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**Central Valley Regional Water Quality Control Board**

9 November 2016

Parry Klassen, Executive Director  
East San Joaquin Water Quality Coalition  
1201 L Street  
Modesto, CA 95354

***APPROVAL OF THE EAST SAN JOAQUIN WATER QUALITY COALITION'S  
2015 NITROGEN MANAGEMENT PLAN SUMMARY REPORT ANALYSIS***

Thank you for your 2 August 2016 submittal of the East San Joaquin Water Quality Coalition's (Coalition) Nitrogen Management Plan Summary Report Analysis for the 2015 Crop Year (NMP Analysis). The NMP Analysis was submitted in response to the Waste Discharge Requirements for Growers within the Eastern San Joaquin River Watershed Order R5-2012-0116-R3 (Order) and Attachment B (Monitoring and Reporting Program [MRP]) to the Order.

Based on the enclosed staff review, the NMP Analysis meets the requirements of the Order. Therefore, I am approving the NMP Analysis for the 2015 crop year. It was noted in the NMP Analysis that only 89 percent of the Coalition members required to submit a Nitrogen Management Plan Summary Report did so for 2015. Effort must be made to gather and include all of the Nitrogen Management Plan Summary Report data required for submittal by Coalition members in future annual reports.

Outreach is an important means of ensuring Coalition member compliance with the Order and continued protection of groundwater quality. A complete outreach plan for the Coalition's groundwater program is required for inclusion in the Groundwater Quality Management Plan and should finalize the Coalition's outreach plans as identified in the NMP Analysis, including how outliers are identified and engaged.

If you have any questions or comments regarding the review, please contact Ashley Peters at 916-464-4857 or [Ashley.Peters@waterboards.ca.gov](mailto:Ashley.Peters@waterboards.ca.gov).

***Original signed by***

Pamela C. Creedon  
Executive Officer

cc: Central Valley Water Board Members  
Phoebe Seaton, Leadership Counsel for Justice and Accountability  
Laurel Firestone, Community Water Center  
Jennifer Clary, Clean Water Action

Enclosure: Staff Review of the Nitrogen Management Plan Summary Report Analysis

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**Central Valley Regional Water Quality Control Board**

**TO:** Susan Fregien  
Senior Environmental Scientist  
**IRRIGATED LANDS REGULATORY PROGRAM**

**FROM:** Ashley Peters, P.E.  
Water Resource Control Engineer  
**IRRIGATED LANDS REGULATORY PROGRAM**

**DATE:** 25 October 2016

**SUBJECT:** REVIEW OF THE EAST SAN JOAQUIN WATER QUALITY COALITION'S  
2015 NITROGEN MANAGEMENT PLAN SUMMARY REPORT ANALYSIS

On 2 August 2016, the East San Joaquin Water Quality Coalition (Coalition) submitted the Nitrogen Management Plan Summary Report Analysis for the 2015 Crop Year (NMP Analysis). A staff review of the NMP Analysis is provided in this memorandum. The NMP Analysis was submitted in accordance with Waste Discharge Requirements for Growers within the Eastern San Joaquin River Watershed Order R5-2012-0116-R3 (Order) and Attachment B (Monitoring and Reporting Program [MRP]) to the Order.

MRP Section V.C. Report Component (17) describes the requirements for the Coalition's NMP Analysis. The required report components are:

- Aggregated information from members' Nitrogen Management Plan Summary Reports (NMP Summary Reports);
- An assessment of Nitrogen Management Plan (NMP) information for, at minimum, comparisons of farms with the same crops, similar soil conditions, and similar practices (e.g., irrigation management);
- A statistical summary of nitrogen consumption ratios by crop or other equivalent reporting units and the estimated crop nitrogen needs for the different crop types and soil conditions will describe the range, percentiles (10<sup>th</sup>, 25<sup>th</sup>, 50<sup>th</sup>, 75<sup>th</sup>, 90<sup>th</sup>) and any outliers;
- A tabular or graphical presentation of the data approved by the Executive Officer (e.g., box and whisker plot);
- A quality assessment of the collected information by township (e.g., missing data, potentially incorrect/inaccurate reporting), and a description of corrective actions to be taken; and
- An aggregate of the data submitted by members in an electronic format, compatible with ArcGIS, identified to at least the township level.

Staff reviewed the NMP Analysis to determine compliance with requirements pursuant to the Order. An overview of the main elements of the NMP Analysis is provided below and followed by staff recommendations.

As of 27 July 2016, 1,125 out of 1,264 members (89 percent) required to submit a NMP Summary Report to the Coalition had done so. The Coalition sent submittal reminders to

members on 9 May and 9 June. On 19 July, a final email notice was sent out and phone calls were made to members without email addresses on file. Surveys received after 27 July 2016 are not included in the NMP Analysis.

The Coalition reviewed the yield and the nitrogen applied per acre data across all crops to determine whether reported values appeared reasonable. The Coalition then contacted 68 members whose reported values seemed excessively high, in some cases approaching 1,000,000 pounds per acre of nitrogen applied. The Coalition removed 180 management units (belonging to 70 members) from the data analysis because of data quality issues that could not be resolved by the NMP Analysis submittal deadline. Complete data from 1,008 members farming 319,626 acres was accepted for inclusion in the NMP Analysis.

The Coalition aggregated all of the accepted nitrogen management data. The data was assessed by crop type, soil conditions, and similar practices. A statistical analysis was completed by township and crop type that identifies outlier nitrogen consumption ratios. Box and whisker plots, by crop type and township, and scatter plots by crop were presented that identify outliers relative to other members and the recommended nitrogen applications rates presented in Table 5 of the NMP Analysis.

Outreach is an important component of the Order. The Coalition is preparing outreach packets for all members who submitted a NMP Summary Report. An example of the outreach package is included in Appendix II of the NMP Analysis. The outreach package shows the yield and total nitrogen applied to the individual member's crop, relative to all of the other growers of that crop in the Coalition area. The Coalition intends to meet with members that were identified as outliers during the statistical analysis and provide education about appropriate nitrogen application rates and management. A complete outreach plan for communicating NMP Analysis feedback to growers will be required for inclusion in the Groundwater Quality Management Plan. This outreach plan will provide details regarding how outliers are identified and engaged.

All of the reported data was submitted in an Excel workbook, compatible with ArcGIS.

The Coalition recommended that summary statistics be developed by grouping only by crop type to identify outliers in future NMP Analyses. This recommendation is based on the fact that soil type, crop type, and township dependent statistics often result in very small data sets with as few as one (1) management unit and disproportionate outlier counts (e.g., with two (2) management units one (1) will always be an outlier regardless of the nitrogen applied per acre over the yield per acre ratio).

Staff agrees that the NMP Analysis demonstrated that data sets were too small to result in meaningful statistics in some cases. However, it is unclear if a different approach or 100 percent submittal of NMP Summary Reports by Coalition members would result in better statistics, so more than one year of assessment should be completed before staff can recommend use of a simplified statistical analysis method.

### **Staff Recommendations**

Staff recommends approval of the Coalition's NMP Analysis for the 2015 crop year because it has met the requirements of the Order to the extent that Coalition members have submitted their NMP Summary Reports to the Coalition. The Coalition should work with members ahead of the next submittal deadline to ensure that they are aware of the nitrogen reporting requirements, especially those members who failed to submit in time for inclusion in the NMP Analysis. The Coalition has reported members to the Central Valley Water Board that failed to submit a NMP Summary Report and notices of violation were mailed on 17 August 2016.

**Public Comments**

One public comment letter on the NMP Analysis was received from Leadership Council for Justice and Accountability, Community Water Center, and Clean Water Action. Quantification of potential loading of nitrogen to groundwater in areas where impacts to drinking water are present or imminent and how that number is reduced over time is the primary focus of the comments. The letter expressed disappointment in the failure of the NMP Analysis to provide basic spatial information about potential nitrogen loading to groundwater on either a regional or local basis citing the fact that management units (the reporting unit for nitrogen data under the Order) and township boundaries do not always align. As a result, nitrogen data is not available at a spatial resolution that can allow for applications to parcels that overlap multiple townships to be broken down to align with the township boundary.

To address this, the Coalition took a conservative approach of including the entire management unit acreage in each of the townships where it is located. As a result, some of the nitrogen application data is duplicated. Staff understands how this makes it challenging to obtain accurate information about nitrogen loading on a township basis. However, nitrogen loading information is not a requirement of the Order and the conservative nature of these values will still permit temporal changes (concentration reductions) to be observed, as long as the approach does not change.

In addition, the objectives of the Groundwater Quality Trend Monitoring required by the Order are (1) to determine current water quality conditions of groundwater relevant to irrigated agriculture, and (2) 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. Temporal changes in water quality due to nitrogen application are outside of the scope of the NMP Analysis.

An additional comment cites vagueness in the analysis of a range of nutrient management practices on the nutrient ratio. The analysis is an assessment of the potential link between the number of management practices implemented in a management unit and the nitrogen applied over nitrogen yield ratio. It does not account for what the practices are, only the number implemented. The NMP Analysis is not the place for evaluating the effectiveness of specific management practices, as is stated by the Coalition in their report. This evaluation will take place under Management Practices Evaluation Program.