

October 8, 2018

Chairman Jean-Pierre Wolff  
Central Coast Regional Water Quality Control Board  
895 Aerovista Place, Suite 101  
San Luis Obispo, CA 93401-7906

Dear Chairman Wolff,

Thank you for the opportunity to include industry-developed options or concepts for the next Irrigated Lands Order as part of the Central Coast Regional Water Quality Control Board's November 8-9, 2018 meeting packet. Attached please find two documents: one specific to surface water and the other specific to nitrogen management. We appreciate your willingness to include these documents in your meeting packet and pre-printed board member materials.

As we understand, at this time the Regional Board is interested in concept proposals and not more detailed metrics, or numbers, which we are working on. We plan to further refine these concepts after the November meeting, working with agriculture and the Regional Board, so that they may be submitted in the future as a full-fledged order, appropriate for CEQA review.

In summary, the Surface Water Management Conceptual Model conceptually outlines a science-based, commercially viable, solution-oriented program that includes a combination of receiving water monitoring and reporting, planning and prioritization, feedback loops, and collective action with a focus on researching practice effectiveness and expanding grower education and outreach, especially in areas of higher priority, to improve water quality. The Program will approach water quality improvements by researching and implementing practical solutions that can improve the quality of the discharge and its impact on the receiving water given social, technical, and/or economic constraints, including food safety. This proposed conceptual model is focused on agricultural non-point source discharges and seeks to improve surface water quality conditions through a multi-step approach that includes vulnerability assessment, management practice implementation coupled with appropriate and reasonable monitoring, reporting, and verification, which will lead to a cycle of continuous improvement in the quality of the discharge and its impact on the receiving water. Notably, the Conceptual Model here does not include specific detail with respect to how such elements will be included in the next Irrigated Lands Order. We are cognizant of the need to develop such detail and are working closely with our industry allies to further develop the next level of detail needed to indicate how this proposal would be implemented in the context of the Irrigated Lands Order.

Similar to the Surface Water Conceptual Model, the Nitrogen Management Conceptual Model outlines a science-based, commercially viable, solution-oriented program for nitrogen management and groundwater protection. It includes: outreach and education, irrigation and nitrogen management planning, an irrigation and nitrogen management reporting option, and groundwater quality monitoring and reporting. These topics are the key focus of the State Water Resources Control Board's precedential provisions contained in the ESJ order. Like with the

Surface Water Conceptual Model, the proposal here does not include specific detail with respect to how such elements will be included in the next Irrigated Lands Order. We will continue to work to develop such detail and will provide further information in the near future.

At this juncture, the below-listed organizations collectively request that the Regional Board consider the conceptual models provided here as the base structure for the Irrigated Lands Program (known as Ag Order 4.0).

These are presented to you by the following agricultural organizations. We look forward to feedback from the Regional Board at the November 8-9 meeting to determine next steps for pursuing these concepts and prepare development of the next level of detail, including metrics.

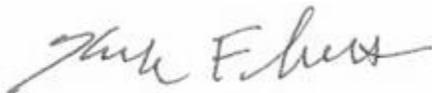
Sincerely,



Abby Taylor-Silva  
Grower-Shipper Association of Central California



Norm Groot  
Monterey County Farm Bureau



Kirk Schmidt  
Sustainable Ag Water Corporation



Gail Delihant  
Western Growers



Rick Tomlinson  
California Strawberry Commission



Kim Stemler  
Monterey County Vintners & Growers Association



Teri Bontrager  
Santa Barbara County Farm Bureau



Lynn Diehl  
San Luis Obispo County Farm Bureau



Cynthia Mathiesen  
Santa Cruz County Farm Bureau



Kris Beal  
Central Coast Vineyard Team



Mindy Sotelo  
San Benito County Farm Bureau



Claire Wineman  
Grower-Shipper Association of Santa Barbara and San Luis Obispo Counties



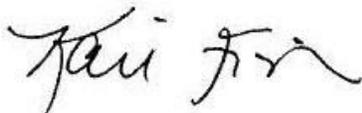
Parry Klassen  
Central Coast Groundwater Coalition



Janet Burbach  
Santa Clara County Farm Bureau

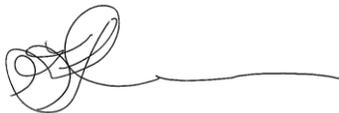


B.J. Burns  
San Mateo County Farm Bureau



Kari Fisher  
California Farm Bureau Federation on behalf of Monterey, San Benito, San Luis Obispo, San Mateo, Santa Cruz, Santa Clara, and Santa Barbara Counties

Also Supported By:



Kay Mercer  
KMI

## Agriculture Industry Response to Regional Board’s Draft Matrix Option Components Request

Required Elements	Components					
	Irrigation & Nutrient Management Ground water	Pesticide Management Ground water	Irrigation & Nutrient Management Surface Water	Pesticide Management Surface Water	Sediment & Erosion Management	Riparian Management
<b>Phasing or Prioritization*</b>	<p>Pages 1 through 5 of the Nitrogen Options submitted on behalf of Central Coast Agriculture summarize a proposal for nitrogen reporting that is consistent with the precedential mandates of State Water Resource Control Board’s East San Joaquin Order.</p> <p>Growers in similar regions use varying amounts of Nitrogen fertilizer on the same crop types. Reporting of total N applied by ranch will be compared to ranches with similar types within the same sub-region or township, which is a precedential requirement of the ESJ Order. The following steps could be implemented to determine which ranches appear to use excess N annually:</p> <ol style="list-style-type: none"> <li>1) Ranch level irrigation and nitrogen annual reporting. This is more completely explained in Attachment A, the Ag N Alternative</li> <li>2) Establishment of Sub-region/Townships</li> <li>3) Sub-region/Township reporting comparison by crop type</li> <li>4) Determination of N coefficients through public review of peer reviewed research</li> <li>5) Determination of Outliers based on comparing similar crop type ranches within the same</li> </ol>	<p>We recognize that this is an issue that Regional Board staff are prioritizing. At this time, those of us submitting this document are aware of only a limited number of studies or circumstances that identify this as a potential problem. Accordingly, we plan to discuss this issue further with staff to understand the concern and provide additional thoughts within the public comment period.</p> <p style="color: blue;">Should this be under the purview of DPR, not th State Water Board?</p>	<p>See page 2 of Central Coast Irrigated Lands Surface Water Management Concept Model, specifically regarding Farm Evaluation, Risk Assessment and Prioritization.</p> <p>In discussions with Central Coast Regional Board Staff, there have been discussions of whether the next permit (or portions thereof) should be implemented in a phased manner. Agriculture generally supports this concept. By phasing in priority areas this program allows growers and regulators to learn from iterative actions. These may be quickly translated and implemented in manageable chunks, instead of becoming overwhelming to a grower or landowner. Areas of high priority would be established using Preservation Inc.’s Cooperative Monitoring Program (CMP) data, as well as TMDLs (other applicable data points may be identified as this concept is further defined). The TAC would provide the methodology to identify what high-priority watersheds should be addressed first, based upon a variety of factors. The prioritization process would need to include a public review process.</p> <p style="color: blue;">In no way should a phased approach displace the need for equitable and reasonable solutions for specific crops and practices, similar to the Tiers of Ag Order 3. Staff's current one size fits all seems aimed at increasing revenue and does not have a basis in science or fact.</p>			

Required Elements	Components					
	Irrigation & Nutrient Management Ground water	Pesticide Management Ground water	Irrigation & Nutrient Management Surface Water	Pesticide Management Surface Water	Sediment & Erosion Management	Riparian Management
	Sub-region/Township, as is precedential in the ESJ Order. 6) Technical recommendations from a yet to be established, Technical Advisory Committee.					
<b>Numeric Limit</b>	Numeric limits are a reasonable regulatory approach for point source types of facilities. However, such limits are not practical or appropriate to apply to non-point source discharges such as agricultural. <a href="#">Any numeric limits developed need to be based in actual data specific to site and situation.</a>					
<b>Time Schedule to Achieve Numeric Limits</b>	<p>Time schedules are not limited to being used for meeting numeric limits but may also be used to address compliance with water quality objectives in applicable receiving waters or waters of the state. (Water code section 13263(c).) For example, time schedules in the ESJ Order, which were upheld by the State Water Board, are focused on time needed to meeting receiving water limits and are granted as long as management plans are developed.</p> <p>The length of time needed to meet applicable water quality objectives for different constituents may vary. Time schedules will need to have milestones, per the NPS policy, but the ultimate time for compliance may be long-term, depending on the constituents.</p>					

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	Irrigation & Nutrient Management Ground water	Pesticide Management Ground water	Irrigation & Nutrient Management Surface Water	Pesticide Management Surface Water	Sediment & Erosion Management	Riparian Management
<b>Monitoring &amp; Reporting</b>	<p>Pages 1 through 5 of the Nitrogen Options submitted on behalf of Central Coast Agriculture summarizes a proposal for nitrogen reporting which is consistent with the precedential mandates of the East San Joaquin Order. Key elements of this proposal include</p> <ol style="list-style-type: none"> <li>1) Ranch level irrigation and nitrogen annual reporting, this is more completely explained in Attachment A, the Ag N Alternative</li> <li>2) INMP reporting</li> <li>3) Research to determine N coefficients</li> <li>4) Sub-region/Township reporting</li> <li>5) Technical recommendations from a, to be established, Technical Advisory Committee</li> <li>6) Incentivizing use of wells with high N groundwater for irrigation (see Attachment B)</li> </ol>	Please see comment in priority section.	<p>See pages 2 and 3 of Central Coast Irrigated Lands Surface Water Management Concept Model.</p> <p>Following the designation of priority areas and vulnerability assessments, a feedback loop will be initiated that introduces education, identifies timelines and milestones, steps for re-assessment, incentives to improve the quality of the discharge and its impact on the receiving water, and potential consequences for failure to comply or meet specified goals. At a designated milestone, the TAC will provide a methodology to re-evaluate the originally identified high-priority areas and to evaluate the effectiveness of the vulnerability assessment and feedback loop in addressing water quality concerns. Assessment will focus on an analysis of Preservation, Inc. data, abbreviated management plans to address vulnerability, outcomes of the feedback loop, research findings and educational outreach effectiveness. Their review will influence the iterative process of further prioritization, additional practice implementation, if warranted, re-assessment of farm-level vulnerability and effectiveness measurements. Hopefully, the TAC will also provide a methodology to identify areas of demonstrated improvement in the quality of the discharge and its impact on the receiving water.</p> <p>An appropriate Practice Effectiveness Evaluation Research &amp; Education Program "Program" would explicitly link both vulnerability assessment and practice effectiveness evaluation to water quality criteria. The program would work with growers throughout the region to test the effectiveness of practices,</p>			

Required Elements	Components					
	Irrigation & Nutrient Management Ground water	Pesticide Management Ground water	Irrigation & Nutrient Management Surface Water	Pesticide Management Surface Water	Sediment & Erosion Management	Riparian Management
			<p>identify research priorities, and educate farms in high priority areas, as well as meet precedential education requirements in the East San Joaquin Order. The program would also identify circumstances where the implementation of certain practices theoretically should have resulted in corresponding improvement in the quality of the discharge and its impact on the receiving water but did not and attempt to identify the reasons for the discrepancy. The outcome of this analysis and research would be educational materials provided to all farms in the region, with a specific focus on those in high priority areas. Areas of research and analysis needed to further improve agricultural practices to protect water quality would be identified for each of the priorities (sediment, nitrate and toxicity), which will be essential, as the Central Coast Regional Board has identified many data gaps that can be addressed by science-driven, field-level trials to identify and characterize effective management practices especially concerning toxicity impairment. Field-level trials will be essential in incorporating real-world constraints including food safety, resistance management, and commercial demands for price, quality, and appearance. The conclusions of the Program could be incorporated into the vulnerability assessment and feedback loop and support the greater feedback loop and verification measures of the entire order. This program could be conducted with input by a variety of public and private entities.</p> <p>It should be noted that the recent Court of Appeal decision issued by the Third Appellate District decision reaffirmed that both Water Code section 13269 and the NPS Policy ("third-party"</p>			

Required Elements	Components					
	Irrigation & Nutrient Management Ground water	Pesticide Management Ground water	Irrigation & Nutrient Management Surface Water	Pesticide Management Surface Water	Sediment & Erosion Management	Riparian Management
			<p>programs) expressly allow the use of group or watershed monitoring. It also affirmed the trial court's assertion that the Coastkeeper's proposed solution of mandatory individual monitoring was too costly, too burdensome, and would overwhelm the Regional Board, and noted that without any evidence of a viable alternative, that the trial court's finding that the State Board did nothing to address the identification of the source of exceedances is not supported by substantial evidence. In short, the appellate court found no evidence to suggest that the monitoring and reporting provisions imposed in Ag Waiver 2.0 were improper. We propose continuing to use Preservation, Inc. to conduct surface water monitoring, in the manner which has been done since its inception, with associated amendments and updates since that time. We also believe that this proposed concept will address pesticide management in a way that will positively influence potential impairment to groundwater in that a focus on risk to surface water will also highlight management practices that will be effective in addressing risk throughout the system as a whole.</p>			

\*Not required; staff soliciting methods for phasing or prioritization of requirements

# Central Coast Irrigated Lands Surface Water Management Conceptual Model

Submitted By: California Farm Bureau Federation on behalf of Monterey, San Luis Obispo, San Mateo, Santa Cruz, Santa Clara, Santa Barbara, and San Benito Counties, California Strawberry Commission, Central Coast Groundwater Coalition, Central Coast Vineyard Team, Grower-Shipper Association of Central California, Grower-Shipper Association of Santa Barbara and San Luis Obispo Counties Monterey County Farm Bureau, Monterey County Vintners and Growers Association, San Benito County Farm Bureau, San Luis Obispo County Farm Bureau, San Mateo County Farm Bureau, Santa Barbara County Farm Bureau, Santa Clara County Farm Bureau, Santa Cruz County Farm Bureau, Sustainable Ag Water Corporation, and Western Growers

October 8, 2018

This document presents foundational concepts for Irrigated Lands Order 4.0 brought forward by the agricultural associations listed above. It conceptually outlines a science-based, commercially viable, solution-oriented program that includes a combination of receiving water monitoring and reporting, planning and prioritization, feedback loops, and collective action with a focus on researching practice effectiveness and expanding grower education and outreach, especially in areas of higher priority, to improve water quality. The Program will approach water quality improvements by researching and implementing practical solutions that can improve water quality given social, technical, and/or economic constraints, including food safety. This proposed conceptual model is focused on agricultural non-point source discharges and seeks to improve surface water quality conditions through a multi-step approach that includes vulnerability assessment, management practice implementation coupled with appropriate and reasonable monitoring, reporting, and verification, which will lead to a cycle of continuous improvement in the quality of the discharge and its impact on the receiving water.

## Statement of Problem to be Addressed

The Central Coast Regional Water Quality Control Board (Central Coast Regional Board) is tasked with improving surface water quality conditions relevant to a wide variety of constituents including, but not limited to nitrate, toxicity, turbidity, pesticides, as well as improving certain types of riparian and wetland habitat conditions. In particular, the Central Coast Regional Board is looking to improve the quality of the discharge and its impact on the receiving water. This proposed conceptual model is focused on agricultural non-point source discharges and seeks to improve the quality of the discharge and its impact on the receiving water through a multi-step approach that includes vulnerability assessment, management practice implementation coupled with appropriate and reasonable monitoring, reporting, and verification, which will lead to a cycle of continuing improvement. Notably, throughout the Central Coast region there are many water bodies that are considered impaired for some beneficial uses but in reality, many of these “impaired” beneficial uses do not actually exist within those water bodies. Moreover, most beneficial uses were designated many decades ago without analysis or consideration of data and information, but were generically assigned in response to a mandated EPA deadline.

Central Coast farming systems are intricate, complicated and highly individualized. No single technology or management can be universally and effectively applied to improve the quality of the discharge and its impact on the receiving water. Nevertheless, innovative farmers have adopted many management practices to do so. This conceptual model we propose provides growers with additional incentives to improve the quality of the discharge and its impact on the receiving water while allowing flexibility to adapt solutions to meet unique needs that vary from by ranch, watershed, and throughout Region 3.

## A Surface Water Management Conceptual Model Proposal for Irrigated Lands Order 4.0

The Central Coast Regional Board should focus their attention on demonstrating improvement to the quality of the discharge and its impact on the receiving water around three main factors: toxicity, sediment and nitrate. A phased-in approach is recommended to allow both farmers and the Regional Board to prioritize and maximize limited staff and financial resources.

### Outline of Process and Definition of Terms Used:

Technical Advisory Committee: A diverse Technical Advisory Committee (TAC) composed of personnel with farming and/or agricultural expertise would provide the operators and Regional Board with recommendations on how to implement the program. The TAC would have the responsibility of proposing methodologies that are congruent with improving the quality of the discharge and its impact on the receiving water.

High Priority Area: Areas, identified using methodology provided by the TAC, where there is quantifiable information that indicates where efforts should be focused.

Farm Evaluation: The East San Joaquin Order requires a farm evaluation once every five years to be prepared by the irrigated lands enrollee. This evaluation is similar to our current Annual Compliance Form, which includes a description of management practices implemented. The farm evaluation/annual compliance form would be modified to meet the goals of this proposal, which would be to use the farm evaluation/annual compliance form for vulnerability assessment purposes.

Vulnerability Assessment: Pursuant to a phased-in schedule, farms would conduct a high-level vulnerability assessment of each ranch. The purpose of the assessment is to allow farmers to assess potential water quality impairment vulnerabilities to both surface and ground waters and document the use of best management practices to reduce vulnerability. Vulnerability assessments plus data analysis will assess the potential to cause an impairment in a high priority area and how farms will mitigate this potential vulnerability through a series of actions in the form of management practices. Within the vulnerability assessment, some “incentives” will be identified that will contribute to a lower vulnerability score.

Feedback Loop: A feedback loop will be initiated using methodology identified by the TAC that will provide a mechanism to confirm that, in situations where a farm’s vulnerability assessment is high, a farm’s vulnerability assessment may be adjusted through implementation of practices in such a way that it has the potential to demonstrate improvement or that potential vulnerabilities are otherwise mitigated by the site-specific circumstances. A feedback loop will occur at several levels of the Irrigated Lands Regulatory Program: review of Preservation, Inc. data, vulnerability assessments, farm evaluation, Irrigation and Nutrient Management Plan reports, research, verification monitoring and multiple reports.

Practice Effectiveness Evaluation Research & Education Program: This program would evaluate practices against selected water quality criteria set forth in the Basin Plan. The program would work with farms throughout the Region to evaluate the effectiveness of practices, identify research priorities, and educate farms in high priority areas and throughout the region.

### Prioritization of Watersheds & Vulnerability Assessment

In meetings with Central Coast Regional Board Staff, there have been discussions of whether the next permit (or portions thereof) should be implemented in a phased manner. Agriculture generally supports this concept. By phasing in priority areas, this program allows growers and regulators to learn from iterative actions. These may be quickly translated and implemented in manageable chunks, instead of becoming overwhelming to a grower or landowner. Areas of high priority would be established using Preservation Inc.'s Cooperative Monitoring Program (CMP) data, as well as TMDLs (other applicable data points may be identified as this concept is further defined). The TAC would provide the methodology to identify what high-priority watersheds should be addressed first, based upon a variety of factors. The prioritization process would also need to include a public review process.

Following the designation of priority areas and vulnerability assessments, a feedback loop will be initiated that introduces education, identifies timelines and milestones, steps for re-assessment, incentives to improve the quality of the discharge and its impact on the receiving water, and potential consequences for failure to comply or meet specified goals. At a designated milestone, the TAC will provide a methodology to re-evaluate the originally identified high-priority areas and to evaluate the effectiveness of the vulnerability assessment and feedback loop in addressing water quality concerns. Assessment will focus on an analysis of Preservation, Inc. data, abbreviated management plans to address vulnerability, outcomes of the feedback loop, research findings and educational outreach effectiveness. Their review will influence the iterative process of further prioritization, additional practice implementation, if warranted, re-assessment of farm-level vulnerability and effectiveness measurements. Hopefully, the TAC will also provide a methodology to identify areas of demonstrated improvement in the quality of the discharge and its impact on the receiving water.

Incentivizing Innovation, Collaboration, Certification and BMP Trials within the Vulnerability Assessment  
The State's Non-Point Source (NPS) Policy supports the implementation of NPS programs that rely on the self-determined cooperation of stakeholders. We suggest incentivizing activities such as those listed below to provide operators with more knowledge and options as they manage their vulnerability. These types of activities should lower a farm's vulnerability category. Any of these activities should also feed into the practice effectiveness evaluation research and focused education program in high-priority areas, which is detailed in the next section. This is not an exhaustive list.

- **Innovation:** Many growers have invested time and funds into innovations that are successful and others that aren't. The evolution of a best management practice provides insight and value to that grower and others in the region. When BMPs fail and are re-purposed, re-structured, or re-developed, they lead to more successful versions of themselves.
- **Collective Treatment Programs:** Integrated projects in which multiple farms come together in a watershed or sub-watershed to address impairment with a focus on downstream water quality improvements should be considered an option. In some situations, compliance with water quality objectives and protecting beneficial uses should be determined at a lower point in the watershed, or at a specified compliance location.

- **Certification:** In lieu of a vulnerability assessment, a category that allows for enrollment by a certification program focused on education and research should be an option for farms that have access to such programs, similar to the winegrape SIP Program and the proposed strawberry grant certification program.
- **BMP Effectiveness Trials:** There are numerous examples of BMPs that are cited as useful on other crops or in other areas of the country, but many of these haven't been adequately trialed locally.
- **Disincentives:** Disincentives, in conjunction with incentives, can be effective change agents. However, it should be noted that a punitive program with ever-increasing regulatory requirements and costs that do not provide incentives to trial new ideas nor receive credit for reducing one's vulnerability is not one likely to be an effective change-agent.

### Practice Effectiveness Evaluation Research & Education Program

An appropriate Practice Effectiveness Evaluation Research & Education Program ("Program") would explicitly link both vulnerability assessment and practice effectiveness evaluation to water quality criteria. The program would work with growers throughout the region to test the effectiveness of practices, identify research priorities, and educate farms in high priority areas, as well as meet precedential education requirements in the East San Joaquin Order. The program would also identify circumstances where the implementation of certain practices theoretically should have resulted in corresponding water quality improvement in the quality of the discharge and its impact on the receiving water but did not and attempt to identify the reasons for the discrepancy. The outcome of this analysis and research would be educational materials provided to all farms in the region, with a specific focus on those in high priority areas. Areas of research and analysis needed to further improve agricultural practices to protect water quality would be identified for each of the priorities (sediment, nitrate and toxicity), which will be essential, as the Central Coast Regional Board has identified many data gaps that can be addressed by science-driven, field-level trials to identify and characterize effective management practices especially concerning toxicity impairment. Field-level trials will be essential in incorporating real-world constraints including food safety, resistance management, and commercial demands for price, quality, and appearance. The conclusions of the Program could be incorporated into the vulnerability assessment and feedback loop, and support the greater feedback loop and verification measures of the entire order. This program could be conducted with input by a variety of public and private entities.

### Technical Advisory Committee Makeup

A Technical Advisory Committee (TAC) composed of persons with local agricultural knowledge that would provide the farms and Central Coast Regional Board with recommendations on how to implement the program. While it is desirable to also include TAC members with expertise in sciences such as pathology, entomology, horticulture, soil nutrition, hydrology, hydrogeology, or environmental science, these individuals must possess education or experience that indicates they have successfully worked with the growing community in the past and understand local farming methods and operational constraints.

### Conclusion

The purpose of this document is to provide a high-level conceptual model that should be included in the options the Central Coast Regional Board considers in fall 2018 and spring 2019. This conceptual model outlines the foundation for a program that will provide:

1. Clear prioritization of surface water areas requiring attention

2. A transparent structure for determining vulnerability to water quality
3. Incentives to lower a vulnerability category
4. A phased in approach to managing water quality improvement
5. Opportunities to innovate
6. The establishment of a feedback loop to provide checks and balances. Such a program would be effective in phasing in improvement over time that addresses milestones.

This proposed conceptual model is focused on agricultural non-point source discharges and seeks to improve the quality of the discharge and its impact on the receiving water through a multi-step approach that includes vulnerability assessment, management practice implementation grounded in real-world constraints, appropriate and reasonable monitoring, and reporting and verification, which together will lead to a cycle of continuous protection and improvement.

## Central Coast Irrigated Lands Nitrogen Management Conceptual Model

Submitted by: California Farm Bureau Federation on behalf of Monterey, San Benito, San Luis Obispo, San Mateo, Santa Cruz, Santa Clara, and Santa Barbara Counties, California Strawberry Commission, Central Coast Groundwater Coalition, Central Coast Vineyard Team, Grower-Shipper Association of Central California, Grower-Shipper Association of Santa Barbara and San Luis Obispo Counties, Monterey County Farm Bureau, Monterey County Vintners and Growers Association, San Benito County Farm Bureau, San Luis Obispo County Farm Bureau, San Mateo County Farm Bureau, Santa Barbara County Farm Bureau, Santa Clara County Farm Bureau, Santa Cruz County Farm Bureau, Sustainable Ag Water Corporation, and Western Growers

### Nitrogen Management Plans

This document presents foundational concepts for Irrigated Lands Order 4.0 brought forward by the agricultural associations listed above. It conceptually outlines a science-based, commercially viable, solution-oriented program for nitrogen management and groundwater protection that includes: outreach and education; irrigation and nitrogen management planning; irrigation and nitrogen management reporting; and groundwater quality monitoring and reporting and is adapted to the unique and diverse circumstances of the Central Coast. These topics are the key focus of the State Water Board's precedential provisions in the East San Joaquin order (ESJ Order). Central Coast Agriculture listed above proposes the following provisions for consideration in the next version of the Irrigated Lands Order (known as Ag Order 4.0).

- 1) **Irrigation Practices** “The requirement for incorporation of irrigation management elements into nitrogen management planning shall be **precedential** for irrigated lands regulatory programs statewide.” (ESJ, pg. 35)

For example, in the ESJ Order, Attachment B (i.e., the Monitoring and Reporting Program or “MRP”), requires the Irrigation and Nitrogen Management Plan “INMP” to include the following as to irrigation practices (See Attachment B, ESJ Order, pg. 39):

#### “INMP Component (4) – Irrigation Management Practices Implemented

Irrigation management practices implemented in the prior year shall be reported for each field/management unit” (Attachment B, ESJ, pg. 36)

- a) For the Central Coast, we recommend that this INMP summary report template component be developed to include these precedential components while also reflecting the complex farming practices on the Central Coast.
  - i) Irrigation management practices implemented in the prior year shall be reported for each field/management unit (Attachment B, ESJ, pg. 35), and will report irrigation and nitrogen management practices implemented for each ranch. This will be reported on a Technical Advisory Committee-approved summary report template that will be released ahead of the reporting period and be available for public review and comment. The Central Coast Regional Water Quality Control Board (RWQCB) will avoid duplicate reporting requirements and will only require reporting of practices on one form.
  - b) The INMP should be part of the Farm Plan prepared for each ranch by the grower, to be maintained on the ranch; the INMP summary report template as developed by the

Technical Advisory Committee (TAC), discussed later in this document, will be submitted to the Central Coast Water Board.

## 2) **Nitrogen Application Management**

Ag submitted a proposal for N recording and reporting to RWQCB which we believe to be consistent with the mandates of the ESJ Order and will result in more meaningful data to base regulatory decisions (See Attachment A)

- Measure and report new<sup>1</sup> N applied (A) and N removed (R) on a ranch basis annually. This is consistent with the precedential mandates of the ESJ Order.
  - Total N removed in the crop, by crop type (i.e. vegetables, grapes or strawberries), would be used to calculate the total N removed, and reported as a total.
  - Total new N applied during the year/crop season would be reported by ranch.
  - The nitrogen applied in irrigation water shall be reported, in pounds per acre, as the estimated amount of nitrogen applied via irrigation water application. (Attachment B ESJ, Page 37).
  - The irrigation water nitrogen concentration shall be reported as parts per million (ppm) of all available forms of nitrogen. The concentration is estimated by analyzing an irrigation water sample to determine the available nitrogen content. (Attachment B, ESJ, Page 36)
  - Soil health and the avoidance of depletion provides an incentive to growers to understand the amount of N in the soil, and such tracking is required by the ESJ. However, the N found in soil reflects already-applied sources of N (previous applications of fertilizer, soil amendments, irrigation water N, crop residue) and is therefore not an additional “Applied” source of N. The ESJ Draft INMP reflects this logic and includes reporting of soil N only to the Coalition on the INMP Worksheet but does not disclose soil N on the INMP Summary report. Similarly, RWQCB should require growers to maintain soil sample analyses on site and be made available to staff only as requested. “The residual nitrogen in soil shall be reported as nitrogen available to the crop during the growing season. This is estimated by analyzing soil samples.” (Attachment B, ESJ, Page 36) Growers would track N removed by crop type by harvest unit until N removal coefficients have been researched, reviewed and adopted by RWQCB as required by the ESJ Order.
  - This is the basis of the N Alternative reporting proposal submitted by Ag prior to the RWQCB workshop on September 20, 2018.
  - The language of the East San Joaquin order should also apply to perennial crops grown on the Central Coast, including but not limited to strawberries, vineyards, etc. “The nitrogen removed includes the nitrogen present in all harvested materials removed from the field (including any pruning’s, removed

<sup>1</sup> NEW is defined as any nutrient introduced during the growing cycle of a crop, exclusive of irrigation water.

vegetation, etc.) plus, in the case of perennial crops, the nitrogen sequestered in the permanent wood." (ESJ, Page 38)

- a) The above N reporting method would be applied to all crop types with variation necessary for specific ranch:

A ranch with a vegetable crop type, planting multiple varieties and plantings throughout the season, would record and report total irrigation water applied, new N applied and N removed throughout the year and report it by ranch. This would be reported annually four months after the end of the calendar year.

- ⊘) A ranch with a single crop type would also report total irrigation water applied, new N applied and N removed, either annually or on a modified reporting cycle if the grower is only on the ranch for one crop cycle for less than a year.

Contiguous ranches could be combined into one reporting unit, at the grower's option, with a maximum contiguous size of 640 acres

- b) Incentives for use of high N irrigation water can be achieved by reporting only totals of new N applied by ranch, not penalizing for the use of existing N in groundwater.

- i) This also provides an incentive for the use of recycled water which may have higher salt and nitrate concentrations.

- c) Other considerations:

- i) Every crop requires more N to grow the plant, the crop N uptake (U), than the N removed at harvest.

- ii) When RWQCB uses Outliers as a metric for follow-up, significant improvement in N practices will result in a reduction in loading.

- iii) Mineralization of certain fertilizers, especially organic, occurs at a slower rate. Some nitrogen could be tied up in soils for years; more research is needed on each soil type to determine how much is mineralized by each fertilizer composition and crop type.

- iv) Ranches with no N in irrigation water would be able to flag this in any mandatory report.

- v) In some watershed areas, water percolating into the aquifer may take years to decades to reach the aquifer and even ongoing improvements to irrigation and nutrient management practices might not result in commensurate improvements to water quality. The water quality presently existing in the aquifer may reflect historic uses. As growers in these watersheds use less N, the concentration of N percolating will be reduced and dilute existing groundwater. Over time the quality of groundwater will improve. This is the essence of the ESJ precedential mandates.

- vi) Market conditions, availability of labor for harvest crews, pests and diseases, and food safety issues may deem a crop non-harvestable and be plowed into the soil, either fully or partially, with no measurable removal value.

- d) Applied Organic Soil Amendments (Compost and Manure where nutrient content is not guaranteed). "The applied organic soil amendments include compost and manure and should be reported as the amount of nitrogen available to the plant during the growing

period in pounds per acre. Available nitrogen may be measured by testing the applied compost or manure materials or estimated using reference materials that are available for estimating nitrogen content.” (ESJ Attachment B, page 37).

“Organic Amendments include any nutrient applications from sources that do not have a guaranteed nutrient content, such as compost and manure applications. Applied organic amendments should be reported as the amount of nitrogen available to the plant during the crop year, in pounds per acre.” (Draft ESJ Irrigation and Nitrogen Management Plan (INMP) Worksheet Instructions, page 3)

“Organic Amendments (11B). Enter the amount of nitrogen applied from sources that do not have a guaranteed nutrient content, such as compost and manure applications, in pounds per acre. Contact your coalition for more resources regarding the nitrogen content of organic amendments.” (Draft ESJ Irrigation and Nitrogen Management Plan (INMP) Summary Report Instructions, page 2).

Growers agree with the ESJ Order documents that growers should only report nitrogen available to the plant during the crop year. Uncomposted manure, composted fertilizer in pellet form and fully composted green waste have vastly different nitrogen mineralization rates. Although it is unlikely that growers use manure in our region due to food safety concerns, it is important to have growers report only the mineralized nitrogen that is available to the plant for uptake to ensure accurate interpretation of results. Conveniently, reporting mineralized N is useful for both growers and regulators as it is the only form of N available for crop uptake. There are many other resources that growers, researchers and the RWQCB staff can provide to growers to research mineralized nitrogen.

### **3) INMP Summary Plan Reporting**

Ag seeks to present an INMP proposal which will be meaningful to growers and RWQCB staff that provide a better way of tracking improvements on each ranch.

“The requirement for all growers to submit summary data from the plans shall be **precedential** statewide. The regional water boards have discretion as to whether to require certification of all growers or just a subset of growers based on a risk categorization such as the low/high vulnerability distinction in the Eastern San Joaquin Agricultural WDRs. At a minimum, the certification requirement for all low-vulnerability growers that are determined to be outliers, consistent with the additional certification requirements stated in section II.A.5.f, is precedential statewide.” (ESJ page 36)

“Where a Member is an AR data outlier, the Member must obtain additional training or employ an expert for certification of the INMP.” (ESJ page 75)

- i) Tier 3 growers are presently in discussions with RWQCB staff regarding INMP effectiveness reports for 2016. The results are uncertain at this time. While it is important not to interfere with this process Ag needs to make proposals on INMP reports to RWQCB for inclusion in the options.

- 4) **Reporting** requirements and reporting templates must be disseminated to growers so they know what to track. During Ag Order 3.0 growers were often required to submit forms that were created well after the crop year (For example, see withdrawn Tier 3 letter). This uncertainty of reporting requirements does not allow the grower to prepare data information and collection systems on the ranch for compliance reporting, and is ultimately inefficient for the grower's operation. As an alternative consider:
- i) Ag will propose options and templates for uniform reporting requirements in future iterations of this proposal.

Outlier Ranches should be required to prepare a certified INMP or that enrollee must obtain additional training.

Only ranches that are outliers (if the enrollee chooses not to obtain additional training) would be required to maintain certified INMPs on the ranch, available for RWQCB staff inspection.

- ii) This would effectively create a division between ranches where non-outliers would have a lower standard of review and reporting.

#### 5) **Determine N Coefficients**

We plan to discuss the process for determining N coefficients further with the board and staff, but at this time want to highlight sections of the ESJ pertaining to the process.

From the East San Joaquin Order: "The regional water boards must approve the coefficients in consultation with State Water Board staff, following an opportunity for public review and comment." (ESJ page 42)

"In developing the coefficients, the regional water boards may rely on their own research, on published values, on the research of other entities, and on coefficients approved by other regional water boards." (ESJ page 42-43)

"Coefficients may also be developed for use where harvest totals are measured by means other than weight, such as by box of produce, lugs, bins, bales, or other forms of volumetric measure." (ESJ page 42, footnote 120)

#### 6) **Outliers** This is the key to fair and equitable enforcement.

"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." (ESJ page 52)

"Our view of the data collected so far by the Third Party indicates that different methods of assigning outliers may be needed as different crops are considered, as there appears to be no single approach that is appropriate across all crop types." (ESJ page 52)

"We will not extend the INMP certification requirement to all Members in the low vulnerability areas at this time. However, we add a certification requirement for Members in low vulnerability areas determined to be outliers as described in section II.A.5.f below." (ESJ page 36)

"A Member will not be identified as an outlier based on high AR data if the only application of nitrogen is in their irrigation water." (ESJ page 52)

"Where a Member is an AR data outlier, the Member must obtain additional training or employ an expert for certification of the INMP." (ESJ page 75)

- We propose that grower results with similar crop types (i.e. grapes, mixed vegetables, strawberries, etc., see §2 a) above) would be compared on a township or other sub-regional basis for both annual A/R and A-R.
  - Outliers will be determined by applying a statistically significant standard deviation based upon A/R and A-R reporting, over an established period of time.
  - A process for appeal and review of an Outlier designation will be established.
  - RWQCB would notify these growers that the ranch is an outlier.
    - Only ranches identified as outliers would require certified Nutrient Management Plans or obtain additional training.
  - Growers would improve annual N applications and the curve would move toward lower usage.

7) **Sub-region / Township** to “facilitate analysis of data and comparison of different areas”.

We plan to work with the RWQCB further on establishing sub-regions. We share the following as background from the ESJ Order.

As it relates to the ESJ Coalition and reporting of data, the ESJ order states: “These data are required to be associated with the township (36 square mile area) where the farm is located. The spatial resolution by township provides a common unit that should facilitate analysis of data and comparisons between different areas.” (*ESJ Attachment A, page 1-2*)

“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.” (*ESJ page 51*)

A township is equal to 23,040 acres. There about 18 townships (415,000 acres ÷ 23,040) in Region 3. It is important to our members that we establish a system that identifies sub-regions in which A/R and A-R data are compared to identify outliers. In the Salinas Valley Basin, for decades we have referred to four major sub-basins, which could be the functional equivalent to the sub-regions envisioned by the state water board.

8) **A Technical Advisory Committee (TAC)** would be established to give advice on reporting formats and forms, education, review of submitted data and research review. The TAC would review the research used to determine all N removed coefficients. The (TAC) would be composed of persons with local agricultural knowledge that would provide the farms and the RWQCB with recommendations on how to implement the program. While it is desirable to also include TAC members with expertise in sciences such as pathology, entomology, horticulture, soil nutrition, hydrology, hydrogeology, or environmental science, these individuals must possess education or experience that indicates they have successfully worked with the growing community in the past and understand local farming methods and operational constraints.

## Attachment A

### Measuring Nitrogen Application Effectiveness (Ag N Alternative)

The ESJ Order requires all farms to track Nitrate (N) inputs (A) from all sources and N removed (R). All sources include applied N, from fertilizer, compost, and nitrate in the irrigation water. R is calculated by a specific crop related coefficient times the pounds, or other measurement, i.e. bin or box, harvested.

We understand the State Water Board's intent of tracking A/R and A-R, as expressed by Board Member Moore, is to be able to estimate the amount of N remaining in the field that could potentially percolate to groundwater and, with this information, estimate the potential for impairment.

The Expert Panel proposed tracking A and R as a method to reach this objective. The order mandates that each farm report A/R and A-R annually, then looks at a 3-year average. Over time this will show improvement in fertilization practices by the farmer and also determine outliers by comparing growers with the same crop based on comparison of A/R ratios. For 200 acres of almonds or canning tomatoes there is no problem applying this concept, however it does not produce usable data for multiple crop vegetable farms on the Central Coast.

The ESJ Order makes great strides in restating this concept for application to the Central Coast.

<sup>88</sup> ... Members may report data for a portion of a field or for multiple fields provided that the reported area has (1) the same crop type, (2) the same fertilizer inputs, (3) the same irrigation management, and (4) the same management practices. ... For reporting purposes in the Central Valley, **the term "field" represents a convenient and appropriate reporting area such that the data reported is meaningful and the scale of reporting balances the level of detail with the reporting burden.** Some growers in other regions engage in highly intensive cropping practices, including multiple rotations of different crops in the same location within a single year, unpredictable crop types and harvesting based on rapidly-shifting market demand, and variable management practices adjusting to weather and field conditions. **The regional water boards have the flexibility to develop alternative reporting areas for these types of growers, as long as the regional water board determines that the alternative reporting area provides meaningful data and balances the level of detail with the reporting burden similar to the field approach.** In no case should a reported area exceed a total size of 640 acres, and different crop types must always be reported separately even if they are within the same reporting area, to allow for evaluation of the effectiveness of management practices with regard to each individual crop type grown." (pg. 30-31. emphasis added)

"A multi-year or multi-cropping-cycle<sup>108</sup> 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 the basis of a single cropping-cycle and justly account for nitrogen present in its many varied states within a field and crop system." (pg. 38)

<sup>114</sup> We recognize that the boundaries of a fields may change from year to year and that certain growers may not grow crops three consecutive years or the same crops for three consecutive years, but this level of imperfection in reporting does not detract from the

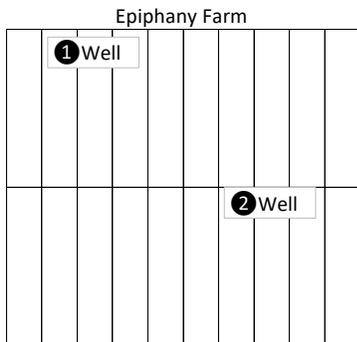
overall usefulness of the data. In cases like these, the Third Party will be expected to make a good faith effort to report the available data in a meaningful way.” (pg. 40)

However, this still does not reach the State Board objective outlined by Board Member Moore. For a multiple cropped farm there is no practical way to allocate the N in irrigation water to each crop. Tracking each crop shows the N directly applied to that crop, but does not consider that the N left in the ground after the first crop consumed by the following crop in the same season. Comparing the first crop of, say lettuce, to a subsequent lettuce planting may consistently show a lower A/R ratio for the second crop. To avoid this the Order proposes a multi-cropping cycle in lieu of a multi-year concept. Yet, this fails to give credit for N uptake by subsequent plantings of non-similar crops during the season, preventing overall determination of the impact of the whole ranch on groundwater conditions.

The ESJ Order gives latitude to the CCRWQCB to craft a reporting system that reaches the objective of determining the N applied and removed by “crop type” with a reporting burden similar to the ESJ “Field Approach”. The following concept is consistent with this directive. It should be noted that the State Board specifically used the phrase “crop type” and not individual variety which allows grouping of types like vegetables, strawberries and wine grapes in an acceptable reporting structure. This also balances the level of detail with the reporting burden.

**A More Meaningful Approach**

Let’s use as a hypothetical a 200-acre mixed vegetable ranch (the “alternative reporting area”) with 20 ten-acre blocks and two interconnected wells. During the season each block on this ranch is planted an average of 2.5 times, for 50 planted blocks (see next page). Well 1 draws water from the 400’ aquifer and has an N concentration of 7 mg/L (NO<sub>3</sub>-N), Well 2 is in the 180’



aquifer and has an N concentration of 35 mg/L. The farmer knows how much water is pumped from each well, not how it is blended as it is applied during irrigation. The contribution of water from each well varies depending on location and size of any irrigation set. Irrigation with movable sprinkler pipes can cover multiple, or partial ranch blocks and crops, depending on temperature, soil and total well capacity.

The grower measures and records total irrigation water applied to the ranch for year and the total new N applied to all of the crops.

The grower records all harvest removal for each crop type, and where the coefficient is available the R per crop. There is no realistic way to determine N applied to each crop due to the inability to measure the volume of irrigation per block, nor is it possible to apply a credit for residual N in the soil from the prior crop with so many overlapping plantings. For these reasons the total N applied to each individual block or planting is not determined, only total N applied at the ranch level.

After the end of the year the grower reports to the RWQCB:

1. Total New N Applied from all sources.

and

2. Total N **Removed** for the ranch.

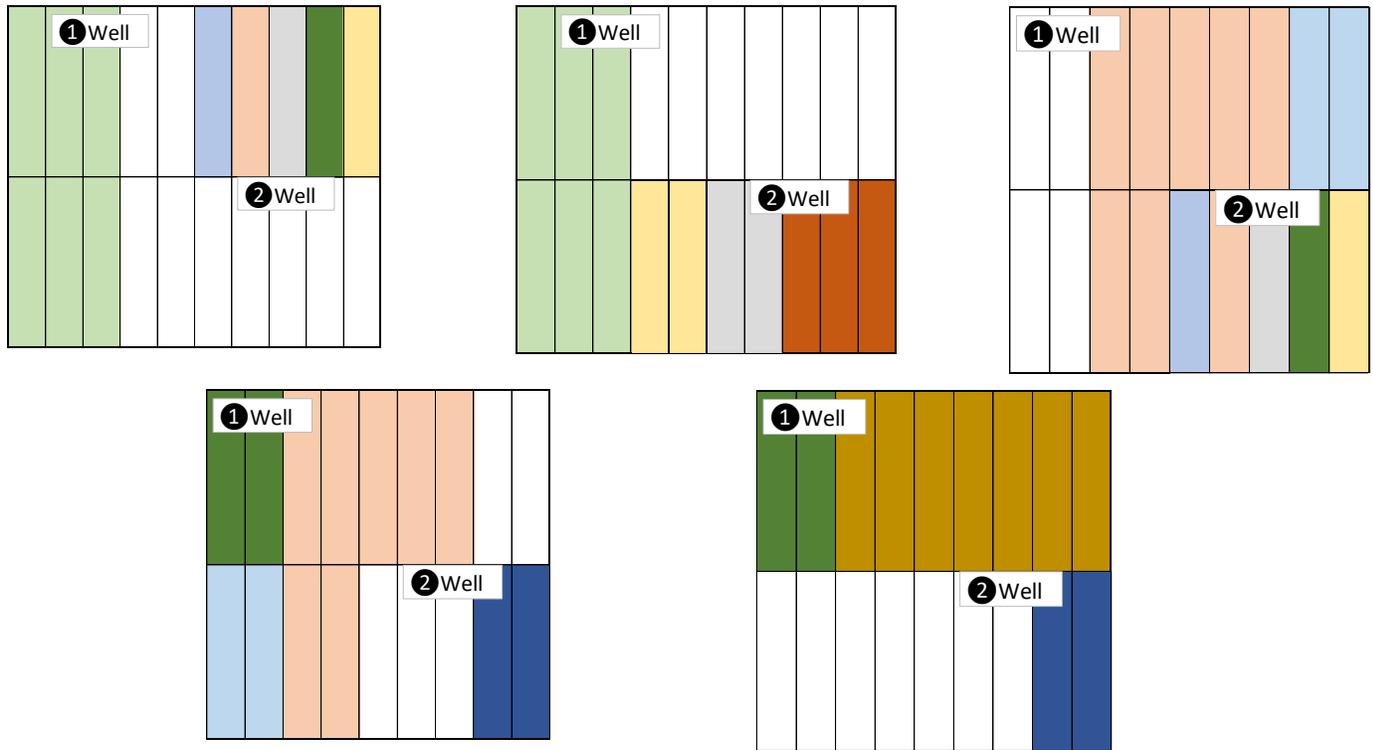
If not all crops have R coefficients, the removal for each crop type (not planting or block).

The report will show accurately both an A/R and A-R calculation for the 200-acre ranch. Should the RWQCB desire to validate the information submitted it can request the underlying R information by crop type.

This produces exactly the same result as AR for a 200-acre almond orchard. It achieves the goal of determining the amount of N remaining in the field that may percolate to groundwater and, with this information, calculate a loading. The record keeping requirements are similar. The data produced is more meaningful than independently tracking varied crops on overlapping blocks throughout the season. More importantly a three-year AR tracking period produces meaningful data for analysis as the farmer continues to operate the same ranch year after year.

**INMP:** This method also makes the INMP relevant as a planning tool for the diversified vegetable farmer. Comparison of annual results can aid the grower in demonstrating reduce N application over time. None of this is possible by tracking each crop without relation to subsequent plantings.

### Ranch crop planting sequence

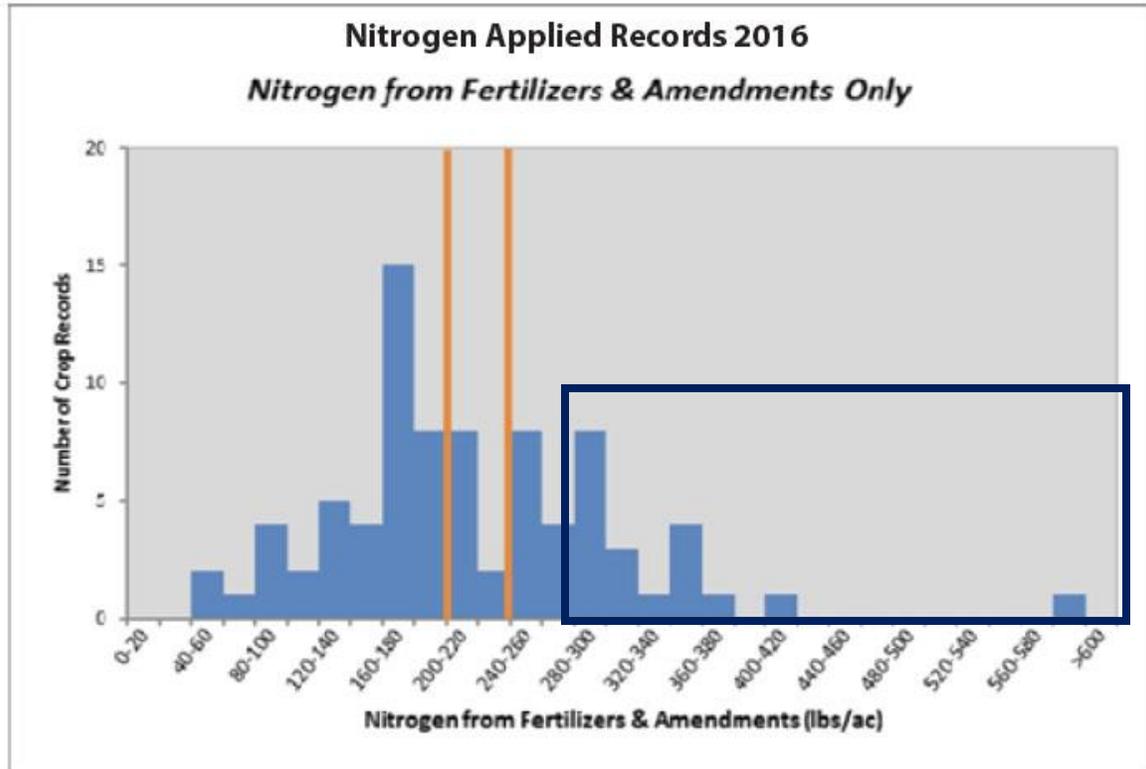


## Attachment B

### Incentive to Pump High N Groundwater

The use of either Total Nitrogen Applied data as mandated by the Ag Order v3.0 for certain Tier 2 and Tier 3 ranches or the Ranch based Applied and Removed calculations outlined above will result in a data set that can identify outliers. It also can incentivize use of high N groundwater in irrigation.

For example, if we look at a single crop ranch the following data from the 2016 TNA reporting is a good example provided by the Water Board. In 2016, only some Tier 3 and select Tier 2 growers had to file TNA reports so many farms were not included. The below chart shows both outliers (dark blue circle) and RWQCB staff's estimates of seasonal crop N uptake at between 200- and 260-pounds N per acre (yellow bars). The blue bars represent the number of individual ranches applying the range of the N indicated.



Ranches using less than 200 lb N/acre could be utilizing existing N (old N) from irrigation water and the soil. Use of charts comparing new ranch N application therefore incentivizes use of old N while identifying ranches with higher application rates as potential outliers.