

**STATE WATER RESOURCES CONTROL BOARD
EX PARTE COMMUNICATIONS REGARDING PENDING GENERAL ORDERS
DISCLOSURE FORM**

Note: This form is intended to assist the public in providing the disclosure required by law. It is designed to document meetings and phone calls. Written communications may be disclosed by providing a complete copy of the written document, with attachments. Unless the board member(s) provided you with a different contact person, please send your materials to: commentletters@waterboards.ca.gov

Use of this form is not mandatory.

1. Pending General Order that the communication concerned:

Eastern San Joaquin River Watershed Agricultural Order

2. Name, title and contact information of person completing this form:

Note: Contact information is not mandatory, but will allow the Water Board to assist you if additional information is required. If your contact information includes your personal residence address, personal telephone number or personal email address, please use a separate sheet of paper if you do not want that information posted on our website. However, this information may be provided to members of the public under the Public Records Act.

Abby Taylor-Silva, Vice President of Policy & Communications
Grower-Shipper Association of Central California, (831) 422-8844

3. Date of meeting, phone call or other communication: 1/11/18

Time: 2:30 p.m.

Location: 512 Pajaro St., Salinas, CA

4. Type of communication (written, oral or both):



5. Names of all participants in the communication, including all board members who participated:

Abby Taylor-Silva, Kirk Schmidt, Kay Mercer, Dorene D'Adamo

6. Name of person(s) who initiated the communication:

Abby Taylor-Silva

7. Describe the communication and the content of the communication. *Include a brief list or summary of topics discussed at the meeting, any legal or policy positions advocated at the meeting, any factual matters discussed, and any other disclosure you believe relevant. The Office of Chief Counsel recommends that any persons requesting an ex parte meeting prepare an agenda to make it easier to document the discussion properly. Attach additional pages, if necessary.*

Discussion of the attached.

8. **Attach a copy of handouts, PowerPoint presentations and other materials any person used or distributed at the meeting. If you have electronic copies, please email them to facilitate web posting.**

From a resource perspective, third parties allow a regional water board to leverage limited regulatory staff by acting as intermediaries between the regional water board staff and the growers, freeing regional water board resources to focus on problem areas or actors. Third parties also may have the expertise to provide technical assistance and training to growers at a scale that cannot be matched by regional water board staff resources, and, in many cases, third parties already have relationships in place with the dischargers.⁶⁰

Because third parties build on relationships already in place with growers, third parties can engender a high level of trust and more effectively reach out to growers to increase understanding of the permit provisions and to facilitate management practice development and deployment, especially in cases where improved management practices are required of particular growers. In addition, there are a number of cost benefits to the growers enrolled in a third-party program.

These include centralization of fee collection and the resulting reduction in the growers' annual water board fee, potentially reduced costs in management practice implementation facilitated by access to management practice effectiveness information, significantly reduced monitoring costs due to allowance for regional and trend water quality monitoring by the third party in lieu of individual farm monitoring under an individual permit, and reduced reporting costs when the third party shoulders responsibility for data entry into systems such as CEDEN and GeoTracker.⁶¹ The Agricultural Expert Panel also endorsed the third-party based approach of the Central Valley Water Board irrigated lands program and recommended that other regional water boards follow a similar approach.⁶² We take our support for third parties one step further in this Order. We believe that a carefully-crafted third party-based approach should be an available option for all of the significant agricultural discharge programs in the state. Therefore, we direct all of the regional water boards to issue general waste discharge requirements or general waivers of waste discharge requirements based on a third-party approach consistent with our description of the roles and responsibilities of a third party in this Order within the next five years. However, establishment of third parties is not precedential on the Central Coast, where an existing comprehensive coalition does not exist. The regional water boards should also continue to issue general waste discharge requirements or general waivers of waste discharge requirements for individual growers that choose not to form a third party or to join an existing third party. Those individual growers would have the same management and reporting obligations that are identified as precedential in this Order, and no additional requirements, but would not, of course, receive the benefits associated with being a member of a third party.

⁶⁰ State Water Board Order WQ 2013-0101, pp. 13-14.

⁶¹ CEDEN is the State Water Board's data system for surface water quality in California. GeoTracker is a statewide database and geographic information system that provides online access to environmental data. The Eastern San Joaquin Agricultural General WDRs require entry of surface water quality data collected under the General WDRs into CEDEN and groundwater quality data collected into GeoTracker.

find that the data required to be reported by the Members to the Third Party is generally appropriate, but direct several revisions, primarily with regard to nitrogen application reporting.

With regard to reporting of the data from the Third Party to the Central Valley Water Board, we revise the General WDRs to require reporting of some of the data at a field level.¹ We also revise elements of the water quality monitoring provisions. With regard to surface water monitoring, we direct State Water Board staff to convene a panel of experts for further consideration of an appropriate monitoring framework.

Our revisions are based on recommendations of the Nitrogen Tracking Task Force Report, the Agricultural Expert Panel Report, and on our own review of the General WDRs. We also relied substantially on a compromise proposal regarding data submission that a group of agricultural representatives and environmental justice organization representatives jointly presented to Board members during the pendency of our own motion review. The directed revisions are designed to strengthen the correlation between the management practices implemented, the monitoring and reporting required, and the water quality requirements of the General WDRs. In particular, the automatic reporting of certain data to the Central Valley Water Board at the field level, rather than only in summary form, is expected to lead to more effective oversight and management of the program by the Central Valley Water Board, as well as provide more transparency for the public.⁶³ We conclude that the Order is consistent with the Water Code and with the Nonpoint Source Policy with the revisions that we direct.

Appendix A is a copy of the Eastern San Joaquin Agricultural General WDRs with revisions directed by us shown in red in underline/strikeout format. We reference Appendix A throughout our discussion below and hereinafter refer to it as the “Modified Eastern San Joaquin Agricultural General WDRs.” In addition to the revisions referenced specifically in this order, Appendix A contains a number of conforming revisions to make other sections of the Modified Eastern San Joaquin Agricultural General WDRs consistent with the directed revisions (such as revisions to Attachment E, Definitions), as well as additional substantive and non-substantive minor revisions throughout.⁶⁴

⁶³ As will be discussed in detail in the sections that follow, we have not required the initial reporting of field-level data with name or location identifiers. For the reasons discussed below, we find that the effective management of a nonpoint source program for agricultural discharges is not necessarily dependent on tying each data point to a discharger identified by name, or to a specific location. However, we find it is essential to continue to allow the Central Valley Water Board to require submittal of specific names or locations, or names or locations generally, should the Central Valley Water Board make a determination that it is necessary.

⁶⁴ We note that this order provides the rationale for the significant revisions to the Eastern San Joaquin Agricultural General WDRs. We have not updated all findings of the General WDRs and supporting documents, including in particular the Information Sheet, related to the revisions. Nor have we updated the findings of the General WDRs and supporting documents to reflect all new and changed information since the issuance of the General WDRs.

¹¹ In some regions, including the Central Coast, field may be defined as a ranch, consistent with the definition already documented in the Central Coast Regional Water Quality Control Board’s current order. Ranch is currently defined as: A tract of land where commercial crops are produced or normally would have been produced. Individual farms/ranches typically have a similar farm/ranch manager, operator or landowner(s) and are categorized by farm size, primary output(s), and/or geographic location.

relevant section below, for requirements currently imposed only in high vulnerability areas to also apply to low vulnerability areas. Additionally, under our revisions, the high/low vulnerability designations may continue to be used for prioritization in the context of some of the groundwater monitoring requirements, as we will discuss in section II.A.8 of this order.⁷⁴ Further, the criteria forming the definition of high vulnerability will continue to inform the requirement to prepare a water quality management plan for both surface water and groundwater.

The uniform application of requirements for groundwater protection shall be precedential for irrigated lands programs statewide. But we leave open the possibility that risk based designations continue to be used for differentiating surface water protection requirements and for phasing in groundwater protection requirements. We also decline to direct a uniform set of criteria for risk designation and leave the regional water boards with considerable discretion to design reasonable frameworks for differentiation and prioritization. In addition to the high/low vulnerability approach of the Eastern San Joaquin Agricultural General WDRs, such criteria may, for example, include the risk-based tier designations in the Central Coast irrigated lands programs or possibly categories based on farm-size.⁷⁵

Finally, we acknowledge, as further discussed in Section II.A.5.b below, that there may be uniquely-situated categories of growers for whom the requirement for nitrogen reporting is inappropriate. Our order revisions allow a category of growers to be exempted from the nitrogen applied and removed reporting requirements subject to a demonstration that applied nitrogen is not expected to seep below the root zone in amounts that would, even over multiple decades, reach groundwater, and is further not expected to discharge to surface water.

2. Requirement to Participate in Outreach Events

Under the Eastern San Joaquin Agricultural General WDRs, members in high vulnerability areas are required to participate in outreach events and review outreach materials to become informed of any known water quality problems and the management practices that are available to address those problems.⁷⁶ We extend the requirement to participate in outreach events to all Members. This is consistent with the direction of the Agricultural Expert Panel for the

⁷⁴ The groundwater monitoring requirements of the Eastern San Joaquin Agricultural General WDRs, discussed in section II.A.8, are carried out by the Third Party and implemented and phased in in part based on determinations of high and low vulnerability. Because of the time and resources that have already been invested by the Third Party and Central Valley Water Board in setting up the vulnerability-based framework for the groundwater monitoring programs, we continue to allow phasing based on vulnerability for those requirements.

⁷⁵ Phasing by farm size leads to initial compliance by a large number of acres represented by a small number of growers.

⁷⁶ Eastern San Joaquin Agricultural General WDRs., § IV.B.4, p.18.

development of a “very strong, comprehensive, and sustained educational and outreach program.”⁷⁷ However, we recognize the additional burden on some Members and on the Third Party created by applying the outreach participation requirement uniformly. Because all Members must now participate in third-party outreach events, at least annually, we revise the provision to allow for the possibility of participation to occur without in-person attendance. We also phase in the requirement to participate in outreach events in low vulnerability areas by requiring participation beginning only in 2020. This delay will provide the Third Party an opportunity to increase staffing and funding for outreach events. As appropriate depending on the anticipated grower audience, we expect that the outreach events and outreach materials will be provided in multiple languages.

Regardless of whether a grower is a member of a coalition or third party, the requirement for uniform participation in outreach events shall be precedential for irrigated lands programs statewide.

The directed revisions are indicated at Appendix A, Modified Eastern San Joaquin Agricultural Order, section IV.B.4, page 19.

3. Farm Evaluation

The Eastern San Joaquin Agricultural General WDRs require that all Members complete a Farm Evaluation describing management practices implemented to protect surface water and groundwater quality. The Farm Evaluations also include information such as the location of the farm, surface water discharge points, and the location of wells. Farm Evaluations are required of all Members, but only Members in high vulnerability areas must update the Farm Evaluation annually. The Farm Evaluation must be prepared by the Member and submitted to the Third Party. The Member must keep a copy and must produce it upon request by the Central Valley Water Board staff.⁷⁸ The Third Party aggregates and summarizes information collected from Farm Evaluations in the annual Monitoring Report submitted to the Central Valley Water Board.⁷⁹ We make several revisions to the Farm Evaluation provisions as laid out below.

a. Farm Evaluation Update Frequency

The Farm Evaluations are the mechanism for identification of the on-farm management practices implemented to achieve the General WDRs’ management practice performance standards. As such, they constitute an essential component of the General WDRs. However, we find that annual submission of the Farm Evaluations is necessary only when water

⁷⁷ Agricultural Expert Panel Report, p.27.

⁷⁸ Eastern San Joaquin Agricultural General WDRs., § VII.B, pp. 24-25.

⁷⁹ *Id.*, Attach. B, MRP, § V.C, Report Component (18), pp.23-24.

quality problems indicate the need for iterative updating of implemented management practices. Based on the experience of the East San Joaquin Water Quality Coalition to date, most implemented management practices otherwise remain fairly stable from year to year. For this reason, we require submission of the Farm Evaluations only every five years for Members in both high vulnerability areas and low vulnerability areas, except where the Executive Officer determines that more frequent reporting is warranted.⁸⁰ In turn, we strengthen the requirements for management practice implementation data reporting for fields covered by an SQMP or GQMP. As will be discussed under section 9 below (Surface Water and Groundwater Quality Management Plans), we require submission of a separate Management Practice Implementation Report (MPIR) for Members in areas for which the third party is implementing a SQMP or GQMP. The Central Valley Water Board, with input from the Third Party, will have discretion to determine appropriate reporting frequency for the MPIR based on the life cycle of the management practices being implemented, but we expect that the reporting will be annual or more frequent. We also move the reporting of irrigation practices and nitrogen application practices to the Irrigation and Nitrogen Management Summary Report so that these practices continue to be reported on a consistent basis, no more often than every other year. ~~an annual basis.~~

The requirement for submission by all growers of management practice implementation information shall be precedential for irrigated lands programs statewide, however, the regional water boards shall continue to have discretion as to the frequency of such submissions.

The directed revisions are indicated at Appendix A, Modified Eastern San Joaquin Agricultural General WDRs, section VII.B, pages 25-26, section VII.G, p. 31, Attachment B, MRP, section VI.B, INMP Components (4) and (5) .

b. Content of Farm Evaluation Template

In terms of the content of the Farm Evaluation, we direct changes to the information fields of the template. The Central Valley Water Board has approved a template for the Farm Evaluation. The Farm Evaluation template lists management practices appropriate for pesticide application, irrigation, nitrogen management, and sediment and erosion management and directs Members to identify those management practices employed at their operations. We expand the list of management practices a Member should consider with the purpose of making the list more comprehensive. However, we also move questions regarding irrigation and nitrogen

⁸⁰ The Executive Officer may, for example, require more frequent update and submission of the Farm Evaluation where a Member is an outlier for nitrogen application.

must be done hand-in-hand with irrigation management, pointing out that water movement through the soil is the mechanism for nitrate transport.⁹⁴ We will hereinafter refer to the plan as revised in the Modified Eastern San Joaquin Agricultural General WDRs as the Irrigation and Nitrogen Management Plan or “INMP,” and to the summary submitted to the Third Party as the “INMP Summary Report.” As stated under section 3 (Farm Evaluation), we also move reporting sections related to irrigation management and nitrogen management from the Farm Evaluation to the INMP Summary Report. Finally, we add a question inquiring whether the Member has been identified in the past year as an outlier for nitrogen application, a concept we discuss in greater detail below. The addition of this question assists in verifying that the Third Party and the Members are communicating effectively and alerts the Central Valley Water Board that the Member may have been required to update or improve management practices related to irrigation and nitrogen management.

The requirement for incorporation of irrigation management elements into nitrogen management planning shall be precedential for irrigated lands programs statewide.

The directed revisions are indicated at Appendix A, Modified Eastern San Joaquin Agricultural General WDRs, Attachment B, MPR, section VI.B, pages 32-37.

b. Extension of Certification and Summary Reporting Requirements to All Members

We next make revisions to the nitrogen management provisions of the Eastern San Joaquin Agricultural General WDRs to remove the distinction in requirements for high and low vulnerability groundwater areas. This revision means that all Members must now have a *certified* INMP and must submit an INMP Summary Report to the Third Party. We have also specified certification language for the INMP that states that the preparer used sound irrigation and nitrogen management planning practices to develop irrigation and nitrogen application recommendations and that the recommendations are informed by applicable training for meeting the crop’s agronomic needs while minimizing nitrogen loss to surface water and groundwater.⁹⁵ However,

⁹⁴ Agricultural Expert Panel Report, p.ii.

⁹⁵ In expanding the certification requirement, we are also sensitive to the concerns expressed by professionals certifying the INMP regarding potential liability for groundwater nitrate impacts, as well as the scope of their professional insurance coverage. With regard to liability under the Water Code, we note that consultants to dischargers are generally not considered to be dischargers of waste and therefore not liable for violations of the dischargers’ waste discharge requirements. With regard to third-party liability, we direct the Central Valley Water Board and the Third Party to include specific language in the certification aimed to limit such liability. (See App. A, Modified Eastern San Joaquin Agricultural General WDRs, Attach. B, MPR, § VI.B, INMP Component (26), page 35-36, Attach. E, Def., 7 & fn. 2, p.2.) The certification language additionally states that the certification does not create liability for environmental violations.

we allow Members in low vulnerability areas until March 1, 2020, to complete a certified INMP, and until March 1, 2021, to submit the INMP Summary Report. The phasing allows limited certification resources to continue to focus on the higher priority acreage while available training develops to match the demand for certification. The training needs to continue to evolve to better incorporate the concepts related to irrigation and nitrogen management planning expressed in this Order and recognized by the Expert Panel.⁹⁶ The phasing also allows the Third Party additional time to expand its staffing and funding to accommodate outreach and processing for nitrogen application submissions.

The requirement for all Members to prepare certified irrigation and nitrogen management plans and to submit summary data from the plans to the party shall be precedential statewide. The certification language shall also be precedential statewide. If no comprehensive Coalition exists in a region, the irrigation and nitrogen management plans will be retained by the grower and submitted directly to the Regional Board upon request if there is a compelling reason with respect to the specific grower or specific location in question.

However, we recognize that there may be uniquely-situated categories of growers for whom the requirement for nitrogen management is inappropriate because applied nitrogen is not expected to seep below the root zone in amounts that would, even over multiple decades, reach groundwater, and is further not expected to discharge to surface water. We will not distinguish these categories based on high and low vulnerability as the Eastern San Joaquin Agricultural General Order currently does. Instead, any category of Members (such as growers of a particular crop or growers in a particular area) seeking to be exempted from irrigation and nitrogen planning and reporting requirements shall make a demonstration, for approval by the relevant regional water board, that nitrogen applied to the fields does not percolate below the root zone in any significant amount and does not migrate to surface water through discharges, including drainage, runoff, or sediment erosion.⁹⁷ The criteria for determining categories of growers that may be exempted from the irrigation and nitrogen planning and reporting requirements shall also be precedential statewide.

c. New Metric for Nitrogen Application Management

We make additional revisions to the nitrogen management provisions of the Eastern San Joaquin Agricultural General WDRs in response to recommendations made by the Agricultural Expert Panel regarding methodologies for measuring appropriate nitrogen application

⁹⁶ Agricultural Expert Panel Report, pp. 29-30-.

⁹⁷ Based on written and verbal comments received on a February 8, 2016, draft of this order, we have been made aware that rice growers in the Central Valley region may have already made the required demonstration, but that will be a determination for the Central Valley Water Board to make in the first instance. Similarly, members in the San Joaquin County and Delta Water Quality Coalition may have demonstrated that nitrogen applied to the fields does not percolate below the root zone, but must, at a minimum, additionally demonstrate that the applied nitrogen does not migrate to the surface water before the Central Valley Water Board could exempt them from the irrigation and nitrogen planning and reporting requirements.

and assessing nitrogen over-application. The purpose of the nitrogen management planning requirements in the Eastern San Joaquin Agricultural General WDRs is two-fold. First, the INMP aids Members in projecting the total nitrogen a given crop will require for a single growing season.

This is done by considering the nitrogen already available in soil and irrigation water, which allows a grower to plan for the appropriate amount of fertilizer to be applied to meet crop requirements.

Such planning helps avoid over-application of nitrogen fertilizer that may lead to excess loss of nitrogen to groundwater. Second, the data made available to the Third Party and the Central Valley Water Board through the INMP Summary Report enables those entities to consider the range of nitrogen application values reported for similar crops and allows the Third Party to identify outliers for follow-up actions with the goal of reducing over-application. The expectation is that the Regional Boards must take under advisement the recommendations of technical experts and the regulated community to determine and establish reasonable and transparent criteria for defining outliers.

In regions with a predominance of multiple crops grown on the same field within a year, such as berries and cool season vegetables, alternative nutrient planning methodology may be used by the growers.

We considered nitrogen application planning and reporting in the Central Coast Agricultural Order in Order WQ 2013-0101. In that case, we struck a requirement for Central Coast dischargers to “make progress toward” a target ratio of nitrogen application to nitrogen uptake in favor of requiring all Tier 2 and Tier 3 dischargers to report total nitrogen applied by fields or management blocks. We stated that the directed revisions “reflect[ed] our best judgment as to temporary measures required to keep work on this important public health and environmental issue moving forward” but that we would look to the Agricultural Expert Panel to “propose a comprehensive, consistent approach that will inform agricultural regulatory programs statewide.”⁹⁸ In reviewing the Eastern San Joaquin Agricultural General WDRs, we now have the benefit of the Agricultural Expert Panel Report, and make revisions to the General WDRs consistent with the Panel’s recommendations on nitrogen management.

The Agricultural Expert Panel reviewed the crop uptake ratio we rejected in Order WQ 2013-0101 and the nitrogen consumption ratio in the Eastern San Joaquin Agricultural General WDRs, and considered the difficulties associated with determining field level nitrogen balances.⁹⁹ The Agricultural Expert Panel additionally considered the recommendations of the Nitrogen Tracking Task Force, including the recommendation that growers track values for total nitrogen applied to the field, actual yield, and nitrogen removed from the field through primary and secondary harvest yields.¹⁰⁰ The Agricultural Expert Panel proposed a refinement on the nitrogen

⁹⁸ State Water Board Order WQ 2013-0101, p. 42. The Sacramento Superior Court Ruling stated that the court “is not persuaded that an adequate Waiver necessarily must include nitrogen balancing ratios,” but questioned the State Water Board’s rationale in removing them as reportable milestones. (Sacramento Superior Court Ruling at 36.) As we discuss in this order, the Agricultural Expert Panel, building on work by the Nitrogen Tracking Task Force, proposed a metric for nitrogen balancing which we now direct all irrigated lands programs to adopt.

⁹⁹ Agricultural Expert Panel Report, pp. 21-22.

¹⁰⁰ Nitrogen Tracking Task Force Report, p. 17.

applied and nitrogen removed calculations as the simplest metric of good management – the multi-year ratio of nitrogen applied to the field (A) to nitrogen removed from the field (R), or the A/R ratio. The nitrogen applied includes nitrogen from any source (i.e. organic amendments, synthetic fertilizer, and/or nitrogen in irrigation water). The nitrogen removed includes the nitrogen present in all harvested materials removed from the field (including any prunings, removed vegetation, etc.) plus, in the case of perennial crops, the nitrogen sequestered in the permanent wood.¹⁰¹ Nitrogen removed is based on a measurable value of yield. Crop yield is multiplied by a coefficient determined via direct testing of the harvested materials. by academic studies based upon standardized harvest units. The nitrogen removed coefficient expresses the amount of nitrogen for a given crop per unit of crop yield.

The multi-year A/R ratio, as proposed by the Agricultural Expert Panel and implemented in this order, is distinguished from previous ratios in two ways. First, it utilizes removed nitrogen instead of nitrogen uptake/consumption. This is an important simplification as it is based on a measurement instead of an estimate. The basis of any good performance metric is that it relies on quantitative measurements that can be performed simply and repeatedly with relative accuracy and that it is easy to understand. The uptake/consumption of nitrogen by a crop as it was employed by the previous orders was based on estimation, not a measurement. Often the published guidance regarding plant uptake/consumption has wide ranges of values from which to select, with variation from low to high values ranging as much as 40 percent. Because of these inherent complexities and inaccuracies, using uptake/consumption as part of a performance metric is problematic. Second, utilizing the measurements of applied and removed nitrogen over several years allows for variations that happen from year to year to cancel out and the carryover of nitrogen in soil to become insignificant for purposes of tracking and reporting. A multi-year approach to a performance metric related to nitrogen management serves to simplify some of the inherent complexity of trying to perform a nitrogen balance on an annual basis and justly account for nitrogen present in its many varied states within a field and crop system.

When evaluated over multiple years for perennial or annual crops grown in succession on the same field, the A/R ratio provides a reliable measurement of the nitrogen left in the field.² -There are growers that don't grow the same crop in the same place within a three-year period and the Regional Board can deem appropriate a system created by the regulated community that will equitably track the annual nitrogen used by that grower. In each consecutive year, the nitrogen left in the field from the prior year, as approximated by the A/R ratio, will either be utilized by the next crop or move further down in the soil column with potential to be leached to groundwater. If, over several years, the ratio of nitrogen applied and nitrogen removed from the field remains high, a significant portion of the nitrogen applied to the field is remaining in the field and potentially reaching groundwater over

¹⁰¹ *Id.*, p. 28.

time through percolation.¹⁰² A high multi-year A/R ratio thus alerts the Member, the third-party group, and the regional water board to the need to address over-application at the field level. As recommended by the Agricultural Expert Panel, a multi-year A/R ratio may also provide the basis for acceptable multi-year A/R ratio target values, with reduction in the multi-year A/R ratio toward the target ratio for an area over time acting as a proxy for reduction in nitrate discharge to groundwater.¹⁰³ The Agricultural Expert Panel Report identified a shift to using the A/R ratio in nitrogen management as critical in reducing nitrogen leaching to groundwater because the multiyear A/R ratio will provide a fairly accurate picture of the efficiency of the nitrogen application on the field and the potential over-application of nitrogen over several years. Similarly, the trend in the multi-year A/R ratio over time will inform whether practices are working to reduce the amount of nitrogen being left on the field and the corresponding potential for discharge to groundwater.

Although not considered by the Agricultural Expert Panel, we find that the multiyear A/R ratio will be rendered more informative if additionally paired with an A-R difference value (pounds of nitrogen applied minus pounds of nitrogen removed) to further tease out the magnitude of any potential nitrogen over-application, especially in cases where use of only the multi-year A/R ratio may mask significant quantities of nitrogen left in the field.¹⁰⁴ Further, the A-R difference, whether considered at the scale of a field, a township, or an alternative geographic unit, provides useful information on the magnitude of the amount of nitrogen left in the soil with potential to reach groundwater. This data in turn allow the Third Party and regional water board to better focus follow-up and management practice implementation as well as research and modeling on groundwater loading.

We find that the INMP should include recording, and the INMP Summary Report should include reporting, of the data supporting the calculation of the multi-year A/R ratio and A-R difference.¹⁰⁵ We revise the Eastern San Joaquin Agricultural Order to eliminate reporting on the nitrogen consumption ratio and to instead require recording and reporting of the AR data. We will require Members to determine and report nitrogen applied and crop yield.¹⁰⁶ Based on this data,

¹⁰² *Ibid.*

¹⁰³ *Id.*, pp. iii, 24, 38.

¹⁰⁴ For example, a grower applying 75 pounds of nitrogen and removing 50 has the same A/R ratio of 1.5 as a grower applying 450 pounds of nitrogen and removing 300. But the nitrogen left in the field by the second grower is six times the magnitude of the nitrogen left in the field by the first grower.

¹⁰⁵ We refer herein to "AR data" to encompass the multi-year A/R ratio and all data required to be reported in support of that ratio, including the A-R difference.

¹⁰⁶ At this early stage in adoption of the AR data reporting, we find it is appropriate to ask Members to report only measured values and not values that require calculation. However, we will require the Third Party to report individual

we will require the Third Party to calculate annual A/R ratio and A-R difference values as well as a three-year running average, where feasible,¹⁰⁷ for these values for each Member for each field. The Third Party shall communicate the calculated values back to the Members.

We specify the minimum requirements for the templates for the INMP and the INMP Summary Report as revisions to the General WDRs. Templates may be proposed by the Third Party and used with approval from the Central Valley Water Board.

The precedential requirement shall be stayed for five years after adoption of the next Irrigated Lands Regulatory Permit in regions with a predominance of annual crops not grown in succession on the same field. We recognize that there are farming systems that are unique and it may not be possible to determine removal coefficients for each specific crop. This allows discretion to adopt interim metrics for reasonable tracking of nitrogen for crops where removed coefficients are not known.

The directed revisions are indicated at Appendix A, Modified Eastern San Joaquin Agricultural General WDRs, section VII.D, pages 27-29; Attachment B, MRP, section VI.B, pages 32-37.

d. Requirement for Third Party to Determine Nitrogen Removed Coefficients

One short-term challenge to using the multi-year A/R ratio and A-R difference is that certain information and data gaps need to be filled. There is insufficient information currently available to calculate the R value for most crops. This data needs to be gathered over time. At this time, it is not a common practice for a grower to track the amount of nitrogen removed during harvest. Terminology currently used for nitrogen application recommendations focuses on crop nitrogen uptake or crop nitrogen need with the goal of maximizing crop yield. Use of the multiyear A/R ratio and A-R difference thus requires a change in nitrogen application recommendations and terminology.¹⁰⁸

Research is required to determine crop removal values. The Agricultural Expert Panel recommended research by third-party groups, commodity groups, and institutions to develop the data.¹⁰⁹ Such research would determine values for how many pounds of nitrogen are contained in a unit of crop yield (e.g. lbs-N/ton of almonds). This can be expressed as a coefficient, that, when multiplied with a crop harvest, will estimate the nitrogen removed. The

A/R ratio and A-R difference values back to the Members so that the Members have the benefit of the information these values provide.

¹⁰⁷ We recognize that fields are not always planted with the same crop for three consecutive years and further that the boundaries of a fields may change from year to year. It may not be feasible to calculate A/R and A-R ratios on a field-level in some cropping systems. A ranch reporting system may be more meaningful.

¹⁰⁸ Agricultural Expert Panel Report, pp. 27-28.

¹⁰⁹ *Id.*, p.40.

research will ultimately need to be completed for all harvested crop materials, including secondary, or complementary, harvests (i.e. prunings, removed vegetation, etc.). We task the Third Party with conducting the appropriate testing or research¹¹⁰ to determine the relevant coefficients for calculating nitrogen removed by crop. We direct the Third Party to publish nitrogen removed coefficients for crops that cover 95% of acreage within the General WDRs' boundaries in time for use with the INMP Summary Reports due 1 March 2021 and 99% of the acreage in time for use with those due 1 March 2023 (with estimated coefficients based on similar crops being acceptable for crops covering the remaining 1%). The coefficients shall be approved by the Central Valley Water Board Executive Officer, in consultation with State Water Board staff, following an opportunity for public review and comment. Once approved, the Third Party must use those values to retroactively calculate the A/R ratio and A-R difference, both past annual reported values, and the three-year running average for the A/R ratio based on the three prior years.

The requirement for use of agronomically defensible and transparently derived coefficients for conversion of yield to nitrogen removed values shall be precedential statewide. In determining the appropriate coefficients, the regional water boards must ~~approve the~~ determine a range of appropriate values, but may rely on their own research ~~and~~ on the research of the third party qualified parties, including agronomically applicable academic research, a review of the scientific literature, and further may consider for approval coefficients evaluated by other regional water boards.

The directed revisions are indicated at Appendix A, Modified Eastern San Joaquin Agricultural General WDRs, Attachment B, MRP, Section V.D, page 25.

e. Expansion of Reporting Requirements

i. Rationale for Field-Level Nitrogen Application Data Reporting to the Central Valley Water Board

The Eastern San Joaquin Agricultural General WDRs require Members to report nitrogen application data in the INMP Summary Report that is submitted to the Third Party; the Third Party in turn aggregates that data and reports it to the Central Valley Water Board in a manner that characterizes the input, uptake, and loss of the nitrogen application by specific crops, but summarizes the data at the township level, rather than by Member or field.¹¹¹ Because the multi-year A/R ratio will provide a concrete, measurable, and reliable benchmark by which progress in reducing groundwater nitrate impacts can be determined, we find that the data should be reported to the Central Valley Water Board by field (although, as we discuss in more detail

¹¹⁰ Published values for many crop coefficients are already available in the scientific literature.

¹¹¹ Eastern San Joaquin Agricultural General WDRs, Attach. B, MRP, § V.C, Report Component (17), p.23.

Water Board finds its oversight function requires a more proactive effort, we note that the Central Valley Water Board may at any time request the names and locations corresponding to the anonymous identifiers.¹²² This option allows the Board to effectively follow up with individual Members where the data indicates that insufficient progress is being made by the Third Party's follow-up efforts with a Member.

In section II.A.11 of this order, we set out our direction to the Central Valley Water Board on how the submitted data shall be utilized.

In addition to submitting the underlying data, we direct the Third Party to evaluate the data, providing comparisons of the A/R ratio and A-R difference by crop type, and within crop type, by irrigation method, soil condition, and farming operation size and other appropriate evaluations as directed by the Executive Officer.

The Third Party is directed to report the data sets set out above in accordance with the schedule set out in Appendix A, Modified Eastern San Joaquin Agricultural General WDRs.

The requirement for field-level AR data submission to the regional water board consistent with the data sets and analysis of those data sets described in this Order shall be precedential for irrigated lands programs statewide. For third-party programs only, the data shall be submitted with anonymous identifiers unless the regional water board finds that there is a compelling grower-specific or location-specific reason why the data should be submitted with name or location identifiers. With regard to the aggregated dataset, the regional water board is not limited to aggregating the data at the township level, but may choose a smaller or larger area unit based on region-specific and program-specific considerations.

The directed revisions are indicated at Appendix A, Modified Eastern San Joaquin Agricultural General WDRs, section VIII.D, p. 34, Attachment B, MRP, section V.D, pages 24-27, section V.E, Report Component (17), pages 29-30.

f. Required Follow-Up

We further revise the Eastern San Joaquin Agricultural General WDRs to require specific actions of the Third Party and of the Member when a Member is determined to be an outlier based on reported AR data. Outliers will be identified by the Third Party, or the Regional Board if no third party exists, annually based on the INMP Summary Report data submitted for that particular year. Outliers will be determined by comparison of farms in a similar geographic area. Consideration should be given to factors such as soil type, and climatic gradient conditions.

Eventually, it is our expectation that outliers will be determined with reference to the ranges for the multi-year A/R ratio and A-R difference target values developed by the Third Party and the Central Valley Water Board. At this early stage, we

¹²² Eastern San Joaquin Agricultural General WDRs, § X, p. 36.

units, and a strong introduced discharge signal.”¹⁴² Where these conditions are present, there are opportunities for studies of management practice effectiveness, as with the Management Practice Evaluation Program of the General WDRs. But another tool is needed to track the effectiveness of implemented practices in reducing discharges to groundwater under a broader set of regional conditions. Although one such tool may be conducting a soil profile analysis by monitoring soil samples for presence of constituents of concern, obtaining a statistically significant number of samples on an annual basis would be prohibitively expensive.

In contrast, the multi-year A/R ratio, analyzed in concert with the A-R difference, is both a cost-effective and a reliable methodology for tracking the amount of nitrogen left in the soil over a period of time, and that may enter the groundwater from the soil. Trends in the multi-year A/R ratio are expected to follow changes in management practices on the field, providing a reliable indication of whether management practices are working to increase efficiency in nitrogen application and to reduce the potential for nitrogen loss to groundwater. The A-R difference further informs the magnitude of any potential over-application of nitrogen. The multi-year A/R ratio and the A-R difference are thus appropriate metrics for determining measurable progress toward ensuring agricultural discharges are not causing or contributing to exceedances of water quality standards in the groundwater. The information obtained through the multi-year A/R ratio and A-R difference in a given area may also subsequently be matched with the groundwater quality trend monitoring data to evaluate and verify the results and conclusions of the methodology.

The AR data is, of course, specific to nitrogen impact, and the groundwater monitoring provisions of the Eastern San Joaquin Agricultural General WDRs consider impacts from a wider set of constituents and remain an indispensable component of the regulatory program. However, with regard to nitrogen, we expect the multi-year A/R ratio and A-R difference to be the primary tools for management, reporting, and oversight going forward. except where research indicates that an alternate system of tracking fertilizer use would be more meaningful. If during the process of conducting A/R or A-R research, a more effective methodology is found to measure nitrogen use, such methodology could be used as an alternative to A/R or A-R. The intent is to encourage innovation to find the most effective measure, which could include lesser reporting.

The agricultural representatives and environmental justice organization representatives who presented the compromise proposal for data reporting to us also proposed development of a methodology for determining targets for nitrogen loading on a township by township basis. The group has committed to working on the proposal and we welcome their input. We direct the East San Joaquin Coalition to develop a project scope and timeline to further flesh out the proposal, in consultation with the Central Valley Water Board, for approval within two years of the adoption of this Order.

¹⁴² Agricultural Expert Panel Report, p. 8.