

7 October 2021

Stephen Julian, Watershed Coordinator
Wackman Consulting
Agriculture, Water and Natural Resources
8970 Elk Grove Blvd, Elk Grove, CA 95624

Subject: Preparation of the Cosumnes Subbasin Annual Report, Water Year (WY) 2021 as part of Groundwater Sustainability Plan (GSP) implementation and compliance with the Sustainable Groundwater Management Act (SGMA) regulatory requirements as incorporated into Title 23 California Code of Regulations (23-CCR) § 356.2.
Cosumnes Subbasin, Sacramento & Amador County Implementation
(EKI C1-150)

Dear Mr. Julian:

EKI Environment and Water, Inc. (EKI) prepared this Scope of Work to prepare the Water Year (WY) 2021 Annual Report (AR) for the Cosumnes Subbasin (also referred to herein as “the Basin”) as part of Groundwater Sustainability Plan (GSP) implementation and compliance with the Sustainable Groundwater Management Act (SGMA) regulatory requirements as incorporated into Title 23 California Code of Regulations (23-CCR) § 356.2.

BACKGROUND

Seven Groundwater Sustainability Agencies (GSAs) have been established within the Basin and are the exclusive GSAs in their respective areas. The seven GSAs form the Cosumnes Subbasin Sustainable Groundwater Management Act (SGMA) Working Group (herein referred to as the “Working Group”) are: Amador County Groundwater Management Authority (ACGMA), City of Galt, Clay Water District, Galt Irrigation District (GID), Omochumne-Hartnell Water District (OHWD), Sacramento County, and Sloughhouse Resource Conservation District (SRCD). The Working Group developed a single coordinated GSP to meet SGMA regulatory requirements, reflect stakeholder values, and preserve local control over management of the groundwater resource. The Working Group is in the process of developing a joint exercise of powers agreement (JPA) that establishes the Cosumnes Groundwater Authority (CGA) for the purpose of implementing the GSP into the future.

The Working Group recently released its draft GSP for public comment and will be submitting its final GSP to the California Department of Water Resources (DWR) before January 31, 2022. Concurrent with the finalization of its GSP, the CGA must prepare its first AR for submittal to DWR by 1 April 2022 (23 CCR §356). As this is the first AR, it must include data from Water Year (WY) 2015 through WY 2021 (i.e., the period from 1 October through 30 September). The AR shall include the sections described in detail below.

- 1) **General Information:** General information regarding the Basin, including an executive summary, a location map depicting the Basin, and documentation of stakeholder outreach and coordination efforts that have been conducted over the reporting period.
- 2) **Groundwater Elevation Data:** Detailed description and graphical representation of groundwater elevation data from monitoring wells identified in the monitoring network. This includes, but isn't

limited to, groundwater elevation contour maps for the Principal Aquifer illustrating seasonal high and low conditions for the current reporting year and hydrographs of groundwater elevations and water year type from WY 2015 to WY 2020.

- 3) Groundwater Extraction Data:
 - a. Detailed description and graphical representation of groundwater extraction from the Basin for the preceding year.
 - b. Map illustrating the general location and volume of groundwater extractions in the Basin.
- 4) Surface Water Supply:
 - a. Detailed description and graphical representation of surface water supply used or available for use in the Basin.
 - b. Surface water supply for groundwater recharge or in-lieu use within the Basin shall be reported based on quantitative data that describes the annual volume and sources for the preceding year.
- 5) Total Water Use:
 - a. Total water use shall be reported in a table that summarizes total water use by water use sector, water source type, and identifies the method of measurement and accuracy of measurements.
- 6) Change in Groundwater Storage:
 - a. Detailed description and graphical representation of change in groundwater in storage maps for the Principal Aquifer in the Basin.
 - b. Graph depicting water year type, groundwater use, the annual change in groundwater storage, and the cumulative change in groundwater in storage for the Basin based on historical data and including data from WY 2015 to the current reporting year.
- 7) Plan Implementation:
 - a. Description of progress towards achieving the Basin's Sustainability Goal.

The Sustainability Goal of the Cosumnes Subbasin is to ensure that groundwater in the Basin continues to be a long-term resource for beneficial users and uses including urban, domestic, agricultural, industrial, environmental and others. This goal will be achieved by managing groundwater within the Basin's sustainable yield, as defined by sustainable groundwater conditions and the absence of undesirable results.
 - b. Detailed description and graphical representation of progress towards achieving interim milestones and sustainable management criteria for all applicable sustainability indicators (chronic lowering of groundwater levels, reduction of groundwater storage, seawater intrusion, degraded water quality, land subsidence and depletion of interconnected surface water).
 - c. Summary of projects and management actions implementation, including such information as: permitting status, construction progress, adoption of policies, etc.

- d. Documentation of work towards filling identified data gaps.

Based on the above requirements, EKI has prepared the scope of work outlined below for drafting, completing, and submitting the WY 2021 AR for the Basin.

SCOPE OF WORK – WY 2021 ANNUAL REPORT

This scope of work includes all necessary work to produce the WY 2021 AR and includes three required Tasks and two optional Tasks.

Task 1 - Data Compilation

Task 1 involves compiling newly available data from WY 2019 through WY 2021. Certain data will need to be provided directly by the Basin Watershed Coordinator and/or applicable GSAs, whereas other data will be downloaded from publicly available sources. Data includes but is not limited to:

- Compiled groundwater elevation data from Representative Monitoring Wells (RMWs) and supplemental wells, including monitoring event data, downloaded data from CASGEM for appropriate RMWs, and downloaded real-time data (transducers) - *to be provided by Watershed Coordinator and GSAs (for example, City of Galt, ACGMA, and OHWD)*;
- Compiled water quality data from:
 - RMW Water Quality (RMW-WQ) network wells – *to be provided by Watershed Coordinator and GSAs*;
 - Publicly available data, for wells across the Basin, downloaded from Safe Drinking Water Information System (SDWIS) Drinking Water Watch website and Groundwater Ambient Monitoring and Assessment (GAMA) Program website – *download guidance provided by EKI and data to be provided by Watershed Coordinator and GSAs*;
- Download data from available stream gauges – *to be provided by Watershed Coordinator and GSAs*:
 - Cosumnes River measured at the United States Geological Survey (USGS) “Cosumnes River at Michigan Bar” gauge;
 - Dry Creek estimated, *under EKI’s guidance*, from C2VSim through WY 2015 and thereafter, based on a linear regression with inflows at the Cosumnes River at Michigan Bar;
 - Jackson Creek measured at the Jackson Valley Irrigation District (JVID) “Jackson Creek below Lake Amador” gauge;
- Annual verification and update of land use maps – *to be provided by Watershed Coordinator and GSAs*;
- Utilizing satellite imagery to identify the spatial and temporal distribution of dry stream reaches in the Basin (e.g., Cosumnes River and Dry Creek). Satellite imagery can be coupled with stream gauge and groundwater-level data to assess the impact of groundwater conditions on Depletions of Interconnected Surface Water – *to be provided by Watershed Coordinator and GSAs*;

- Downloading land subsidence data collected from the existing University Navstar Consortium (UNAVCO) Global Positioning System station located within the Basin (P275) – *download guidance provided by EKI and data to be provided by Watershed Coordinator and GSAs;*
- Downloading land subsidence data provided by the Interferometric Synthetic Aperture Radar (InSAR) data from DWR– *download guidance provided by EKI and data to be provided by Watershed Coordinator and GSAs;*
- Downloading Precipitation data from Parameter-elevation Regressions on Independent Slopes Model (PRISM) – *download guidance provided by EKI and data to be provided by Watershed Coordinator and GSAs;*
- Obtain, process, and estimate surface water delivery data as needed from appropriate GSAs, online resources and updated references (e.g., Urban Water Management Plans [UWMP]):
 - Urban imports from Lake Tableaud are delivered to the City of Ione and are estimated from total water treated at the wastewater treatment plant – *data to be provided by Watershed Coordinator and GSAs;*
 - Castle Oaks Golf Course is irrigated with tertiary treated wastewater from the Castle Oaks Water Reclamation Plant (COWRP) and is estimated from the irrigated area and an assumed average monthly demand, calibrated to match the irrigation demand for the water, as specified in the most up-to-date AWA UWMP – *data to be provided by Watershed Coordinator and GSAs;*
 - Download stream diversion data at points of diversion (PODs) from the Electronic Water Rights Information Management System (eWRIMs) – *download guidance provided by EKI and data to be provided by Watershed Coordinator and GSAs;*
- Compile pumping data from appropriate GSAs, and download available Public Water System (PWS) pumping data:
 - City of Galt – Monthly pumpage from production wells;
 - AWA – monthly pumpage from Camanche and Camanche North Shore production wells;
 - Other PWSs – Pumpage from production wells – *download guidance provided by EKI and data to be provided by Watershed Coordinator and GSAs;*
 - Aquaculture – total pumpage (11,000 acre-feet per year [AFY] estimate unless updated by Watershed Coordinator or GSAs);
 - Ag-Res – total pumpage (9,000 AFY estimate unless updated by Watershed Coordinator or GSA);
- Monthly Camanche Reservoir stage – *to be provided by Watershed Coordinator and GSAs;*
- Compiled voluntary groundwater extraction data – *to be provided by Watershed Coordinator and GSAs;*
- Status report on Project and Management Actions (PMAs) progress – *to be provided by GSAs;*

Data compiled under Task 1 will either be used directly to produce necessary graphics and tables for the Annual Report (Task 3) or be used to update CoSANA model input files (Task 2).

Task 2 - Groundwater Flow Model Extension

Task 2 involves extending and updating the Numerical Model to run through September 2021 (i.e., WY 2021). This involves updating all input files to include surface water delivery, pumping, ET, and land use data between October 2019 and September 2021 compiled under Task 1, running the model, and post-processing results. The model results will be used to estimate agricultural pumping, streamflow depletions, and the change in groundwater storage for purposes of AR reporting.

Task 3 - Write and Submit Annual Report

Task 3 includes: (1) development of AR templates to streamline future reporting, and (2) preparation of draft and final versions of the WY 2021 AR for submittal to DWR by the CGA. All necessary graphics, tables, and descriptions as described in 23-CCR § 356.2, and above in the background section, will be produced. Where applicable, graphics will include information back to January 1, 2015 and earlier, if available. As required by the regulations, WY 2021 water levels will be compared to Sustainable Management Criteria and results summarized. Finally, Task 3 includes required coordination and communication with the CGA.

Optional Task 4a – Data Management System (DMS) Update

EKI will update the Basin DMS using the compiled data provided by the GSAs from Task 1. EKI will perform a review of the data in accordance with the Basin QAQC Plan (Appendix N of the GSP), and flag data as appropriate. EKI will then import the data into the DMS and run updated queries to calculate and complete the necessary data fields in the DMS (e.g., calculate water level elevation from reported depth to water and well construction data).

Optional Task 4b – Data Management System (DMS) Training

EKI will train the Watershed Coordinator on DMS use, including importing the data and modifying the data fields by running the appropriate queries. This Task can be completed in-lieu of Task 4a, in which case the Watershed Coordinator will be responsible for updating the DMS and providing it to EKI prior to January 1, 2022, or after the Spring 2022 semi-annual monitoring event as part of GSP implementation.

PERSONNEL

EKI's staff members who will be available to work on this project include Anona Dutton, P.G., C.Hg. (Officer), John Fio (Principal), and Kristyn Lindhart (Grade 3); grades in parentheses are for purposes of billing in accordance with the attached Schedule of Charges (see Attachment A). Other supporting EKI staff members may be assigned to assist with the performance of the tasks as required to meet project commitments.

TERMS AND CONDITIONS

All work performed by EKI under this Scope of Work is anticipated to be performed pursuant to the Terms and Conditions of the Agreement with the CGA.

COMPENSATION

Inasmuch as the exact level of effort required to complete the above Scope of Work cannot be known precisely, EKI proposes to perform the work on a time and materials expense reimbursement basis in accordance with our current Schedule of Charges (Attachment A). The estimated budget for this scope of work is \$53,000 (see also Table 1).

Table 1. Estimated Budget

TASK	Cost Estimate
WY 2021 Annual Report	\$45,000
Optional Task 4a: DMS Update	\$5,000
Optional Task 4b: DMS Training	\$3,000
TOTAL:	\$53,000

SCHEDULE

EKI is prepared to start work on the above Scope of Work immediately upon authorization to proceed. Most items in Task 1 are to be completed by the Watershed Coordinator/GSAs, and in order to meet the schedule must be completed by 1 January 2022. The Draft AR under Task 3 will be completed by 2 March 2022 for review by the GSAs, with comments due back to EKI by March 9th so the Final AR can be completed and approved by March 16th and submitted in advance of the April 1 deadline. EKI will inform the GSA of any issues that arise that may affect the schedule for completion or impact the anticipated level of effort.

We are happy to discuss the proposed approach and anticipated level of effort for these tasks in more detail with you and look forward to working with you on this important project. If this Proposal meets your needs, with your approval, please sign where noted below and return a fully executed copy to our office to confirm your authorization to proceed. Please call if you have any questions or wish to discuss this proposal in greater detail.

Very truly yours,

EKI ENVIRONMENT & WATER, INC.



Anona L. Dutton, P.G., C.Hg.
Vice President / Principal-In-Charge

Stephen Julian, Watershed Coordinator
Cosumnes Subbasin
7 October 2021
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AUTHORIZATION

Stephen Julian, Watershed Coordinator, on behalf of the
Cosumnes Groundwater Authority (CLIENT)

By _____

Title _____

Date _____

Attachments

EKI 2021 Schedule of Charges

Proposal/Agreement Date:

EKI Proposal/Project # B80081.xx

SCHEDULE OF CHARGES FOR EKI ENVIRONMENT & WATER, INC.**2 January 2021**

<u>Personnel Classification</u>	<u>Hourly Rate</u>
Officer and Chief Engineer-Scientist	306.80
Principal Engineer-Scientist	296.40
Supervising I, Engineer-Scientist	286.00
Supervising II, Engineer-Scientist	275.60
Senior I, Engineer-Scientist	265.20
Senior II, Engineer-Scientist	254.80
Associate I, Engineer-Scientist	244.40
Associate II, Engineer-Scientist	229.84
Engineer-Scientist, Grade 1	214.24
Engineer-Scientist, Grade 2	201.76
Engineer-Scientist, Grade 3	185.12
Engineer-Scientist, Grade 4	165.36
Engineer-Scientist, Grade 5	144.56
Engineer-Scientist, Grade 6	127.92
Technician	116.48
Senior GIS Analyst	149.76
CADD Operator / GIS Analyst	133.12
Senior Administrative Assistant	146.64
Administrative Assistant	115.44
Secretary	95.68

Direct Expenses

Reimbursement for direct expenses, as listed below, incurred in connection with the work will be at for items such as:

- a. Maps, photographs, reproductions, printing, equipment rental, and special supplies related to the work.
- b. Consultants, soils engineers, surveyors, drillers, laboratories, and contractors.
- c. Rented vehicles, local public transportation and taxis, travel and subsistence.
- d. Special fees, insurance, permits, and licenses applicable to the work.
- e. Outside computer processing, computation, and proprietary programs purchased for the work.

Large volume copying of project documents, e.g., bound reports for distribution or project-specific reference files, will be charged as a project expense as described above.

Reimbursement for company-owned automobiles, except trucks and four-wheel drive vehicles, used in connection with the work will be at the rate of sixty cents (\$0.60) per mile. The rate for company-owned trucks and four-wheel drive vehicles will be seventy-five cents (\$0.75) per mile. There will be an additional charge of thirty dollars (\$30.00) per day for vehicles used for field work. Reimbursement for use of personal vehicles will be at the federally allowed rate.

CADD Computer time will be charged at twenty dollars (\$20.00) per hour. In-house material and equipment charges will be in accordance with the current rate schedule or special quotation. Excise taxes, if any, will be added as a direct expense.

Rate for professional staff for legal proceedings or as expert witnesses will be at a rate of one and one-half times the Hourly Rates specified above.

The foregoing Schedule of Charges is incorporated into the Agreement for the Services of EKI Environment & Water, Inc. and may be updated annually.