
Central Valley Regional Water Quality Control Board

28 June 2016

Donald Ikemiya
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P.O. Box 2840
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REVIEW OF THE KAWEAH BASIN WATER QUALITY ASSOCIATION'S COMPREHENSIVE GROUNDWATER QUALITY MANAGEMENT PLAN

Thank you for your 5 February 2015 submittal of the Kaweah Basin Water Quality Association's (Coalition) Comprehensive Groundwater Quality Management Plan (GQMP). The GQMP was submitted in response to Waste Discharge Requirements General Order for Growers in the Tulare Lake Basin that are Members of a Third Party Group, Order No. R5-2013-0120 (General Order). Central Valley Water Board staff has reviewed the GQMP and has noted areas within the Plan that must be addressed to comply with the General Order.

The attached staff review memo contains GQMP elements in need of revision. A key element that needs to be addressed is the addition of more detailed information regarding the management practices to be implemented prior to the availability of MPEP results and schedules for implementation of those practices.

Please revise the GQMP in accordance with the staff review memo and resubmit an updated GQMP by **1 August 2016**. If you have any questions regarding this letter, please contact David Sholes at (559) 445-6279 or by email at david.sholes@waterboards.ca.gov.

Sincerely,

Original signed by:

Pamela C. Creedon
Executive Officer

Attachment: Central Valley Water Board Staff Review Memo of the Coalition's GQMP

cc: Sue McConnell, Central Valley Water Board, Rancho Cordova

Central Valley Regional Water Quality Control Board

TO: David Sholes, CEG
Senior Engineering Geologist
Irrigated Lands Regulatory Program

FROM: Ryan K. West
Engineering Geologist
Irrigated Lands Regulatory Program

DATE: 28 June 2016

SUBJECT: REVIEW OF THE COMPREHENSIVE GROUNDWATER QUALITY
MANAGEMENT PLAN FOR THE KAWEAH BASIN WATER QUALITY
ASSOCIATION

On 5 February 2015, Provost & Pritchard Consulting Group submitted a Comprehensive Groundwater Quality Management Plan (GQMP) on behalf of the Kaweah Basin Water Quality Association (Coalition). Groundwater Quality Management Plans are the key mechanism under Waste Discharge Requirements General Order R5-2013-0120 (General Order) to help ensure that waste discharges from irrigated lands do not cause or contribute to an exceedance of applicable water quality objectives in the underlying groundwater, unreasonably affect applicable beneficial uses, or cause or contribute to a condition of pollution or nuisance.

Central Valley Regional Water Quality Control Board (Central Valley Water Board) staff reviewed the GQMP to determine compliance with requirements pursuant to section VIII.I. of the General Order, and Appendix MRP-1 of Attachment B (Monitoring and Reporting Program) to the General Order. Based on staff review, modification and additions are necessary to the GQMP to comply with the requirements of the General Order. Table 1 provides descriptions of the required groundwater quality management plan components from Appendix MRP-1 of the General Order's Monitoring and Reporting Program (MRP) and lists the section in the GQMP that addresses each component. Recommended revisions/additions for incomplete items are provided below. The memorandum item numbers correspond to item numbers in Table 1.

Item 1. Constituents of Concern

Nitrate was the only constituent of concern listed in the GQMP. However, pesticides (which include herbicides, insecticides, fungicides, and others) were identified and evaluated as constituents of concern for the Coalition's Groundwater Quality Assessment Report (GAR). Areas with pesticide impacted groundwater are represented in Figure 5-2 in the GAR. The GQMP should be revised to include pesticides as constituents of concern; a map/figure showing the locations of pesticide exceedances in groundwater should also be included.

Additionally, groundwater salinity (electrical conductivity [EC] and/or total dissolved solids [TDS]) was discussed in the GAR as a constituent of focus, however the Coalition determined that EC/TDS exceedances in groundwater were redundant to the nitrate/pesticide issues and not necessarily indicative of potential impacts due to irrigated agriculture. As stated in staff's review of the GAR, the General Order only requires that the Coalition assess the influence of irrigated agricultural activities on salinity trends. The *Water Quality Control Plan for the Tulare Lake Basin*, Second Edition, revised January 2004 (page III-8) states that the maximum average annual increase in salinity (EC) should not exceed 3 micromhos per centimeter ($\mu\text{mhos/cm}$) in the Kaweah River Hydrographic Unit. The GQMP should be revised to include salinity as a constituent of concern.

Item 7. Irrigated Agricultural Sources of Constituents of Concern

The GQMP provided a discussion regarding irrigated agricultural sources, factors, and mechanisms of nitrate impacts to groundwater. However, the discussion needs to be expanded to include pesticides and EC (see Item 1 above). This information should be provided in a revised GQMP.

Item 8. Beneficial Uses of Groundwater

The GQMP stated "...groundwater basins included in the area of the KBWQA, noted previously, are designated for municipal (MUN), agricultural (AGR) and industrial (IND) beneficial uses..." However, there are additional beneficial uses of groundwater in the Coalition's area. The *Water Quality Control Plan for the Tulare Lake Basin*, Second Edition, revised January 2004 designates the following beneficial uses for ground water in the Kaweah Basin hydrologic unit: Municipal and Domestic Supply (MUN); Agricultural Supply (AGR); Industrial Service Supply (IND); Industrial Process Supply (PRO); Water Contact Recreation (REC-1); and Non-Contact Water Recreation (REC-2). The GQMP should be revised to include acknowledgment of PRO, REC-1, and REC-2 beneficial uses of groundwater.

Item 9. Management Practices that could be Affecting Groundwater Quality

Section B.1.d. of Appendix MRP-1 of the Monitoring and Reporting Program requires that the GQMP provide a baseline inventory of identified existing management practices in use within the management plan area that could be affecting the concentrations of COCs in groundwater and locations of the various practices. The discussion provided in section 2.4.1 (Existing Practices) of the GQMP focused on the increased trend of permanent crops which utilize highly efficient drip and/or micro-spray irrigation systems. However, Figure 17 in the GQMP illustrated that a significant portion of growers in the Coalition's primary area are utilizing flood irrigation, and no discussion was provided regarding the potential impacts to groundwater from this irrigation method. The GQMP should be revised to include a discussion of flood irrigation management practices with respect to the potential to impact groundwater.

Item 11. Regional and Area Specific Geology

Section B.3.b.i. of Appendix MRP-1 of the Monitoring and Reporting Program requires that the GQMP provide regional and area specific geology, including stratigraphy and existing published

geologic cross sections. Geologic, hydrogeologic, and stratigraphic information were provided in the GQMP; however, geologic cross sections were not provided.

Geologic cross sections that extend across portions of the Coalition's area have been published in reports produced by the United States Department of the Interior Geological Survey such as: (1) *Geology, Hydrology, and Quality of Water in the Hanford-Visalia Area, San Joaquin Valley, CA* [Open-File Report 68-67], (2) *Subsurface Geology of the Late Tertiary and Quaternary Water-Bearing Deposits of the Southern Part of the San Joaquin Valley, CA* [Water –Supply Paper 1999-H], etc. Additionally, geologic cross sections for the Coalition's area are contained in a report prepared for the Kaweah Delta Water Conservation District (KDWCD) entitled *Water Resources Investigation of the Kaweah Delta Water Conservation District*, December 2003, Revised July 2007, prepared by Fugro West, Inc. (hereafter referred to as the Fugro Report). The GQMP should be revised to include geologic cross sections for the Coalition's area.

Geologic cross sections should be utilized in future work plans and reports when presenting data in a graphical format. For example, a graphical representation of data might include a geologic cross section as a base layer, with other data overlain such as depth to groundwater data, well completion data, groundwater quality data, etc. in order to clearly convey the relationships of each of the datasets to each other and to the subsurface geology. A similar concept was utilized in cross sections provided in the Fugro Report referenced above.

Item 12. General Groundwater Chemistry within the GQMP Area

Section B.3.b.ii. of Appendix MRP-1 of the Monitoring and Reporting Program requires that information be provided on groundwater basin(s) and sub-basins contained within the GQMP area, including a discussion of their general water chemistry (range of EC, concentrations of major anions and cations, nutrients, TDS, pH, dissolved oxygen and hardness); Piper Diagrams, Stiff Diagrams and/or Durov Diagrams should also be provided for the GQMP area. However, the GQMP only provided: (1) a brief discussion of the general types of groundwater (calcium bicarbonate and sodium bicarbonate) in the Coalition's area; and (2) provided a range of TDS values for groundwater.

The GAR should be revised to contain a more detailed description of groundwater chemistry (range of EC, concentrations of major anions and cations, nutrients, TDS, pH, dissolved oxygen and hardness) in the Coalition's area, and provide diagrams (Piper, Stiff, and/or Durov) that represent the general chemistry of groundwater in the Coalition's area.

Items 13. & 14. Water Bearing Zones

Sections B.3.b.iii. and B.3.b.iv. of Appendix MRP-1 of the Monitoring and Reporting Program require that information be provided regarding known water bearing zones, and identification of which water bearing zones are being utilized for domestic, irrigation, and municipal water production. While the GQMP did provide information regarding depth to groundwater and provided a general idea of depths that domestic, irrigation, and municipal wells might be completed, specific information regarding water bearing zones was not provided.

Cross sections provided in the Fugro Report, referenced above in Item 11, illustrate that a majority of irrigation wells are completed within a water bearing zone in the oxidized older alluvium. The water bearing zone within the oxidized older alluvium is unconfined and generally contains a calcium bicarbonate type groundwater. If domestic wells are typically completed in shallow aquifers, as stated in the GQMP, it is likely that domestic wells may also be completed within the unconfined water bearing zone of the oxidized older alluvium.

Information provided in a report entitled *Groundwater Ambient Monitoring and Assessment (GAMA), Domestic Well Project, Groundwater Quality Data Report, Tulare County Focus Area* [California State Water Resources Control Board, 2013] indicates that municipal and irrigation wells are typically completed to a total depth of 100 to 500 feet in Tulare County, with the exception of wells within the Tule Sub-basin which are completed to depths ranging from 200 to 1,400 feet bgs.

The GQMP should be revised to include an assessment of available well construction information in conjunction with subsurface geologic information in order to identify which water bearing zones are being utilized for domestic, irrigation, and municipal water production.

Item 15. Aquifer Characteristics

Section B.3.b.v. of Appendix MRP-1 of the Monitoring and Reporting Program requires that information be provided regarding aquifer characteristics such as depth to groundwater, groundwater flow direction, hydraulic gradient, and hydraulic conductivity, as known or estimated based on existing information. However, section 2.1.4.5 (Aquifer Characteristics) of the GQMP only contained depth to groundwater information. The GQMP should be revised to include information regarding groundwater flow direction, hydraulic gradient, and hydraulic conductivity.

Item 16. Irrigation Water Quality

Section B.3.c. of Appendix MRP-1 of the Monitoring and Reporting Program requires that information be provided regarding identification, where possible, of irrigation water sources (surface water origin and/or groundwater) and their available general water chemistry (range of EC, concentrations of major cations and anions, nutrients, TDS, pH, dissolved oxygen, and hardness). The information provided in the GQMP was insufficient to identify the quality of surface water and groundwater that are used for irrigation.

The GQMP should be revised to include a summary of the general water quality of both surface water and groundwater. The summary could be presented in a tabular format that contains data for the following constituents/parameters: range of EC, concentrations of major cations and anions, nutrients, TDS, pH, dissolved oxygen, and hardness. Data provided for surface water should identify the source of the water (Friant/Kern Canal, etc.).

Item 17. Management Plan Strategy/Approach

The Coalition will not be pursuing a source identification study for areas with groundwater that has been impacted by nitrate. According to the GQMP, "previous efforts to define the relative contribution of various nitrate producing activities to groundwater impacts have yielded

inconclusive results, especially in defining or explaining legacy impacts.” The GQMP also stated “...it is infeasible to retroactively trace local nitrate impacts back to specific agricultural management system choices. Similar barriers exist in tracing the impacts of newly implemented practices and their nitrate impact on groundwater due to the spatial and temporal disconnects prevalent throughout the KBWQA.”

In lieu of source identification studies, the Coalition’s management plan strategy will focus on addressing irrigation and nutrient management practices through extensive outreach and education for all irrigated lands included in the scope of the GQMP. The outreach will also address multiple surface level metrics including the nitrogen applied/removed ratio (A/R ratio). According to the GQMP, the main factors that influence the potential for farming operations to impact groundwater include: management decisions, fertilizer application methods, soil type, crop type, irrigation type, etc. The Coalition believes that an analysis of the interaction of these factors should provide a foundational baseline for the implementation of reasonable management practices to reduce nitrate leaching risk.

While staff would agree that outreach and education is needed, the GQMP did not identify which irrigation and nutrient management practices would be advocated by the Coalition to reduce the risk of leaching nitrate and other constituents of concern to groundwater. Additionally, there was no mention of how the Coalition would prioritize the implementation of efficient irrigation and nutrient management practices within high vulnerability areas (e.g. phased approach, etc.). The GQMP should be revised to provide this information.

Items 21. & 22. Key Individuals/Responsibilities of Each Individual

Sections C.3.a. and C.3.b. of Appendix MRP-1 of the Monitoring and Reporting Program require that information be provided regarding the identification of key individuals involved in major aspects of the project, including a discussion of each individual’s responsibilities. While the report did identify Donald Ikemiya, PE as the Executive Director of the Coalition, no other individuals were identified (e.g., project lead, data manager, sample collection lead, lead for stakeholder involvement, quality assurance manager) and no discussion was provided regarding the responsibilities of these other individuals. The GQMP should be revised to include this information.

Item 25. Protective Management Practices

Section C.4.b. of Appendix MRP-1 of the Monitoring and Reporting Program requires that information be provided regarding the identification of management practices that will be used to control sources of COCs from irrigated lands that are: technically feasible; economically feasible; proven to be effective at protecting groundwater quality; and will comply with sections III.A and B of the General Order. While the GQMP did acknowledge that “a review of relevant knowledge is likely sufficient to initially identify practices to suggest for implementation and to formulate effective outreach materials” the GQMP did not identify specific management practices to be implemented by growers that are protective of groundwater quality.

While staff understands that the Management Practices Evaluation Program (MPEP) has not yet been initiated and there is uncertainty regarding the effectiveness of certain management

practices in relation to a variety of different site conditions, the General Order requires that the GQMP identify specific management practices that are known to be effective in partially or fully protecting groundwater quality which growers can implement as a first step to protect groundwater quality prior to the completion of MPEP studies. The GQMP indicated that numerous practices that decrease or potentially decrease nitrogen leaching are contained in Technical Report 4: *Addressing Nitrate in California's Drinking Water with a Focus on Tulare Lake Basin and Salinas Valley Groundwater* (2012), and that information contained in this report would be employed to develop outreach and education materials to help growers improve nitrogenous fertilizer application efficiency and irrigation efficiency. However, the GQMP did not specifically identify which management practices are known to be effective at decreasing or potentially decreasing deep percolation of COCs to groundwater. Additionally, no mention was made regarding the employment of management practices for well head protection.

The GQMP should be revised to include specific management practices that are known to be protective of groundwater quality. The management practices should be consistent with those documented to improve nitrogen fertilizer efficiency that are listed in Table 3-3 of the Draft Management Practices Evaluation Workplan for the Southern San Joaquin Valley MPEP Committee, which the Coalition has agreed to implement through the Group Option.

Item 26. Outreach Strategy

The GQMP identified the outreach strategy that will be used to disseminate information to participating growers. However, no discussion was provided regarding how the Coalition will evaluate the effectiveness of the outreach efforts. The GQMP should be revised to include this information.

Item 27. Schedule and Milestones for Implementation

Section C.4.d. of Appendix MRP-1 of the Monitoring and Reporting Program requires that the GQMP include a schedule and milestones for the implementation of management practices that are known to be effective in partially or fully protecting groundwater quality. While the GQMP did provide a brief description of timelines for implementation, the information provided was insufficient to meet the General Order's requirements.

The GQMP states "some practices may be able to be adopted as soon as two or three years from the initial notification of high vulnerability status and subsequent outreach and education." A two or three year time frame should not be required for growers to begin implementing management practices that are known to be protective of groundwater quality. As Groundwater Receiving Limitation III.B applies immediately, management practices that are known to be protective of groundwater quality should begin to be implemented within the first year of initial notification of high vulnerability status (e.g. provided in Appendix MRP-1, at least 25% of growers identified in HVAs must implement management practices by year 1; at least 50% by year 2). The overall time schedule for compliance must be consistent with the requirements in section XII of the General Order, Time Schedule for Compliance (i.e. 10 years from the date the GQMP is submitted for approval by the Executive Officer).

The GQMP should be revised to provide a specific schedule and milestones for the phased implementation of management practices that are known to be protective of groundwater quality that begins (at least partially) within the first year of initial notification of high vulnerability status.

Item 28. Performance Goals

Section C.4.e. of Appendix MRP-1 of the Monitoring and Reporting Program requires that the GQMP establish measurable performance goals that are aligned with the elements of the management plan strategy. However, this information was not provided as the GQMP stated “Baseline performance data for A/R ratios will need to be developed before relevant performance goals can be set.” While additional time may be needed to determine appropriate A/R ratios for all crops within the Coalition’s area, this is an insufficient reason for not providing performance goals and targets for the Coalition’s management plan strategy.

The GQMP should be revised to establish measurable performance goals that are aligned with all elements of the Coalition’s management plan strategy, both short term and long term, and should include specific targets that identify the expected progress towards meeting a desired outcome. Additionally, the revised GQMP should contain a performance goal for implementation of an effective outreach plan for outliers identified through the nitrogen management plan summary report analysis. The outreach plan should include a schedule for providing growers with the A/R or A/Y information when A/R is not available and also provide a process for informing growers of where they stand in relation to other growers of the same crops in similar conditions.

Item 29. Monitoring Compliance

The Coalition intends on utilizing the A/R ratio to evaluate the compliance rates of members to implement practices that are protective of groundwater quality. Multi-year averages of A/R ratios will be used to evaluate the shift in agricultural management practices at the farm level. However, the GQMP indicated that there is very little data on ranges of A/R ratio values for various crops and did not indicate when this data is expected to be available for use. As the A/R ratio is a critical component of the Coalition’s method of monitoring compliance with the General Order’s requirements, more information should be provided regarding a timeframe that the Coalition expects to be able to utilize A/R ratio data.

Item 30. Groundwater Quality Trend Monitoring

Groundwater monitoring is an important component of a groundwater quality management plan. It provides data to determine current groundwater quality conditions and is a mechanism to develop long-term groundwater quality information that can be used to evaluate the regional effects of irrigated agriculture and its practices.

In reference to the Coalition’s Groundwater Quality Trend Monitoring Program, the GQMP stated “Existing wells that have been tested for groundwater quality generally do not have well construction information available, complicating the determination of representativeness of first encountered groundwater” then went on to say “At the current time, only a general evaluation of the regional impact of irrigated agriculture is possible with the existing data.” However, in June 2015, subsequent to the GQMP submittal, Senate Bill 83 amended California Water Code

§13752 to allow public access to well completion reports. The Department of Water Resources is currently in the process of redacting personal information from the reports, which are expected to become available online within the next year and are currently available upon request.

Well construction information needs to be utilized to identify suitable wells within existing groundwater monitoring networks for the Coalition's Groundwater Quality Trend Monitoring Program. Well construction details will allow the Coalition to choose appropriate wells to obtain groundwater quality data from first encountered groundwater. The Coalition should explore the option of using existing domestic supply wells for the Groundwater Quality Trend Monitoring Program, as these may be suitable (proper well screen length and placement with respect to the water table) for obtaining groundwater samples that would be consistent with the groundwater monitoring provisions of the General Order.

Item 31. Data Analysis Methods

Section E.1 of Appendix MRP-1 of the Monitoring and Reporting Program requires that the GQMP describe the methods to be utilized to perform data analysis (graphical, statistics, modeling, index computation, or some combination thereof). However, the GQMP did not specifically describe the methods to be utilized to perform data analysis. The GQMP should be revised to include this information.

Item 32. Quantification of Management Plan Effectiveness

Section E.2 of Appendix MRP-1 of the Monitoring and Reporting Program requires that the GQMP describe how the Coalition will quantify program effectiveness going forward, including the tracking of management practice implementation. While the GQMP did convey that nutrient management plans and irrigation management plans would be implemented by growers and A/R ratios would be tracked over time for summarization and interpretation, specific information regarding nutrient management plans and irrigation management plans was not provided and it is unclear what information will be collected and quantified from these plans.

More information on the specifics of nutrient management plans and irrigation management plans as well as the information that will be collected and quantified from these plans needs to be provided in a revised GQMP. A discussion should also be provided regarding how the information in nutrient management plans and irrigation management plans would be verified.

Table 1. Components of the Groundwater Quality Management Plan

Item No.	Required Component	Location in GQMP
Introduction and Background		
1	Provide a discussion of the constituents of concern (COCs) that are the subject of the GQMP.	Section 1.1.1 (incomplete)
2	Provide a discussion of the water quality objective(s) or trigger(s) requiring preparation of the management plan.	Section 1.1.3 Figure 3
3	Identification (both narrative and in a map form) of the boundaries (geographic and groundwater basin[s] or portion of a basin) to be covered by the GQMP including how the boundaries were delineated.	Section 1.1.4 Section 1.1.5 Figures 4 & 5
4	Provide a summary of previous work conducted to identify the occurrence of the COCs (e.g., studies, monitoring conducted) for the GQMP area.	Section 1.1.2 Section 1.1.3
Physical Setting and Information		
5	Provide land use maps which identify the crops being grown in the GQMP area (these maps may already be presented in the GAR). Map(s) must also be provided in electronic format as ArcGIS shapefiles.	Section 2.1.1 Figure 6
6	Provide soil types and other relevant soils data as described by the NRCS soil survey or other applicable studies. The soil unit descriptions and a map of their aerial extent within the study area must be included.	Section 2.1.2 Figure 7
7	Identification of the potential irrigated agricultural sources of the COC(s) for which the management plan is being developed. If the potential sources are not known, a source identification study may be designed and implemented.	Section 2.2 (incomplete)
8	Provide a list of the designated beneficial uses as identified in the <i>Water Quality Control Plan for the Tulare Lake Basin</i> , Second Edition, revised January 2004 (Basin Plan).	Section 2.3 (incomplete)
9	Provide a baseline inventory of identified existing management practices in use within the management plan area that could be affecting the concentrations of COCs in groundwater and locations of the various practices.	Section 2.4 (incomplete)
10	Provide a summary, discussion, and compilation of available groundwater quality data for the parameters addressed by the management plan. The GAR developed for the Coalition's area, and groundwater quality data compiled in that document, may serve as a reference for these data.	Section 2.5
Geology and Hydrogeology		
11	Provide regional and area specific geology, including stratigraphy and existing published geologic cross-sections.	Section 2.1.3 (incomplete)
12	Provide information on groundwater basin(s) and sub-basins contained within the GQMP area, including a discussion of their general water chemistry as known from existing publications, including the GAR (range of EC, concentrations of major cations and anions, nutrients, TDS, pH, dissolved oxygen, and hardness). The discussion should reference and provide figures of existing Piper Diagrams, Stiff Diagrams and/or Durov Diagrams for the GQMP area.	Section 2.1.4 (incomplete)

13	Provide information regarding known water bearing zones, areas of shallow and/or perched groundwater, as well as areas of discharge and recharge to the basin/sub-basin in the GQMP area (rivers, unlined canals, lakes, and recharge or percolation basins).	Section 2.1.4.3 Figures 13, 14, & 15 (incomplete)
14	Identification of which water bearing zones within the GQMP area are being utilized for domestic, irrigation, and municipal water production	Section 2.1.4.4 (incomplete)
15	Aquifer characteristics such as depth to groundwater, groundwater flow direction, hydraulic gradient, and hydraulic conductivity, as known or estimated based on existing information.	Section 2.1.4.5 Figure 14 (incomplete)
16	Identification, where possible, of irrigation water sources (surface water origin and/or groundwater) and their available general water chemistry (range of EC, concentrations of major cations and anions, nutrients, TDS, pH, dissolved oxygen, and hardness).	Not Provided
Management Plan Strategy		
17	Provide a description of the approach to be utilized by the management plan (e.g., multiple COC's addressed in a scheduled priority fashion, multiple areas covered by the plan with a single area chosen for initial study, or all areas simultaneously [area wide]). Any prioritization included in the management plan must be consistent with the requirements in section XII of the General Order, Time Schedule for Compliance.	Section 2.4 Through Section 3.1.2 (incomplete)
18	Provide a description of actions to be taken in order to achieve compliance with the receiving water limitations of the General Order (section III).	Section 3.2
19	Provide a description of how the Coalition plans to educate Members about the sources of the water quality exceedances in order to promote prevention, protection, and remediation efforts that can maintain and improve water quality.	Section 3.2.1
20	Provide a description of how the Coalition will identify, validate, and implement management practices to reduce loading of COCs to surface water or groundwater, as applicable, thereby improving water quality.	Section 3.2.2
21	Identification of key individuals involved in major aspects of the project (e.g., project lead, data manager, sample collection lead, lead for stakeholder involvement, quality assurance manager).	Section 3.3.1 (incomplete)
22	Provide a discussion of each individual's responsibilities.	Not Provided
23	Provide an organizational chart with identified lines of authority.	Figure 19
24	Identification of the entities or agencies that will be contacted to obtain data and assistance.	Section 3.4.1
25	Identification of management practices used to control sources of COCs from irrigated lands that are 1) technically feasible; 2) economically feasible; 3) proven to be effective at protecting water quality, and 4) will comply with sections III.A and B of the General Order. Practices that growers will implement must be discussed, along with an estimate of their effectiveness or any known limitations on the effectiveness of the chosen practice(s). Practices identified may include those that are required by local, state, or federal law. Where an identified constituent of concern is a pesticide that is subject to DPR's Groundwater Protection Program, the GQMP may refer to DPR's regulatory program for that pesticide and any requirements associated with the use of that pesticide provided that the requirement(s) are sufficient to meet water quality objectives.	Section 3.2.2 Section 3.4.2 (incomplete)

26	Identification of outreach that will be used to disseminate information to participating growers. This discussion shall include: the strategy for informing growers of the water quality problems that need to be addressed, method for disseminating information on relevant management practices to be implemented, and a description of how the effectiveness of the outreach efforts will be evaluated. The third-party may conduct outreach efforts or work with the assistance of the County Agricultural Commissioners, U.C. Cooperative Extension, Natural Resources Conservation Service, Resource Conservation District, California Department of Food and Agriculture, or other appropriate groups or agencies.	Section 3.4.3 (incomplete)
27	Provide a specific schedule and milestones for the implementation of management practices and tasks outlined in the management plan. Items to be included in the schedule include: time estimated to identify new management practices as necessary to meet the Order's surface and groundwater receiving water limitations (section III of the Order); a timetable for implementation of identified management practices (e.g., at least 25% of growers identified must implement management practices by year 1; at least 50% by year 2).	Section 3.4.4 (incomplete)
28	Establish measureable performance goals that are aligned with the elements of the management plan strategy. Performance goals include specific targets that identify the expected progress towards meeting a desired outcome.	Section 3.4.5 (incomplete)
Monitoring Methods		
29	The monitoring system must be designed to measure effectiveness at achieving the goals and objectives of the GQMP and capable of determining whether management practice changes made in response to the management plan are effective and can comply with the terms of the General Order.	Section 4 (incomplete)
30	The third-party's Management Practice Evaluation Program and Groundwater Quality Trend Monitoring shall be evaluated to determine whether additional monitoring is needed in conjunction with the proposed management strategy(ies) to evaluate the effectiveness of the strategy(ies). This may include commodity-based representative monitoring that is conducted to determine the effectiveness of management practices implemented under the GQMP. Refer to section IV of the MRP for groundwater monitoring requirements.	Section 4.3 (incomplete)
Data Evaluation		
31	Methods to be utilized to perform data analysis (graphical, statistics, modeling, index computation, or some combination thereof).	Not Provided
32	Identify the information necessary to quantify program effectiveness going forward, including the tracking of management practice implementation. The approach for determining the effectiveness of the management practices implemented must be described. Acceptable approaches include field studies of management practices at representative sites and modeling or assessment to associate the degree of management practice implementation to changes in water quality. The process for tracking implementation of management practices must also be described. The process must include a description of how the information will be collected from growers, the type of information being collected, how the information will be verified, and how the information will be reported.	Section 5 (incomplete)