
Central Valley Regional Water Quality Control Board

30 October 2018

Mr. Michael Wackman
San Joaquin & Delta Water Quality Coalition
3294 Ad Art Road
Stockton CA 95215

**2018 NITROGEN MANAGEMENT PLAN SUMMARY REPORT ANALYSIS
APPROVAL - SAN JOAQUIN COUNTY AND DELTA WATER QUALITY COALITION**

Thank you for your 1 May 2018 submittal of the San Joaquin County and Delta Water Quality Coalition's (Coalition) Nitrogen Management Plan Summary Report Analysis (NMP Analysis) for the 2016 Crop Year. The NMP Analysis was submitted in response to the Waste Discharge Requirements for Growers within the San Joaquin County and Delta Area Order R5-2014-0029-R1 (Order) and Attachment B (Monitoring and Reporting Program) 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 2016 crop year. Please continue your grower communication regarding A/Y outlier results. Alerting growers that are significantly different from their neighbors is expected to prompt them to evaluate their nitrogen use and management practices. We anticipate that future enforcement staff efforts will include follow-up with growers that have continuing outlier status based on this data. Furthermore, continued effort must be made to gather and include all the NMP Summary Report data required for member submittals to the Coalition in future annual reports.

In addition, the 2017 crop year NMP Summary Report will be due on 30 November 2018, per the approved June 2018 Monitoring and Reporting Plan revision.

If you have any questions or comments regarding the review, please contact Chris Jimmerson at (916) 464-4859 or Chris.Jimmerson@waterboards.ca.gov.

Original signed by:

Patrick Pulupa
Executive Officer

Enclosure: Staff Review of the 2016 NMP Summary Report Analysis

Central Valley Regional Water Quality Control Board

TO: Susan Fregien
Senior Environmental Scientist
Monitoring and Implementation Unit
Irrigated Lands Regulatory Program

FROM: Chris Jimmerson
Environmental Scientist
Monitoring and Implementation Unit
Irrigated Lands Regulatory Program

DATE: 15 October 2018

SUBJECT: NITROGEN MANAGEMENT PLAN SUMMARY – SAN JOAQUIN COUNTY AND DELTA WATER QUALITY COALITION

On 1 May 2018, the Central Valley Water Board received the San Joaquin County and Delta Water Quality Coalition's (Coalition) Nitrogen Management Plan (NMP) Summary Report Analysis for the 2016 crop year as part of the Annual Monitoring Report. The NMP Analysis was submitted in accordance with Waste Discharge Requirements for Growers within the San Joaquin County and Delta Area Order R5-2014-0029-R1 (Order) and Attachment B to the Order. The 2017 Nitrogen Management Plan Summary data is due to the Central Valley Water Board by 30 November, per the approved June 2018 Monitoring and Reporting Plan revision.

Attachment B of the Order, Section V.C. Report Component (18) describes the requirements for the Coalition's NMP summary analysis. The required report components are:

- A quality assessment of the collected information by township (e.g., missing data, potentially incorrect/inaccurate reporting), and a description of any corrective actions
- 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 nitrogen consumed for the different crop types and soil conditions describing the range, percentiles (10th, 25th, 50th, 75th, 90th) and any outliers
- A tabular or graphical presentation of the data approved by the Executive Officer (e.g., box and whisker plot)
- An aggregate of the members' submitted data in an electronic format, compatible with ArcGIS, identified to at least the township level.

Overview

Growers summary reports that have missing or ambiguous data were flagged for follow-up. The Coalition reported that the 2016 crop year had an overall 93% survey completeness rate reporting 98% of the acres in the Coalition region. Most of the uncompleted surveys were due to misreported data requiring the grower to correct and resubmit. The Coalition continues to follow up with members who have not yet completed or revised their NMP Summary Report to the Coalition.

The Coalition aggregated the nitrogen management summary information including comparisons of farms with the same crops, similar soil conditions, and similar irrigation practices to test if A/Y and the frequency of outliers varied depending on the irrigation practice among NMP management units. The Coalition grouped irrigation practices into flood irrigation (flood and furrow) and pressurized irrigation (drip, sprinkler, micro-sprinkler) for the 12 most abundant specific crops in the region. None of the 12 crops had significant differences in A/Y in flood versus pressurized fields.

The Coalition is communicating the statistical outlier results to individual growers with the expectation the grower will evaluate the information in their NMP management practices operation.

The Coalition complied with the Order and completed a statistical analysis by township and crop type that includes a summary of ranges and percentiles (10th, 25th, 50th, 75th and 90th), including 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 N removal factors presented are in Table 4 of the NMP Analysis and Appendix I.

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

Outreach is an important component of the Order. The Coalition prepared outreach packets for all members who submitted an 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 the other growers of that crop in the Coalition area. Having a management unit identified as an outlier in the outreach package will notify growers about nitrogen application rates that differ from their neighbors and they may need to re-evaluate their nitrogen application practice.

Staff agrees with the Coalition that summary statistics are more meaningful when calculated from a larger sample size than by township/range, soil type, and irrigation management practice. This is because: 1) the differences in A/Y between soil types or irrigation practices are not large enough to justify separate analysis; and 2) grouping crops by township then by soil type or management practices will reduce the sample size, and hence the accuracy of summary statistics, especially for less common crops. As part of the Coalition's reporting requirements, the Coalition, however, met the NMP reporting requirements by grouping according to the requirements. Next, for more reliability, the Coalition grouped the data on a region-wide and similar crop basis which staff recommended in last year's NMP review.

The Coalition compared outliers from 2015 and 2016 by crop type for the Coalition region because of the problems identifying outliers by township/range. The number of members in the Coalition region with at least one outlier based on crop type were similar from 2015 to 2016. Efforts to communicate the outliers to growers are underway.

Staff Recommendations

Staff recommends approval of the Coalition's NMP Analysis for the 2016 crop year because the requirements of the Order have been met. The Coalition prepared the required statistical analysis, Coalition members have submitted their NMP Summary Reports to the Coalition by the deadline, and the Coalition is conducting multiple follow-up activities with the recalcitrant members.

Staff recommends continued grower communication with the outlier results as part of its outreach and education. Alerting growers that are significantly different from their neighbors may encourage them to evaluate their nitrogen use and management practice.

The Coalition will submit the 2017 NMP summary results by 30 November, per the approved June 2018 Monitoring and Reporting Plan revision.