board of all absences that are excused for good cause. The minutes shall indicate whether an absence was excused.

**POLICY TITLE: Committees of the Board of Directors**  
**POLICY NUMBER: 1060**

**1060.1 Committees.** The Board President shall appoint any such committees as may be deemed necessary or advisable by the Board of Directors. Committees, whether standing committees or temporary, exist to provide guidance and recommendations to the Board, but are not decision-making bodies of the agency.

**1060.1.1** Meetings of standing committees, whether composed of a majority of the board or less than a quorum, will be open to the public pursuant to the Brown Act. With the exception of the Citizen's Advisory Committee, committees of the Board will, in general, be comprised of members of the Board or their designated representatives.

**1060.1.2** The Board president may also establish temporary advisory committees. The purpose of a temporary advisory committee and the time allowed to accomplish that purpose shall be outlined at the time of appointment. A temporary advisory committee shall be considered dissolved when its purpose has been accomplished or when the timeframe for its existence has expired, whichever occurs first. A temporary advisory committee shall be comprised solely of members of the Board, and shall consist of less than a majority of Board Members.

**POLICY TITLE: Duties of the Board President**  
**POLICY NUMBER: 1070**

**1070.1 Presiding Officer.** The President of the Board of Directors shall serve as the presiding officer at all Board meetings.

**1070.1.1** In the absence or disability of the President, the Vice President of the Board of Directors shall serve as the presiding officer over all meetings of the Board. If the President and Vice President of the Board are both absent or disabled, the remaining members present shall select one of themselves to act as temporary presiding officer of the meeting.

**1070.1.2** The presiding officer shall have the same rights as the other members of the Board in voting, introducing motions, resolutions and ordinances, and any discussion of questions that follow said actions. The presiding officer may move, second, debate, and vote from the chair.

**1070.2 Duties Regarding Meetings.** The President shall preside over and conduct all meetings of the Board of Directors, shall carry out the resolution and orders of the Board of Directors, and shall exercise such other powers and perform such other duties as the Board of Directors shall prescribe including, but not limited to, the following:

- a. Call the meeting to order at the appointed time;
- b. Announce the business to come before the Board in its proper order;
- c. Enforce the Board's policies in relation to the order of business and the conduct of meetings;
- d. Recognize persons who desire to speak, and protect the speaker who has the floor from disturbance or interference;
- e. Explain what the effect of a motion would be if it is not clear to every member;
- f. Restrict discussion to the question when a motion is before the Board;
- g. Rule on parliamentary procedure;
- h. Put motions to a vote, and state clearly the results of the vote; and
- i. Preserve order and decorum.

**1070.3 Responsibilities.** Responsibilities of the President include, but are not limited to, the following:

- a. Sign all instruments, act, and carry out stated requirements and the will of the Board;
- b. Sign the minutes of the Board meeting following their approval;
- c. Appoint and disband all committees, subject to Board ratification;
- d. Call such meetings of the Board as he/she may deem necessary, giving notice as prescribed by law;
- e. Coordinate the preparation of meeting agendas with the General Manager;
- f. Confer with the CGA Administrator or designee on crucial matters which may occur between Board of Directors meetings;
- g. Be responsible for the orderly conduct of all Board meetings;
- h. Be the spokesperson for the Board; and
- i. Perform other duties as authorized by the Board.

**1070.3.1** In the absence or disability of the President, the alternate presiding officer may temporarily carry out these responsibilities until such time as the President is able to resume

his or her responsibilities.

**1070.3.2** The President of the Board of Directors shall serve as the presiding officer at all Board meetings.

**1070.3.3** In the absence or disability of the President, the Vice President of the Board of Directors shall serve as the presiding officer over all meetings of the Board. If the President and Vice President of the Board are both absent or disabled, the remaining members present shall select one of themselves to act as temporary presiding officer of the meeting.

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**POLICY TITLE: Members of the Board of Directors**  
**POLICY NUMBER: 1080**

**1080.1 Meeting Preparation.** Directors shall thoroughly prepare themselves to discuss agenda items at meetings of the Board of Directors. Directors may request information from staff before meetings.

**1080.1.1** Requests by individual Directors for substantive information and/or research from Authority staff will be channeled through the CGA Administrator.

**1080.1.2** The CGA Administrator shall be responsible for providing the requested information and shall make all information equally available to all Directors.

**1080.1.3** If writings are distributed to a majority of the Board in connection with an agenda item, those writings shall be made available to the public in the manner required by law.

**1080.2 Meeting Decorum**

**1080.2.1** Directors shall at all times conduct themselves with courtesy to each other, to staff, and to members of the audience present at Board meetings.

**1080.2.2** Directors shall defer to the presiding officer for conduct of meetings of the Board, but shall be free to question and discuss items on the agenda. All comments should be brief and confined to the matter being discussed by the Board.

**1080.2.3** Directors may request for inclusion into the meeting minutes, brief comments pertinent to an agenda item only at the meeting that item is discussed (including, if desired, a position on abstention or dissenting vote).

**1080.3 Abstentions and Failure to Vote**

**1080.3.1** Directors should not abstain from the Board's decision-making responsibilities unless a personal or financial conflict of interest exists. Directors abstaining due to a disqualifying conflict of interest will not be counted as part of a quorum and will be considered absent for the purposes of determining the outcome of a vote on the matter. Directors who fail to vote in the absence of a declared conflict of interest will be counted as part of a quorum and in effect consent that a majority of the quorum will determine the outcome of a vote on the matter.

## **Cosumnes Groundwater Authority Citizen Advisory Committee (CAC) Overview**

The Cosumnes Groundwater Authority (CGA) is responsible for implementing the Cosumnes Subbasin Groundwater Sustainability Plan (GSP) to meet the California Sustainable Groundwater Management Act (SGMA) requirements for the Cosumnes Subbasin. The sustainability goal of the Cosumnes Subbasin is to ensure that groundwater in the subbasin continues to be a long-term resource for beneficial users and uses including urban, domestic, agricultural, industrial, environmental, and others. Successful implementation for this long-term effort requires broad and ongoing coordination, collaboration, and engagement. More information about the Cosumnes Subbasin GSP can be found at: [CosumnesGroundwater.org](http://CosumnesGroundwater.org).

### **Purpose:**

The Citizens Advisory Committee (CAC) for the Cosumnes Subbasin, as established by the CGA Board of Directors, is convened to provide a productive venue for input from and information-sharing among the subbasin's diverse communities and interest. The CAC will serve an advisory role to the Cosumnes Groundwater Authority (CGA) Board of Directors, to inform the Board's implementation of the Cosumnes Subbasin Groundwater Sustainability Plan (GSP).

### **Objective:**

Develop a mutual understanding of and provide feedback on the implementation of the Cosumnes Subbasin Groundwater Sustainability Plan.

### **Anticipated Activities:**

- Quarterly meetings
- Provide feedback on the development and implementation of the Cosumnes Subbasin Priority Projects List
- Review available data regarding groundwater conditions and progress on the implementation of the Cosumnes Subbasin GSP
- Provide feedback on discussions and technical work related to the Cosumnes Subbasin's monitoring network, Undesirable Results, Sustainable Management Criteria, and funding mechanisms
- Identify future information needs
- Discuss and support public outreach and engagement as applicable

### **Approach:**

- The CGA will share draft materials related to from GSP implementation with the CAC. All draft materials will be informed by CGA Board discussions.
  - CAC members will review and discuss draft materials and generate feedback to be shared with the CGA Board.
  - Consistent with the Sustainable Groundwater Management Act, the CGA Board will consider whether and how to incorporate CAC feedback. The CGA Board will regularly update the CAC on how its feedback informed its decision-making.
-

## **Agenda Item #8d**

### **Discussion Focus:**

Each meeting will focus on a topic, or variety of topics, described below. There may be need for additional flexibility on topics.

- Funding Mechanisms
- Projects and Management Actions
- Outreach and Engagement
- Monitoring Network
- Sustainable Management Criteria

### **CAC Composition:**

The CAC will be structured to reflect a range of interests and perspectives among water users and uses in the Subbasin. The Board will solicit a basic application to residents of the Subbasin. This application will ask for the individual's interest and experience in sustainable groundwater management. The Board will periodically review application. If the Board believes an applicant will be beneficial to the CAC, a formal invitation to join will be extended. CAC members will be expected to follow the CAC Code of Conduct. If the CGA Board find that someone has violated the CAC Code of Conduct, they have the right to remove individuals from their term on the CAC. Discussions of the CAC will be supported by contracted CGA staff, technical consultants (as funding is available), and a facilitation team from the DWR Facilitation Support Services program (if support is granted). The target size of the CAC is 12 people. Members will serve 2-year terms. In the initial year some 1-year terms will be offered to strive for staggered changes.

The CGA Board will draw on the following criteria when identifying CAC members:

- Demonstrated interest in sustainable groundwater management
- Ability to serve as an effective information conduit to others within the subbasin, both in terms of disseminating information and gathering broader input
- Demonstrated commitment to engaging in constructive dialogue with others
- Availability to attend CAC meetings on a regular basis

Additionally, invitations to the groups listed below may be extended from time to time if relevant topics are planned for discussion at specific meetings:

- NGOs: Cosumnes Coalition, The Nature Conservancy, Environmental Defense Fund, ECOS, California Sportfishing Protection Alliance
- STATE/FED AGENCY: California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, National Marine Fisheries Service, and Bureau of Land Management (Cosumnes Preserve)
- LOCAL AGENCY: Sacramento-Amador Water Quality Alliance, RD-800, Sacramento County Farm Bureau, Sacramento County Cattleman's Association,
- TRIBAL: Wilton Rancheria, Ione Band of Miwok Indians, Jackson Rancheria Band of Miwok Indians, and others
- Representatives from the South American and Eastern San Joaquin Subbasins

### **Ground Rules:**

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## **Agenda Item #8d**

The CAC will generally rely on the ground rules outlined in the Cosumnes Groundwater Authority agreement and the Board's policies, with emphasis on these points:

- The CAC is an advisory body. All final decisions will be made by the CGA Board.
- Focus on developing credible and timely information and understanding
- Foster thoughtful exchange of information and perspectives
- Identify areas of common interests and approach
- Consensus seeking

### **Roles and Responsibilities:**

CAC members shall:

- be able to demonstrate a general knowledge of and involvement in the activities of priority interest related to the Cosumnes GSP and SGMA.
- review the CAC Overview (this document), CAC Code of Conduct, the Cosumnes Subbasin GSP website, and other documentation to become familiar with the current issues and their background.
- attend meetings adequately prepared to engage meaningfully in discussions.
- engage in CAC and GSP activities in accordance with the CAC Code of Conduct and other CGA governance documents, as applicable.
- be expected to commit to a 1- or 2-year term. Terms can be extended based on the mutual agreement of the CGA Board and CAC member.

### **Anticipated Work Product:**

We anticipate a series of presentations to the CGA Board summarizing the CAC's key perspectives, recommendations, and areas of agreement and divergence on each of main topics discussed.

### **Anticipated Timeline:**

March 2022:

- Development of CAC Overview, Code of Conduct, and Application

April 2022 – May 2022:

- Selection of CAC Members

May 2022 – June 2022:

- First CAC Meeting
-

**Agenda Item #8d**

**Cosumnes Groundwater Authority  
Citizen Advisory Committee**

**Committee Member Application**

The Cosumnes Groundwater Authority (CGA) is soliciting applications for membership on the CGA Citizen Advisory Committee (CAC). The CAC will serve as an advisory role to the CGA Board of Directors and provide direct feedback on implementation of the Cosumnes Subbasin Groundwater Sustainability Plan (GSP). Members will develop a mutual understanding of and provide feedback on a variety of aspects of the GSP including, but not limited to, funding mechanisms, projects and management actions, outreach, monitoring, and more. It is anticipated that the CAC will meet once quarterly.

If you are interested in serving on the CAC, please review the Cosumnes Subbasin GSP website, review the CAC overview, complete this application, and submit it to CGA Staff. The Application may be submitted in person to staff, mailed USPS, or emailed to the address below. Staff will then work with the CGA Board to put the consideration of new members on an upcoming agenda of the Board. Applicants will be invited to participant at that meeting but are not required to attend. You will be advised by the Board if you are appointed to serve as a CAC member.

Austin Miller, 8770 Elk Grove Blvd., Elk Grove, CA 95624 Phone: 916-526-5447  
Email: [Austin@SloughhouseRCD.org](mailto:Austin@SloughhouseRCD.org)

NAME: \_\_\_\_\_

RESIDENCE ADDRESS: \_\_\_\_\_

BUSINESS OR MAILING ADDRESS: \_\_\_\_\_

PHONE (DAYTIME): \_\_\_\_\_ PHONE (EVENING): \_\_\_\_\_

Please provide a brief description of your background and qualifications and any other relevant documents you believe support your eligibility and nomination, including relevant experience and/or education, with particular emphasis on factors that demonstrate an interest in groundwater conservation, an ability to serve as a information conduit to a wider community of water users, and a demonstrated commitment to productive and collaborative dialogue. (Please include additional pages as needed.)

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**Cosumnes Groundwater Authority  
Citizen Advisory Committee  
Code of Conduct**

Presented as Draft: February 11, 2022

Members of the Cosumnes Groundwater Authority's Citizen Advisory Committee hereby agree to abide by the following:

- 1) Members will treat all persons in a fair and respectful manner when participating in the Board's activities and meetings, or related meetings with other groups, political entities, or organizations. Activities includes phone calls, digital meetings, and correspondence.
- 2) Members will act at all times in accordance with all applicable laws of the U.S.A. and the State of California in the performance of their duties.
- 3) Members will refrain from abusive conduct, including verbal attacks upon the character or motives of other Members, the CGA Board and staff, other groups, political entities, or the public.
- 4) Members will abide by the processes and rules established by the Board and this Code of Conduct.
- 5) The Committee exercises authority only collectively as a Committee. Individual members will not state that a matter is the Committee's policy, position, or opinion on a matter unless the matter has been previously approved by a majority of the Committee.
- 6) When speaking with the media, elected officials, or general public, CAC members are asked to represent only their own individual views (unless, as previously mentioned, the Committee has previously approved the matter by a majority of the Committee). CAC members should refer all press inquiries to CGA Staff.
- 7) Members will keep confidential CGA information that has been provided to them in confidence. Board members will not disclose confidential information without proper authorization from the Board as a whole or use such information to advance their personal, or private, financial interests.
- 8) As a consequence of violation of this Code of Conduct, the first violation shall result in a written warning to the member which states the facts of the violation. A second violation shall result in removal from the CGA Citizen Advisory Committee. Each violation should be documented in writing and approved by the majority of the Board.

I have read and agree to abide by this Code of Conduct.

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Committee Member

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Date



**Agenda Item #9**

**Cosumnes Groundwater Authority  
Board of Directors Meeting**

Agenda Date: March 21, 2022

Agenda Item #: 9

Agenda Item Subject: Grant Applications and Letters of Support

To: CGA Board of Directors

From: CGA Staff

**Background**

To support CGA efforts, staff has identified the following funding opportunities:

<b>Grant Opportunity</b>	<b>Applicant</b>	<b>Funds Requested For</b>	<b>Amount Requested</b>	<b>Match</b>	<b>Staff Recommended Actions</b>
<a href="#"><u>CA Department of Conservation Multibenefit Land Repurposing Program</u></a>	CA Association of Resource Conservation Districts (CARCD)	Project development, outreach, implementations, etc.	~\$12mil	None.	<ul style="list-style-type: none"><li>• Submit a letter of support to CARCD for their DOC MLRP application.</li></ul>
<a href="#"><u>CA Department of Conservation Multibenefit Land Repurposing Program</u></a>	Regional SANS	Regional Environmental Impact Report	~\$5mil	None.	<ul style="list-style-type: none"><li>• Submit a letter of support to Regional SANS for their DOC MLRP application.</li></ul>
<a href="#"><u>Special District Leadership Foundation Technology Grant</u></a>	Cosumnes Groundwater Authority	Technology	\$3,000	None.	<ul style="list-style-type: none"><li>• Direct staff to apply for the SDLF Technology Grant</li></ul>
<a href="#"><u>The Campbell Foundation Grant</u></a>	Cosumnes Groundwater Authority	General/Technical Support	\$25,000	None.	<ul style="list-style-type: none"><li>• Direct staff to apply for the Campbell Foundation Grant</li></ul>
<a href="#"><u>Bureau of Reclamation Cooperative Watershed Management Program</u></a>	Cosumnes Groundwater Authority	Committee Support (CAC, SWAG). Cone of Depression Project Development.	\$200,000	None	<ul style="list-style-type: none"><li>• Direct staff to apply for the Bureau of Reclamation Grant</li></ul>