California Rice

May 27, 2016

Submitted via email to: commentletters@waterboards.ca.gov

Ms. Felicia Marcus, Chair
State Water Resources Control Board
1001 "I" Street, 24th Floor
PO Box 100
Sacramento, California 95812-0100

RE: Comments to Eastern San Joaquin River Watershed Agricultural Order SWRCB/OCC Files A-2239(a)-(c)

Dear Chair Marcus:

The California Rice Commission (CRC) is a statutory organization representing the state's rice industry encompassing 2,500 rice growers, 40 millers, and approximately 500,000 acres of farmland. The CRC manages the only commodity specific coalition for the nine contiguous counties of Butte, Colusa, Glenn, Placer, Sacramento, Sutter, Tehama, Yolo and Yuba. On behalf of CRC Coalition members, we respectfully submit the following comments on the proposed changes to the Eastern San Joaquin River Watershed Waste Discharge Requirements.

Having successfully managed surface water quality for the industry for over 10 years, and with the demonstration of low risk to ground water, we believe we are in a unique position to offer comments relative to the proposed changes on regions and crops previously considered low vulnerability.

Please contact me if you have any questions, need additional information, or more background materials.

Sincerely,

Tim Johnson
President & CEO

Enclosure

cc: Ms. Jeanine Townsend, Clerk to the Board

Comments of the California Rice Commission on the proposed revisions to the Eastern San Joaquin River Watershed Agricultural Order SWRCB/OCC Files A-2239(a)-(c)

The California Rice Commission (Commission), representing the state's 2,500 rice farmers offers the following comments on the draft order (Draft Order) modifying the Waste Discharge Requirement for the Eastern San Joaquin River Watershed.

The Commission has a long and successful history managing water quality impacts from our fields. For over 15 years, the Commission has managed the highly successful Rice Pesticides Program, which was a model for the Irrigated Lands Regulatory Program (ILRP) and our commodity specific, rice waste discharge requirements (Rice WDR).

The Commission also has a very good understanding of the potential impacts of rice production on ground water quality drawing from 9 years of monitoring conducted by the United State Geological Survey (USGS) under rice fields, as well as three other sources of monitoring data. In addition, the Commission completed the first Ground Water Assessment Report (GAR) approved by the Central Valley Regional Water Quality Control Board (CVRWQCB), which we submitted in parallel with the proposed Rice WDR in July of 2013.

We would also note that the Rice WDR is the only order not petitioned. We believe this speaks to the rigor of scientific analysis, understanding of the pathways for rice impacts on water quality and the uniqueness of this commodity based WDR.

The following comments are specific precedential impacts of the Draft Order on our Rice WDR adopted by the board on 27 March 2014.

I. Removal of Low Vulnerability Designation

While the Commission supports the concept that growers must know and apply management practices to reduce the potential for nitrate impacts on surface and ground water, removal of differential risk designations is inappropriate, unnecessary and significantly increases compliance and oversight costs not only for rice but also broadly across the region. However, because the new proposed requirements for the Draft Order are highly precedential they will be applied to every Agricultural WDR.

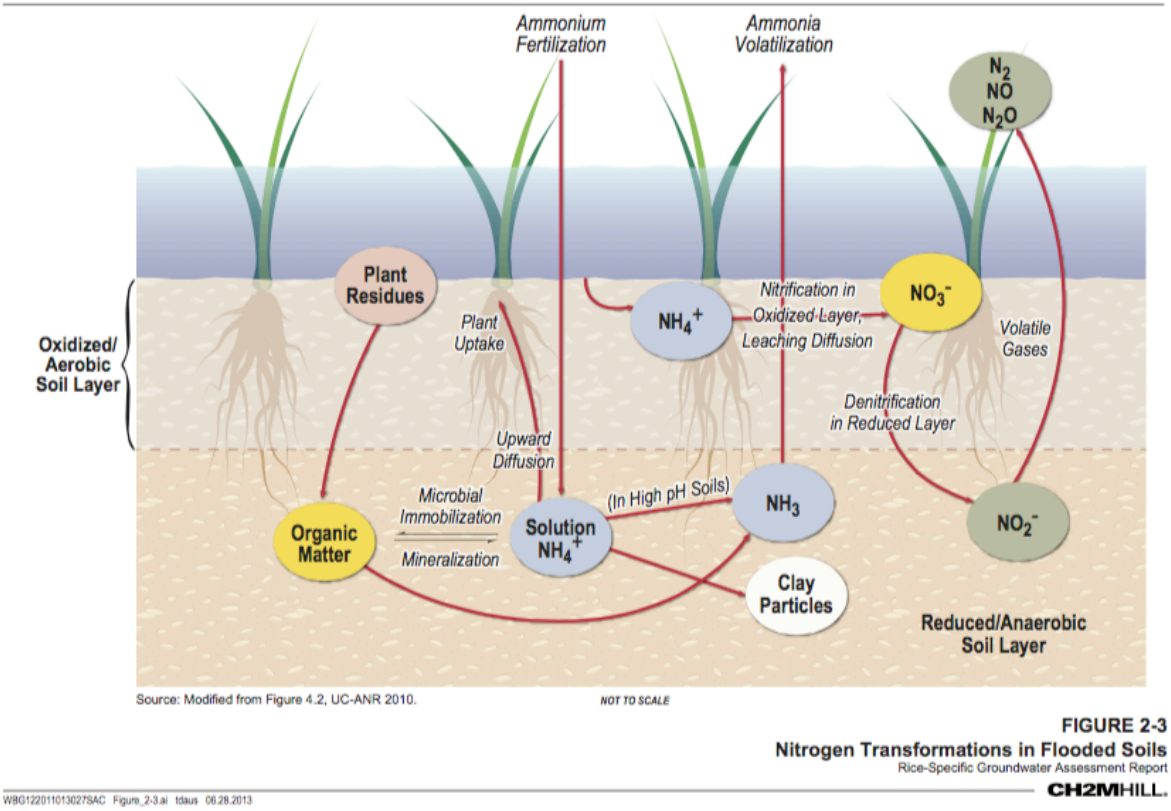
There are three key problems with the new proposed requirement to remove vulnerability distinctions as it applies to a crop specific WDR like rice, or for other highly stable, nitrate conserving or low nitrate cropping patterns on known soil types.

1) Removal of the distinction treats all areas and crops as having the same potential impact on water quality. The Commission, in its GAR, has clearly demonstrated that the anaerobic nature of rice production is the single greatest limitation on the generation of nitrate and therefore the potential to impact water quality:

> "Mobility of N is therefore minimized by rice field physical conditions and management during most of the year." *Rice–Specific Groundwater Assessment Report.* 2013. p. 2-21.

Presented in the Rice-Specific Groundwater Assessment Report, Figure 2-3 best demonstrates this low potential.

Figure 2-3. Nitrogen Transformations in Flooded Soils.



The rice GAR also clearly demonstrates that rice is grown on specific soil types that are highly impervious to water movement and leeching:

> "Rice is preferentially farmed on lands with low vertical hydraulic conductivity. Low rates of downward water (and thus solute) movement through the soil allows for maintenance of standing water, and avoids rapid seepage and deep percolation of applied water." *Rice–Specific Groundwater Assessment Report.* 2013. p. ES-1.

2) Removal of the distinction fails to allow for recognition of developed data that indicates that current practices do not impact ground water quality. The rice GAR relied on data developed by USGS, which included over 9 years of monitoring water directly underneath rice fields. These data clearly show that water under rice fields does not exhibit elevated nitrate or show negative trends in water quality:

> "Nitrate was not detected in any USGS Rice Well at a level exceeding the maximum contaminant level (MCL). The results are consistent with geochemical understanding of rice root zone properties and are validated by the other USGS datasets reviewed." *Rice–Specific Groundwater Assessment Report.* 2013. p. ES-3.

The impact on surface water must also be addressed if the impervious soils below fields create a likely pathway for nitrate movement laterally into adjacent irrigation and drainage ditches. Again, rice has addressed this pathway with a special study in 2004. **It is important to note that this study was conducted at the edge-of-field and not representative of water quality in irrigation ditches or receiving waters.**

CALFED Drinking Water Quality Grant (application number 384) was awarded to The Regents of the University of California, Davis as Grant Number: 04-183-555-0 on 17 June 2004. The Commission was a collaborator with University Regents on specific grant components provided in the final report, "The Development and Implementation of Cultural and Water Management Practices in Rice to Protect Downstream Water Quality", (Hill 2011).

The grant contained components produced from data the Commission submitted to the CVRWQCB with the conditional waiver monitoring requirements. Components of the grant relative to the conditional agricultural waiver included evaluation of dissolved organic carbons, dissolved organic nitrogen, particulate organic carbon, total organic carbon, electrical conductivity, turbidity, etc. in rice field outflows with differing straw and winter flooding practices.

In addition, the grant looked at management practices for alternative rice seeding methods and herbicide methods for this type of practice. Thirdly, the grant looked at management practices relative to pesticide use and the potential impacts on water quality.

Nitrogen Concentrations in Rice Field Outflows. Data on nitrogen outflows from rice fields are included in Table 5 and presented in Figures 20 through 23 (found in the cited, final report). Study parameters for this component included: ammonium (NH4-N), nitrate (NO3-N) and dissolved inorganic nitrogen (DIN-N).

Presented in the CALFED Grant final project report, Table 5, from "The Development and Implementation of Cultural and Water Management Practices in Rice to Protect Downstream Water Quality" (Hill 2011).

Table 5. Nitrogen (ammonium and nitrate and dissolved inorganic N) in water leaving rice fields.

	NH4-N (PPM)	**NO3-N (PPM)**	**DIN-N (PPM)**
Number of observations	*346*	*335*	*378*
Minimum	0.01	0.01	0.00
Maximum	3.61	9.52	9.54
Average	0.10	0.12	0.20
Median	0.03	0.01	0.05
Standard deviation	0.27	0.71	0.72
Variance	0.1	0.5	0.5

The following summarizes the results of the nutrient sampling:

- Approximately 98% of all NH4-N results were below 0.5 ppm. Above 0.5 ppm, there were six observations between 0.5 and 2.5 ppm and one observation of 3.61 ppm.

- Approximately 97% of all NO3-N results were below 0.5 ppm. Above 0.5 ppm, there were six observations between 0.5 and 1 ppm, one observation of 2.5 and one observation of 9.52.

- Approximately 93% of all DIN-N results were below 0.5 ppm. Above 0.5 ppm, there were 22 observations between 0.5 and 2.5 ppm, one observation each of 3.64, 4.55, 7.27, and 9.54.

The Development and Implementation of Rice Field Management Practices to Improve Water Quality. 2011. p. 24-25.

Note: It is important to note that this study was conducted at the edge-of-field and not representative of water quality in irrigation ditches or receiving waters.

Nitrate monitoring in surface water is an ongoing requirement of the Rice WDR, and took place in 2012 and 2015 at our rice specific sample locations[1]. Results were consistent with the expectations in the University of California (UC) study with the highest sampling result of 0.35 mg/L and 0.20 mg/L respectively. Both are well below MCL of 10 mg/L.

The monitoring results did not trigger the requirement for a surface water quality management plan.

3) Removal of the designation fails to recognize cropping stability
The stability of rice, and other crops, grown in specific regions, climates and soils is not recognized. As referenced in our GAR, rice production is highly stable with both production practices varying little and highly constant crop distribution. In fact, the majority rice fields have been in continuous production for decades. In Yuba County, a number of fields have been planted to rice for 100 years. Monitoring data show no impacts to water quality from continuous rice production.

Yet, the new proposed requirement of eliminating low vulnerability regions (or crops) requires that all irrigated lands implement the same practices as crops grown in the most impacted watersheds and groundwater basins.

Recommendation
Consistent with the numerous acknowledgements of the expert panel that "rice is different," we recommend that rice be exempted from the significant and expensive new proposed requirements of the Draft Order triggered by the loss of a lower risk designation including: 1) annual submission of the farm evaluation, 2) development of Management Practices Evaluation Process (MPEP), 3) annual grower participation in an outreach event, 4) development of a Ground Water Quality Management Plan (GQMP), 5) submission of field level data including the applied/removed (A/R) ratio, 6) addition of a certified Irrigation Management Plan, 6) addition of a certified Nitrogen Management Plan (NMP), and 7) annual submission of Nitrogen Management Plan Summary data.

Note: many of these requirements (development of a MPEP, development of a GQMP, certified irrigation management plan, and annual submission of NMP summary data) are currently in the Rice WDR but are only triggered with the exceedance of a water quality objective (WQO) or trigger. Removal of the low vulnerability designation would automatically make these requirements of the Rice WDR.

As clearly evidenced for rice, significant data show low potential for impacts due to nature of the crop production systems, no observable negative water quality impairments, and stable cropping patterns. Accordingly, rice has been able to

[1] These locations were developed out of the Rice Pesticide Program over 10 years of study and 60 monitoring sites. The 5 monitoring locations represent 90 percent of the rice field drainage.

demonstrate that no additional requirements are necessary. Notably, other crops and sub–regions may also be able to make such demonstrations now or in the future with similar data and information.

We also offer that rice is not unique in its differences. Many crops share the low potential for nitrate impacts on water quality. Many geographic areas have, or will be able to, demonstrate that surface and ground water quality are not impacted due to the specific cultural practices of the crop and/or because of local conditions. For example, many crops (both annual and permanent) are highly stable with production limited by climate, geography or other physical factors. Using the demonstrations made under the crop specific Rice WDR, water quality is, and will continue to be, protected by the current measures already in place. Thus, no changes are necessary to protect surface and/or groundwater quality for areas and/or crops that can demonstrate low risk.

In summary, we recommend that the Draft Order be revised to recognize that it is possible for crops and/or areas to demonstrate low risk with respect to impacting surface and/or groundwater, and that with such demonstrations, these crops/areas have different requirements.

If, however, the State Water Resources Control Board (State Board) determines that additional requirements are necessary, we believe that at most additional nitrate management training would be appropriate to ensure growers are aware of the best practices. The requirement to participate in a workshop once every three years either at a workshop or through an online continuing education training course adapted to the unique nature of rice and the region would ensure that the growers have the tools necessary to manage their crop with respect to the potential for nitrate impacts on water quality.

II. Insufficient Surface Water Monitoring Density

Without offering specific guidance, the Draft Order simply declares the surface monitoring density inadequate and remands the program back to the CVRWQCB for review and modification. If this same requirement is applied to the Rice WDR, as we believe it will be, we face time consumptive and costly defense of a surface water monitoring program that has been proven over 30 years to be effective in assessing and improving surface water quality related to rice production. Worst case, we will be forced into implementing more costly monitoring simply to meet the conditions of a coalition in a different part of the state with no similarities to rice production in the Sacramento Valley.

It is important for the State Board to understand that the surface water quality-monitoring program for rice (and in particular our sampling locations) was developed over 30 years and in close collaboration with the CVRQWCB and the Department of Pesticide Regulation (DPR). The State Board, in collaboration with the CVRWQCB, and the UC, summarized this program in Special Projects Report

No. 84-4, April 1984. Beginning with 60 monitoring locations between Redding and the Delta, and more than 30 years of data, the program eventually focused on 5 monitoring locations that represent over 90 percent of the drainage from rice fields covered by the Rice WDR. From this effort, the California Department of Food and Agriculture, Pest Management Division (now DPR) developed a field dissipation study of rice herbicides managed under the Rice Pesticides Program.

Further, prior to adoption of the conditional ILRP, the Commission reassessed the monitoring sites to verify their adequacy and relevance for the commodity specific program, which resulted in the report: *Basis for Water Quality Monitoring Program: Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands for Rice (CWFR)*, CH2M, October 2004.

Moreover, this program has proven to provide sufficient information to evaluate rice drainage impacts to surface water, and provides sufficient information for the Commission to work with its growers to ensure that rice drainage does not cause or contribute to exceedences of water quality objectives, and has been doing so for over 10 years. In fact, over the last decade of the conditional ILRP (and now the Rice WDR), our monitoring data shows that rice drainage consistently complies with water quality objectives.

Thus, after 30 years of developing this program and twice reviewing the adequacy of the program, we are significantly concerned that we will have to, once again, spend consultant resources to justify the program for a third time.

Recommendation
Adopt a finding in the Draft Order that specifically recognizes that the current surface water monitoring program for rice in the Sacramento Valley is an exception and that the CVRWQCB is not directed to re-evaluate surface water monitoring requirements in the Rice WDR.

III. Applied/Removed Ratio as an adequate measurement tool for rice and field level reporting

While the A/R ratio is a simple to understand tool for comparing nitrogen use against an average removal rate, it does not provide information that reflects potential impacts to groundwater in rice systems.

As previously discussed, the anaerobic nature of rice production does not convert nitrogen into nitrate. Nitrogen lost in the system is converted rapidly to nitrogen gas when the field is tilled or when the surface of the soil is allowed to dry. Measuring the A/R ratio for nitrogen from rice therefore tells us little with respect to the potential impact on water quality.

Rather, for rice, the UC Cooperative Extension has developed a more appropriate tool for nitrogen management. The Leaf Color Chart indicates when additional nitrogen should be added, after pre–plant nitrogen in the form of aqueous ammonia is applied subsurface and starter fertilizer is applied to the soil surface.

Further, the NMP incorporated into the online Rice WDR compliance tool includes clear guidelines from UC Davis on nitrogen application rates in rice.

The combination of these recommendations and utilization of the Leaf Color Chart are the best tools for ensuring that growers have the necessary information available for determining the appropriate levels of nitrogen to apply to their rice crops. An A/R ratio is not at all appropriate for rice and would result in grower confusion compared to the current educational tools already being employed.

To the extent that the State Board determines that field level reporting is necessary as a surrogate for compliance in lieu of monitoring, we offer that field level reporting of the A/R ratios can be accomplished in a manner that does not put a grower at risk with respect to the public dissemination of such information. For example, this level of reporting can be accomplished by generating unique numbers for each grower's fields rather than APN numbers or GIS coordinates. A unique number can be assigned to each field farmed and compliance with all practices reported reference that field number. Or, alternatively, information could be identified for each field and/or management unit but location referenced by township.

Moreover, the CVRWQCB already maintains sufficient authority to review and audit this information with individual growers and the third parties such as the Commission. At any time, the CVRWQCB can inspect a grower's operation, including reviewing their NMP, and can meet with a coalition to review summary reports, if applicable. There is no practical or legal reason for making this information publically available on a website, especially as compared to the risk to growers (e.g., exposure to third party nuisance litigation, dissemination of private information like crop yields).

Finally, significant comments were provided by the Environmental Justice Community regarding the value of field level data associated with a grower for the purposes of advancing research. Real world examples of collaborative UC research with growers indicate otherwise. In rice, the UC has decades long history working with grower collaborators. In this research, which spans variety trials to greenhouse gas research, individual grower fields are never revealed. Instead, unique and anonymous field designations are used to report research results. Like in a WDR, this step is necessary to protect grower identity from release of trade secrets, trespass, and litigation and to encourage grower participation. If individual field or farm information were released the UC research could not be accomplished.

Recommendations

1) The A/R ratios, as provided in the certified Irrigation and Nitrogen Management Plans, the NMP and the NMP Summary Report proposed in the Draft Order, should not be required or applied to rice production. Rather, rice growers should continue to utilize the UC nitrogen guidelines contained in the rice online NMP tool and utilize the Leaf Color Chart as the basis for their annual nitrogen plan.

2) Any requirements related to field level reporting (e.g., Farm Evaluation information and the A/R ratios) should at most be reported with a unique field number rather than being location specifics to protect individual grower privacy.

Other comments

In addition, the Commission offers support for the comments made by others in the agriculture community including:

- Monitoring drinking water wells – it is not appropriate to require monitoring of domestic drinking water wells on agricultural lands just because they are subject to a WDR. This regulatory requirement is best addressed under some form of landlord-tenant regulation. We agree with the need to protect public health and those users of drinking water from domestic wells should know the quality of water from those wells. However, it is inappropriate to mandate this type of testing through the irrigated lands program. First, such a requirement will provide information for a small subset of the Central Valley population that relies on individual domestic wells for their drinking water. Second, it would be far more effective, and protective of public health, if this requirement was placed on all domestic well owners/users through either local or statewide regulation outside of the ILRP. The Commission, third party coalitions and the CVRWQCB do not have the resources necessary to ensure compliance with this mandate as proposed in the Draft Order.

- Additional reporting and oversight costs – as proposed, the additional costs of the increased reporting, management practices, compliance and regulatory oversight is many times the current costs, especially for growers and regions in areas with low vulnerability.

  In the case of the CRC Coalition, a simple evaluation of the information provided by the CVRWQCB at the 4 May 2016 workshop indicates that costs per acre for grower covered under the Rice WDR would increase over 300 percent.

  A more thorough evaluation of the increased costs anticipated by the CRC Coalition is underdevelopment by CH2M and will be provided to the State Board at a later date.

- A/R ratios as standards or triggers – A/R ratios are at best a compliance tool, showing that growers are measuring nitrogen inputs and crop production. Suggestions by Environmental Justice Community that the board adopt an A/R ratio as a standard or trigger would be extremely difficult from a technical perspective. There simply has not been enough science to correlate and A/R ratio with potential to impact water quality. And, as demonstrated by rice, this tool is not even usable for some crops. Agriculture does not support, nor did the expert panel recommend, that A/R ratios be used as a regulatory tool.

References Cited

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