Central Valley Regional Water Quality Control Board

26 January 2024

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REVIEW OF THE 5-YEAR ASSESSMENT REPORT, SACRAMENTO VALLEY WATER QUALITY COALTION

Thank you for submitting the 1 May 2023 Sacramento Valley Water Quality Coalition (Coalition) 5-Year Assessment Report (5-Year Report), which provides analysis of groundwater quality conditions and trends within the Coalition area. The report was submitted to comply with the *Waste Discharge Requirements General Order for Growers in the Sacramento River Watershed that are Members of a Third-Party Group*, *Order R5-2014-0030-11* (General Order)

Staff has completed review of the 5-Year Report and finds it meets the General Order requirements. Two comments are provided in the enclosed memorandum. Please submit the annual GQTMP update at least 60 days prior to the start of 2024 sampling.

If you have any questions regarding this letter, please contact Victor Bautista at 530-226-3458 or victor.bautista@waterboards.ca.gov.

Adam Laputz
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Water Boards

Patrick Pulupa
Executive Officer

Enclosure: Central Valley Water Board Staff Review of the SVWQC 5-Year Report

Central Valley Regional Water Quality Control Board

TO: Petra Lee
Senior Environmental Scientist
Irrigated Lands Regulatory Program

FROM: Victor Bautista
Environmental Scientist
Irrigated Lands Regulatory Program

DATE: 3 January 2024

SUBJECT: **REVIEW OF THE SACRAMENTO VALLEY WATER QUALITY COALITION 5-YEAR ASSESSMENT REPORT**

On 1 May 2023, the Sacramento Valley Water Quality Coalition (Coalition) submitted the *Five-Year Assessment Report* (5-Year Report or Report) as required by the *Waste Discharge Requirements General Order for Growers in the Sacramento River Watershed that are Members of Third-Party Group, Order R5-2014-0030-11* (Order). The 5-Year Report provides results and discussion related to Groundwater Quality Trend Monitoring Program (GQTMP) sampling conducted from 2018 – 2022, as well as a trend analysis of the results from the sampling conducted across the Coalition region.

The overall objectives of the GQTMP are to determine current water quality conditions of groundwater relevant to irrigated agriculture and develop long-term groundwater quality information that can be used to evaluate the regional effects of irrigated agricultural practices. The 5-Year Report (Report) includes the required assessment of GQTMP and other available groundwater quality data trends in the Coalition area. Provided below is a summary of the report submittal, staff review comments, and staff review recommendations.

5-Year GQTMP Assessment Report – Summary
The Coalition submits annual GQTMP Reports; however, every fifth year, the coalition has been approved to submit the 5-Year Report in lieu of their annual GQTMP Reports. This 5-Year Report is the first of its kind submitted by the Coalition and includes a broader consideration of publicly available data sources and more extensive data analyses than the annual reports.

The report focuses on the observed concentrations, distributions, and trends of nitrate in groundwater, with additional assessments of total dissolved solids (TDS) and pesticides. General mineral data is also provided in the Report. Data was obtained from

all publicly available sources, including the ILRP GQTMP and the ILRP Drinking Water Well Monitoring Program. Water quality conditions are presented in numerous maps, graphs, and spreadsheets, and compared by Land use types to assess potential correlations. The data were also used to evaluate the existing GQTM network.

Nitrate

The 5-Year Report uses the subset of groundwater nitrate data collected from each of the three depth categories (Upper, Lower, and Below Lower Zones[1]) for the trend analyses. The Report covers nitrate data collected from 1900 through 2022, but 85% of all nitrate samples were collected in 2000 or later.

Spatial trends of nitrate concentrations in groundwater were analyzed and illustrated using GQTMP data alone and combined with publicly available data sources. Geostatistical techniques, including declustering and interpolation, were used to estimate ambient nitrate conditions in areas without observed data. Temporal trends of nitrate concentrations were analyzed for individual wells and the entire Coalition area. Additionally, regional trend analyses were categorized by land use and High Vulnerability Areas (HVA), where wells were designated as irrigated, urban, or other based on the Department of Water Resources 2018 land use data, where available, or by well type. Non-parametric and parametric statistical analyses were performed on the data, where sufficient, and presented in the report. The report notes high variability in nitrate concentrations and trends and concludes that long-term nitrate concentrations are increasing in the Upper Zone in irrigated areas and in HVA areas. Tables 5-1a and 5-2a of the 5-Year Report contain summary statistics for the nitrate concentration data evaluated and are provided below.

Total Dissolved Solids

Spatial and temporal trends in total dissolved solids (TDS) were evaluated using similar methods as trends in nitrate. The 5-Year Report finds that TDS concentrations are increasing in almost all regions and depth zones in the Coalition areas. See Section 5.5 of the 5-Year Report for TDS trend and Tables 5-1b. and 5-2b. below for summary statistics of the TDS data.

Pesticides

The 5-Year report evaluated nine pesticides, including seven that are actively used (atrazine, bentazon, bromacil, diuron, norflurazon, prometon, and simazine) and two that were once widely used and are now banned (1,2,3-trichloropropane [1,2,3-TCP] and 1,2-Dibromo-3-chloropropane DBCP]). The report states that the latter two chemicals are of particular concern for drinking water. Pesticide data were compared to the following water quality standards: California (CA) Primary Maximum Contaminant Levels (MCLs), Drinking Water Advisory Health Levels, and Health-Based Screening Levels (see 5-Year Report Table 5-14).

The report finds that of the nine pesticides, 1,2,3-TCP, DBCP, and Atrazine, were detected above the CA Primary MCL. A total of 83 wells, mostly within the Sacramento

[1] Groundwater zones from the CV-Salts framework.

Valley, had 1,2,3-TCP concentrations above the MCL. A total of 10 wells exceeded the MCL for DBCP which were distributed throughout the entire Coalition area. A single Atrazine exceedance occurred outside of the Sacramento Valley.

Minerals
General mineral data collected from GQTMP wells is provided in the 5-Year Report. An analysis of general mineral data was not performed due to limited data since general mineral sampling occurs only once every five years. As more data is collected, the Coalition will consider further analysis of general minerals for future assessments. See Table 5-17 of the 5-Year Report for a statistical summary of the general mineral data.

Recommended GQTMP Network Refinements
Section 6.2 of the 5-Year Report provides a list of five potential data gap areas in the GQTMP well networks for consideration when the Coalition completes annual network updates. These areas are Monitoring Well (MW) areas 4, 5, 8, 12, and 13. The Coalition suggests that publicly available data may help address data gaps in MW areas 4, 5, 8, and 12. Publicly available data for MW 13 was more limited than for the other MW areas, thus the Coalition plans to consider additional monitoring of this area.

2022 GQTMP Sampling Summary

Annual GQTMP sampling of 26 network wells took place in August 2022. The well types sampled included 13 domestic, 9 public water supply, 3 irrigation, and 1 well listed as “other”. A total of 29 wells were planned for GQTMP sampling, but three wells could not be accessed due to a change in ownership, a withdrawal from the program, and a closed business.

Nitrate as nitrogen results ranged from non-detect (<0.1mg/L) to 15 mg/L. Two wells had nitrate concentrations above the MCL of 10 mg/L and five wells had concentrations between 5 and 6.5 mg/L. The remaining 19 wells had nitrate concentrations less than 5 mg/L, including 13 wells that had nitrate concentrations below 2.5 mg/L.

TDS concentrations ranged from 170 to 930 mg/L. No wells sampled exceeded the 1000 mg/L upper secondary MCL for TDS. Seven wells exceeded the secondary MCL of 500 mg/L, including five that exceeded the secondary MCL for specific conductance of 900 µS/cm.

For the remaining analytes sampled with applicable water quality objectives or trigger limits, one well exceeded the secondary MCL of 250 mg/L for sulfate, and four wells exceeded the California State Notification Level of 1.0 mg/L for boron.

Staff Review
This section provides a review of the required 5-Year Report elements, staff comments, and issues identified.

All the requirements for the 5-Year Report have been met. A summary of the requirements can be found in Table 2.1 below.

Staff Comments
Section 1 and Section 5.6 indicate there were a total of nine pesticides of concern that were analyzed; however, language in Section 1 states the eight pesticides of concern were analyzed for exceedances, which appears to be a typographical error.

Section 7.1.1 implies that a well was not sampled because there was no power to the well as a result of a business closure. Some wells may be sampled manually via sample ports. The Coalition should clarify in future reports whether manual sampling may be attempted in the case that wells are offline due to power issues.

Staff Recommendations
Staff recommends that the Coalition address the two comments provided in this memo. The next Coalition 5-Year GQTMP Assessment Report should be submitted by May 2028.

Table 5-1a. Summary Statistics for Nitrate for SVWQC GQTM Data								
Depth Zone	Number of Individual GQTM Wells	Total Number of Samples	Number of Detections	Date Range	Concentration (mg/L as N)			
					Minimum	Maximum	Average	Median
Upper	23	98	74	2018 to 2022	non-detect	19	5.9	5.3
Upper/ Lower	5	20	14	2018 to 2022	non-detect	5.6	2.4	3
Lower	5	15	8	2018 to 2022	non-detect	9.6	5.3	4.9

Table 5-2a. Summary Statistics for Nitrate for Publicly Available Data								
Depth Zone	Number of Individual Wells with Results	Total Number of Samples	Number of Detections	Date Range	Concentration (mg/L as N)		Concentration (mg/L as N)	
					Minimum	Maximum	Average	Median
Upper	2,252	24,506	19,987	1935 to 2023	non-detect	136	4.2	2.7
Lower	2,418	19,754	16,879	1900 to 2023	non-detect	100	3.4	2.5
Below Lower	1,401	12,699	9,424	1935 to 2022	non-detect	91	3.4	2

Table 5-1b. Summary Statistics for TDS for SVWQC GQTM Data								
Depth Zone	Number of Individual GQTM Wells	Total Number of Samples	Number of Detections	Date Range	Concentration (mg/L)		Concentration (mg/L)	
					Minimum	Maximum	Average	Median
Upper	23	42	42	2018 to 2022	140	980	414	335
Upper/ Lower	5	9	9	2018 to 2022	240	1200	423	330
Lower	5	7	7	2018 to 2022	170	390	321	330

Table 5-2b. Summary Statistics for TDS for Publicly Available Data								
Depth Zone	Number of Individual Wells with Results	Total Number of Samples	Number of Detections	Date Range	Concentration (mg/L)			
					Minimum	Maximum	Average	Median
Upper	2,108	7,372	7,321	1952 to 2022	non-detect	30,800	432	160
Lower	2,224	8,820	8,702	1935 to 2022	non-detect	27,800	329	200
Below Lower	1,672	7,439	7,365	1935 to 2022	non-detect	14,300	443	168

Table 2.1 from the report lists the required elements of the 5-Year Report, whether the element is complete, and staff comments.

Table 2.1. SVWQC Reporting and Implementation Elements for Annual GQTM and Five-Year Assessment Reports

Element	Annual Requirement	5-Year Requirement	Source[1]	Detail	Completed[1]	Staff Comments[1]
Trend Monitoring Sample Results	Yes	Yes	Workplan Phase I	Maps, Tables, Time-Series Charts; Electronic Submittal to GeoTracker	Yes	
Groundwater Elevations	No	No	Workplan Phase I	Groundwater level (GWL) Contours, GQTM Well Static Water Levels, GQTM Well Static Water Level is collected annually if possible	N/A	
Trend Analyses	No	Yes	Workplan Phase I	Summary Statistics, Time-Series, Linear Regression, Non-Linear Trend Analyses, Correlation Matrices (Land Use, Management Practice Implementation)	Yes	
GQTM Well Network Updates	Yes	Yes	Workplan Phase 1	Descriptions of wells added to network. Explanations for wells removed from network.	Yes	2023 GQTMP Update

1. The 'Completed' and 'Staff Comments' columns were added by staff.