

Central Valley Regional Water Quality Control Board

4 December 2015

Parry Klassen, Board Chairman
East San Joaquin Water Quality Coalition
1201 L Street
Modesto, CA 95354

EAST SAN JOAQUIN WATER QUALITY COALITION'S TREND MONITORING WORK PLAN

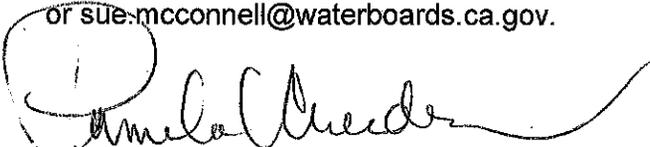
Thank you for your 18 November 2015 letter, in which the East San Joaquin Water Quality Coalition (Coalition) requested a status update on the review of the Phase I Groundwater Quality Trend Monitoring (GQTM) Work Plan, which was submitted on 4 June 2015. You also noted the lack of response to your June 2016 request for Well Completion Reports from the Department of Water Resources, which contributes to the difficulty in completing the Phase II Work Plan.

Staff has reviewed the GQTM Phase I Work Plan and their comments are summarized below and provided in the attached review memo.

1. Shallow Groundwater - The coalition is proposing to use only wells with a perforated interval depth of greater than 100 feet in the Trend Monitoring program. The selection of monitoring wells must include justification of why 100 feet is considered representative of shallow groundwater as required by the General Order. The Phase II work plan must include this justification.
2. Minimum Monitoring - The coalition is proposing to utilize wells in Tier 3 and 4 areas that may not be sampled on an annual basis or may not be analyzed for all the constituents that are required to be monitored on an annual basis under the General Order. The GQTM needs to be revised so that all Trend Monitoring Program wells are sampled a minimum of annually and the collected samples are analyzed for all the required constituents consistent with the Order.

Staff will also provide assistance with your request for Well Completion Reports from the Department of Water Resources. Please move forward with preparation of the Groundwater Trend Monitoring Program Phase II Workplan so that final approval of the GQTM can be considered. Staff comments can be addressed in the Phase II workplan, with a new submittal date of **29 January 2016**.

If you have any questions regarding this letter, please contact Sue McConnell at 916-464-4798 or sue.mcconnell@waterboards.ca.gov.

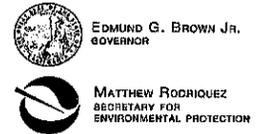


Pamela C. Creedon
Executive Officer

Attachment: 3 December Staff Review Memo

KARL E. LONGLEY SCD, P.E., CHAIR | PAMELA C. CREEDON P.E., BCEE, EXECUTIVE OFFICER

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Central Valley Regional Water Quality Control Board

TO: Sue McConnell, P.E.
Program Manager
Irrigated Lands Regulatory Program

Adam Laputz, P.E.
Assistant Executive Officer
Central Valley Water Board

FROM: Dana Kulesza
Engineering Geologist
Irrigated Lands Regulatory Program

Glenn Meeks, P.G.
Senior Engineering Geologist
Irrigated Lands Regulatory Program

DATE: 3 December 2015

SUBJECT: REVIEW OF THE GROUNDWATER QUALITY TREND MONITORING
WORKPLAN (PHASE 1) FOR THE EAST SAN JOAQUIN WATER QUALITY
COALITION

On 4 June 2015, the California Regional Water Quality Control Board, Central Valley Region (Central Valley Water Board) received the East San Joaquin Water Quality Coalition (ESJWQC or Coalition) *Groundwater Quality Trend Monitoring Workplan – Phase I* (Phase I GQTM or Phase I Workplan).

The Phase I GQTM Transmittal Letter explains that the complete Trend Monitoring Workplan will be submitted in two phases: the Monitoring Design Approach (Phase I) and the Determination of Specific Wells for GQTM (Phase II). According to the Transmittal Letter:

Phase I of the GQTM Workplan outlines the rationale and approach to the trend monitoring program and describes the analyses and reporting that will occur as part of the GQTM. Phase I of the Workplan also includes identification and ranking of existing candidate wells to be considered for incorporation as part of the GQTM network. Because of the considerable time required to investigate the suitability of existing wells for inclusion in the GQTM network, including locating the well, confirming well construction details, and coordinating with the well owner or monitoring entity, a second phase of the Workplan (Phase II) will be conducted to complete the monitoring network design. The required elements of the GQTM Workplan and the phase under which these will be completed are shown in a checklist included in the Workplan Phase I as Table 1. The Workplan Phase I also includes an entire section and flow charts describing the steps necessary to complete the Workplan Phase II.

The Phase I GQTM was reviewed to determine compliance with requirements pursuant to section VIII.D.3 of Waste Discharge Requirements General Order R5-2012-0016-R3 (Order), and section IV of Attachment B (Monitoring and Reporting Program) to the Order.

Staff recommends that the Coalition move forward with preparation of the Groundwater Trend Monitoring Program Phase II so that final approval can be considered and that staff comments provided below be addressed in the Phase II document.

Attachment A to the Order summarizes the requirements and purpose for the Trend Monitoring Program (excerpted below from page 16):

The trend monitoring program is designed to determine current water quality conditions of groundwater in the third-party area, and to develop long-term groundwater quality information that can be used to evaluate the regional effects (i.e., not site-specific effects) of irrigated agriculture and its practices. Trend monitoring has been developed to answer the Groundwater Management Advisory Workgroup questions 1 and 4. At a minimum, trend monitoring must include annual monitoring for electrical conductivity, pH, dissolved oxygen, temperature, nitrate as nitrogen (N), and once every five year monitoring for total dissolved solids, carbonate, bicarbonate, chloride, sulfate, boron, calcium, sodium, magnesium, and potassium. Existing shallow wells, such as domestic supply wells, will be used for the trend groundwater monitoring program. The use of existing wells is less costly than installing wells specifically designed for groundwater monitoring, while still yielding data which can be compared with historical and future data to evaluate long-term groundwater trends.

As the management practices identified as protective of groundwater quality through the Management Practices Evaluation Program are implemented, the trend monitoring, together with other data included in updates to the Groundwater Assessment Report (GAR), should show improvements in water quality. The trend monitoring and GAR updates will, therefore, provide a regional view as to whether the collective efforts of Members are resulting in water quality improvements. If groundwater quality trends indicate degradation in low vulnerability areas, then a Groundwater Quality Management Plan must be developed and implemented. Negative trends of groundwater quality in high vulnerability areas over time would be an indicator that the existing Groundwater Quality Management Plan is not effective or is not being effectively implemented.

Section IV.C *Groundwater Quality Trend Monitoring* of the MRP describes the specific trend monitoring requirements (excerpted below):

Implementation. To reach the stated objectives for the Groundwater Quality Trend Monitoring program, the third-party shall develop a groundwater monitoring network that will (1) be implemented over both high and low vulnerability areas in the third-party area; and will (2) employ shallow wells, but not necessarily wells completed in the uppermost zone of first encountered groundwater. The use of existing wells is less costly than installing wells specifically designed for groundwater monitoring, while still yielding data which can be compared with historical and future data to evaluate long-term groundwater trends. The third party may also consider using existing monitoring networks such as those used by AB 3030 and SB 1938 plans.

The third-party shall submit a proposed Trend Groundwater Monitoring Workplan described in section IV.E below to the Central Valley Water Board. The proposed network shall consist of a sufficient number of wells to provide coverage in the third-party geographic area so that current water quality conditions of groundwater and composite regional effects of irrigated agriculture can be assessed according to the trend monitoring objectives. The rationale for the distribution of trend monitoring wells shall be included in the workplan.

Staff comments are provided below. Trend Monitoring Program required components not discussed are complete and do not need to be revised or addressed. Table 1 below lists the requirements.

Item 1. Requirement to prepare a Trend Monitoring Workplan; objectives

Order requirement: Upon Executive Officer approval of the GAR, the third-party shall develop a Groundwater Quality Trend Monitoring Workplan (GQTM). The workplan must meet the goals, objectives, and other requirements described in section IV of the attached MRP. The workplan shall be submitted to the Central Valley Water Board within one year after written approval of the GAR by the Executive Officer.

Staff review: The Coalition has submitted a partial GQTM, splitting it into two phases – Phase I and Phase II. Final approval can be considered once the full GQTM has been submitted to the Central Valley Water Board.

Item 3. Groundwater sampling depths

Order requirement: The trend monitoring network will employ shallow wells, but not necessarily wells completed in the uppermost zone of first encountered groundwater.

Staff review: The Phase I workplan describes utilizing relatively shallow public supply and irrigation wells versus domestic wells. Page 16 states that wells with perforated intervals starting below 100 feet but not below 400 feet will be targeted. The rationale is that these larger capacity wells draw water from a wider area and provide a regional representation of GW quality (see section 3.2), while domestic wells provide regional data to a lesser extent since they draw from a much smaller zone of influence. Staff recommends that the final wells chosen need to be verified as relatively shallow wells considering the depth to groundwater in each monitoring subarea, rather than a minimum 100 foot depth criteria for the entire coalition area.

Item 7. Sampling frequency and constituents

Order requirement: Sampling shall occur at a minimum annually at the same time of year for conductivity, pH, dissolved oxygen, temperature, and nitrate as nitrogen. In addition, sampling shall occur the first year and once every five years thereafter for total dissolved solids, carbonate, bicarbonate, chloride, sulfate, boron, calcium, sodium, magnesium, and potassium.

Staff review:

- (a) The GQTM proposes that all Tier 4 wells (Tier 4 is the term used in the GQTM for low vulnerability areas) and some Tier 3 wells (Tier 3 wells are wells within Priority 3 High Vulnerability Areas) will be sampled once every five years.¹ Staff recommends that the GQTM be revised so that all Trend monitoring wells will be sampled a minimum of annually for the constituents as required by the General Order.
- (b) Table 4 of the GQTM states that nitrogen and TDS may not be sampled at all wells in Tiers 3 and 4. Staff recommends that the GQTM be revised so that all Trend monitoring wells will be sampled for all minimally required constituents consistent with the General Order.

¹ See Phase I GQTM first paragraph on page 12 and Tables 4 and 5.

Table 2. Groundwater Trend Monitoring Workplan (GQTM) Requirements.

Review Memo Item Number	Requirement Description	Location in GQTM	Staff Review Notes
	Required Reports, Groundwater Trend Monitoring Workplan, Order R5-2012-0116-r2, section VIII.D.3		
1	Upon Executive Officer approval of the GAR, the third-party shall develop a Groundwater Quality Trend Monitoring Workplan. The workplan must meet the goals, objectives, and other requirements described in section IV of the attached MRP. The overall objectives of groundwater trend monitoring are to (a) determine current water quality conditions of groundwater relevant to irrigated agriculture and (b) develop long-term groundwater quality information that can be used to evaluate the regional effects of irrigated agricultural practices. The workplan shall be submitted to the Central Valley Water Board within one year after written approval of the GAR by the Executive Officer.	Throughout; section 2.1	Only half of the GQTM (Phase I) has been submitted so final approval cannot yet be considered.
Requirements contained in Attachment B (Monitoring and Reporting Program) to Order R5-2012-0116-r2, section IV.C & IV.E			
WORKPLAN APPROACH AND IMPLEMENTATION			
2	The trend monitoring network will be implemented over both high and low vulnerability areas.	Sections 2.2. and 3	Requirement met.
3	The trend monitoring network will employ shallow wells, but not necessarily wells completed in the uppermost zone of first encountered groundwater.	Section 3.2	Requirement met. Proposal describes utilizing relatively shallow public supply and irrigation wells as these draw water from a wider area and provide a regional representation of GW quality, and domestic wells to a lesser extent. Final wells chosen need to be verified as relatively shallow wells.
4	The proposed monitoring well network shall consist of a sufficient number of wells to provide coverage in the third-party geographic area so that current water quality conditions of groundwater and composite regional effects of irrigated agriculture can be assessed according to the trend monitoring objectives.	Throughout	Requirement met.

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Requirement Description

The rationale for the number, distribution, and location of trend monitoring wells shall be included in the workplan. The rationale needs to consider: 1) the variety of agricultural commodities produced within the third-party's boundaries (particularly those commodities comprising the most irrigated agricultural acreage), 2) the conditions discussed/identified in the GAR related to the vulnerability prioritization within the third-party area, and 3) the areas identified in the GAR as contributing significant recharge to urban and rural communities where groundwater serves as a significant source of supply.

Well details. Details for wells proposed for trend monitoring, including:

- i. GPS coordinates;
- ii. Physical address of the property on which the well is situated (if available);
- iii. California State well number (if known);
- iv. Well depth;
- v. Top and bottom perforation depths;
- vi. A copy of the water well drillers log, if available;
- vii. Depth of standing water (static water level), if available (this may be obtained after implementing the program); and
- viii. Well seal information (type of material, length of seal).

Sampling shall occur at a minimum annually at the same time of year for conductivity, pH, dissolved oxygen, temperature, and nitrate as nitrogen. In addition, sampling shall occur the first year and once every five years thereafter for total dissolved solids, carbonate, bicarbonate, chloride, sulfate, boron, calcium, sodium, magnesium, and potassium.

REPORTING

8 The methods to be used to evaluate trends shall be proposed by the third-party in the trend monitoring workplan.

Location in GQTM	Staff Review Notes
Section 3; Tables 6 & 7	Requirement met.
	Proposed one monitoring well per subarea; subareas (excluding Tier 4) range from one to 68 square miles. 62 total subareas.
Table 3	Specific well details not included. Phase I states this information will be provided in the Phase II portion of the GQTM.
Section 3.1; Tables 4 & 5	The Order requires annual monitoring at Trend wells. The GQTM states Tier 4 wells (in low vulnerability areas) and some Tier 3 wells will be sampled once every five years.
Section 4	Table 4 states that nitrogen and TDS may not be sampled at all wells.
Section 4	Requirement met.