

Central Valley Regional Water Quality Control Board

23 February 2017

Tim Johnson
California Rice Commission
1231 I Street, Suite 205
Sacramento, CA 95814-2933

REVIEW OF THE CALIFORNIA RICE COMMISSION'S 2016 ANNUAL MONITORING REPORT

Thank you for submitting the 2016 Annual Monitoring Report (AMR) for Sacramento Valley Rice Growers on 29 December 2016 as required by the Monitoring and Reporting Program (MRP) for General Order R5-2014-0032 (Order). The AMR covers the reporting period from 1 November 2015 through 31 October 2016.

The Central Valley Water Board staff review of the AMR is in the attached memorandum. Staff reviewed the AMR to determine if all Order requirements were met. There were instances where water quality objectives for dissolved oxygen and electrical conductivity were not met. A management plan for dissolved oxygen was submitted in May 2015 and is under staff review.

In addition, some reporting requirements were not met. Items that are missing from the 2016 AMR include: recommendations for 2017 in the executive summary, laboratory control spike duplicate results, discussion of how failed quality assurance/quality control results affect the validity of reported data, and calculation of overall project completeness. Steps should be taken to avoid these errors in subsequent AMRs.

As required by the Order, the AMR included a proposed list of pesticides for monitoring in 2017. The pesticides proposed for monitoring in 2017 are penoxsulam and bensulfuron-methyl. These pesticides were recommended for monitoring based on the updated Rice Pesticide Evaluation, which was approved by the Executive Officer on 4 August 2016.

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

Original signed by

Sue McConnell, Chief
Program Manager
Irrigated Lands Regulatory Program

Original signed by

Susan Fregien
Senior Environmental Scientist
Irrigated Lands Regulatory Program

cc: Roberta Firoved, California Rice Commission

Enclosure

Central Valley Regional Water Quality Control Board

TO: Susan Fregien
Senior Environmental Scientist
IRRIGATED LANDS REGULATORY PROGRAM

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

DATE: 6 February 2017

SUBJECT: REVIEW OF THE WASTE DISCHARGE REQUIREMENTS FOR
SACRAMENTO VALLEY RICE GROWERS 2016 ANNUAL MONITORING
REPORT

On 29 December 2016, the Central Valley Water Board received the 2016 Annual Monitoring Report (AMR) from the California Rice Commission (CRC) as required by the Monitoring and Reporting Program (MRP) for General Order R5-2014-0032 (Order). The AMR covers the reporting period from 1 November 2015 through 31 October 2016. The AMR was reviewed by staff for compliance with the Order.

In this memorandum, staff provides a brief summary of the monitoring activities conducted by the CRC during the 2016 reporting period, followed by comments on reporting requirements that were not fully met. The item numbers used in the review of reporting requirements are the same as those used in the AMR Checklist (see attached). Staff derived the checklist from the Order and used it to document that the content presented in the AMR complies with the Order.

Requirements which are not discussed herein have been met by the CRC.

2016 Program Summary

The CRC performed modified assessment monitoring in 2016, from April through July, at four primary sites: CBD5, BS1, CBD1, and SSB, and three secondary sites: F, G, and H. The sampling schedule and constituent categories monitored during the 2016 season are shown in Table 1. Monitoring for each constituent was completed at the frequency specified in the MRP.

The CRC submitted exceedance reports for every sampling event in which water quality triggers/objectives were exceeded. Exceedances were observed for dissolved oxygen (DO) and electrical conductivity (EC). Tables 2 and 3 summarize the DO and EC exceedances. No exceedances were observed for any other constituents monitored during the reporting period.

Low DO occurred at all sites during at least one annual monitoring event. The CRC reported that drought conditions and longer required water holds have resulted in drains with decreased water volumes and higher in-stream temperatures, conditions that can lead to decreased DO.

A management plan for DO was submitted by the CRC in May 2015 based on exceedances of the DO objective that occurred in 2014. Staff will provide feedback on the DO management plan and request revisions if necessary for compliance with the requirements of the MRP.

Two exceedances of the water quality goal for EC (700 micromhos per centimeter [$\mu\text{mho/cm}$]) occurred at site CBD1 during the 2016 monitoring period. All of the results were below the secondary maximum contaminant level for EC.

The CRC implemented a CEDEN-compliant electronic data submittal system in 2015 and their 2016 review of data quality indicated a substantial achievement of quality objectives. The CRC reported achievements for field completeness of greater than 90%, laboratory completeness based on quality control (QC) samples of 82%, and laboratory completeness, when acceptable COC process, storage times, in-house sample preservation, and extraction and analysis of samples are considered, of greater than 90%.

Staff confirmed that the CRC met greater than 90% of compliance objectives in all areas except CLS Chemistry Batch Completeness (81.3%) and MCA Chemistry Batch Completeness (75%).

The CRC provided the first rice pesticide evaluation required under the Order as an addendum to the 2015 AMR. Using the approved evaluation method, CRC has proposed monitoring for penoxsulam and bensulfuron-methyl in 2017. The next rice pesticide evaluation update is required in 2020.

2016 Staff Review

Checklist Item 4.2 Summary of Recommendations

The Executive Summary of the AMR does not include a summary of the recommendations provided in the conclusion and recommendation section of the AMR.

Staff recommends that the CRC include a summary of the recommendations provided for the next monitoring period in the Executive Summary.

Checklist Item 16.2 QA Evaluation: LCSD Results

The laboratory control spike duplicate results for propanil were not reported by the laboratory and, therefore, are not included in the AMR. These results are a requirement of the MRP. The Coalition stated that the laboratory has been notified of this requirement, so that this issue can be avoided during the 2017 monitoring year.

Staff recommends that the CRC take care to ensure that all of the laboratories they use meet the requirements of the Order.

Checklist Item 16.3 QA Evaluation: Failed QA/QC Results

Several failed quality assurance (QA)/ QC results are described in the AMR narrative. However, the AMR does not discuss how the failed results affect the validity of the reported data.

Staff recommends that the CRC discuss how the validity of the reported data is affected by these results in future AMRs.

Checklist Item 16.4 QA Evaluation: Project Completeness

Field and laboratory completeness are calculated and reported in the AMR. However, the overall project completeness is not clearly identified.

Staff recommends that the CRC report overall project completeness, in addition to individual determinations of field and laboratory completeness, in future AMRs.

Table 1. 2016 Sampling Schedule

Sample Event	Field Measurements	Physical Parameters	Nutrients	Pesticides
SE1: 4/26-4/27	✓	-	-	C
SE2: 5/10-5/11	✓	✓	✓	C
SE3: 5/24-5/25	✓	✓	✓	C
SE4: 6/7-6/8	✓	✓	-	C, P
SE5: 6/21-6/22	✓	-	-	P
SE6: 7/5-7/6	✓	-	✓	P
SE7: 7/19-7/20	✓	-	-	P

Notes:

C = clomazone

P = propanil

Table 2. Dissolved Oxygen Exceedances reported during 2016

Event	Sites with Exceedance and DO Reading (mg/L)						
	BS1	CBD5	CBD1	SSB	F	G	H
SE1	7.68	7.41	8.11	7.11	13.05	7.46	6.49
SE2	6.36	7.76	6.61	5.98	8.70	7.36	8.90
SE3	5.37	8.30	7.51	3.79	9.37	6.55	9.08
SE4	2.82	6.54	4.86	2.91	6.91	4.08	7.09
SE5	5.54	6.99	4.85	1.01	7.74	4.38	4.84
SE6	5.60	6.56	4.67	0.76	7.69	4.77	6.26
SE7	6.17	6.96	3.74	0.30	7.71	4.64	4.70

Notes: **Gray** indicates the cold water quality objective (>7.0 mg/L DO) was not met.

Bold indicates the warm water quality objective (>5.0 mg/L) was not met.

Table 3. Electrical Conductivity Exceedances reported during 2016

Event	Sites with Exceedance and EC Reading (µmhos/cm)						
	BS1	CBD5	CBD1	SSB	F	G	H
SE1	257	388	542	324	305	263	402
SE2	298	351	403	316	259	206	128
SE3	327	434	547	455	270	262	104
SE4	340	530	701	387	314	233	157
SE5	275	478	549	459	311	239	305
SE6	322	590	952	467	323	262	383
SE7	331	479	542	477	316	250	312

Notes: **Bold** indicates exceedance of 700 µmhos/cm objective.

Attachment 1: 2016 Annual Report Review Checklist

Report Name: Waste Discharge Requirements for Sacramento Valley Rice Growers 2016 Annual Monitoring Report					Reviewer Name: Ashley Peters		
Submittal Date: 12/29/2016					Review Date: 2/6/2017		
Item No.	AMR Component Name	Item meets requirement	Incomplete item/ Not included	Not applicable	Page # (Section #)	Comments	
1	Signed Transmittal Letter						
1.1	Penalty of Perjury Statement	✓			3 (Trans. Letter)		
1.2	Signature of Authorized Coalition Representative	✓			3 (Trans. Letter)		
1.3	Dated	✓			1 (Trans. Letter)		
1.4	Submitted on time	✓			1 (Trans. Letter)		
2	Title page						
2.1	Report title	✓			ii		
2.2	Date of the report	✓			ii		
2.3	Monitoring date range covered by the report	✓			ii		
2.4	Coalition Group name	✓			ii		
3	Table of contents						
3.1	List of sections/chapters, tables, figures, appendices/attachments with page numbers	✓			iii-vi		
4	Executive Summary						
4.1	Summary of key results and activities	✓			ES-1 - ES-2		
4.2	Brief summary of conclusions and recommendations		✓		ES-1 - ES-2	Summary of recommendations for 2017 should be included.	
5	Description of the CRC geographical area						
5.1	General description of relevant geographic features of the Coalition area, such as location and extent of area, major landforms, land uses, vegetation types, crop types, climate patterns, key waterways, and cities	✓			2-1 - 2-2		
6	Monitoring objectives and design						
6.1	Brief description of monitoring objectives (references to section and page numbers in Monitoring Plan or QAPP, as appropriate)	✓			3-1		
6.2	Monitoring design aligns with Monitoring Plan, any deviations from Monitoring Plan or QAPP are described (references to section and page number in Monitoring Plan or QAPP, as appropriate)	✓			3-2 - 3-5		
	6.2.1 Assessment Monitoring: sites, parameters, schedule	✓			3-2 - 3-5		
	6.2.2 Core Monitoring: sites, parameters, schedule	✓			3-2 - 3-5		
	6.2.3 Special monitoring (Management Plan, TMDL, source identification): sites, parameters, schedule			✓	3-5		

Attachment 1: 2016 Annual Report Review Checklist

Item No.	AMR Component Name	Item meets requirement	Incomplete item/ Not included	Not applicable	Page # (Section #)	Comments
7	Sampling site/monitoring well descriptions and rainfall records for the time period covered under the Annual Monitoring Report (AMR)					
7.1	Sampling site name and description (e.g. geographic area, watershed, and drainages that the site represents), or unique information about the site or surrounding area	✓			4-1 - 4-2	CRC should update the estimate of rice acre acres represented for each sampling site. Rice acreage has changed significantly in the 12 years since the cited report was completed (2004).
7.2	Rainfall records in graphic or narrative form (in inches of precipitation)	✓			4-3	Page numbering off, page identified at 4-5 in report. No pages 4-3 and 4-4 are included.
8	Location maps(s) of sampling sites/monitoring wells, crops and land uses					
8.1	Location maps show sampling sites/monitoring wells, crops, and land use with informative level of detail	✓			4-2 (Fig. 4-1)	
	8.1.1 Datum identified on map (<u>must be</u> WGS 1984 or NAD 1983)	✓			4-2 (Fig. 4-1)	
	8.1.2 Source and date of all data layers identified on map	✓			4-2 (Fig. 4-1)	
8.2	A list or table indicates: site name, ID/well number, CEDEN site code (if applicable), and GPS coordinates (latitude and longitude in decimal degrees to at least five decimal places)	✓			4-1 (Tbl. 4-1)	
8.3	Accompanying GIS shapefile or geodatabase that identifies parcels covered by the CRC.	✓				
	8.3.1 The data that the GIS information is based on must be no greater than one (1) year old.	✓				
	8.3.2 This information shall be updated at least every three years, or whenever rice acreage varies by 20% from the latest submitted GIS information.	✓				
9	Summary of pesticides used on rice, including pounds of active ingredient applied and acreage, as well as any changes in label requirements					
9.1	List the pesticides used on rice, the pounds of active ingredient applied, the acreage covered, and summarize any changes in label requirements.	✓			6-1 - 6-5	
10	Tabulated results of all analyses arranged in tabular form so that the required information is readily discernible					
10.1	Data are in tabular form, clearly organized and readily discernible	✓			7-1 - 7-17	
10.2	Tabulated results agree with the electronically submitted data	✓			7-1 - 7-17	
10.3	Previously reported exceedances match exceedances identified in the AMR	✓			7-1 - 7-17	
10.4	All required constituents for each site have reported results	✓			7-1 - 7-17	
10.5	All necessary re-sampling completed and results reported			✓		
11	Discussion of data relative to water quality objectives/trigger limits, and water quality management plan milestones, where applicable					
11.1	Results discussed in text agree with tabulated data	✓			7-1 - 7-17	

Attachment 1: 2016 Annual Report Review Checklist

Item No.	AMR Component Name	Item meets requirement	Incomplete item/ Not included	Not applicable	Page # (Section #)	Comments
11.2	Discussion illustrates compliance with the WDRs, or if a required component was not met an explanation of missing data or a reason for non-compliance is included	✓			7-1 - 7-17	
11.3	Results are compared to WDR requirements, water quality standards and trigger limits; toxicity results, TIE's and possible causes of toxicity are discussed	✓			7-1 - 7-17	
12	Proposed pesticide monitoring					
12.1	Evaluate previous years' monitoring results, whether changes in the pesticide usage has occurred, and the most recent rice pesticide evaluation (MRP Order R5-2014-0032 Section III.C.1).	✓			6-1 - 6-5; 8-1	
12.2	In the 2015 AMR, and every five (5) years thereafter, provide an updated evaluation of rice pesticides relative to potential effects on surface water quality.			✓	Completed in 2015	
	12.2.1 Consider use information (e.g., pounds applied, acres treated, timing of application, product formulation, method of application, application rate, hold times, requirements associated with drift or discharge to surface waters)			✓	Completed in 2015	
	12.2.2 Consider physical and chemical properties of the pesticide (e.g., degradation rate, adsorption coefficients)			✓	Completed in 2015	
	12.2.3 Consider the pesticide's toxicity to aquatic life and risk to human health (e.g., through review of relevant toxicity studies, benchmarks or criteria established for human health or aquatic life protection)			✓	Completed in 2015	
	12.2.4 Consider newly registered or cancelled pesticides that are registered for use on rice fields			✓	Completed in 2015	
12.3	Propose the pesticides to be monitored and provide the rationale for the proposal.	✓			6-1 - 6-5; 8-1	
13	Electronic data submittal					
13.1	An Excel workbook containing an export of all data records uploaded and/or entered into the CEDEN comparable database (surface water data). The work book shall contain, at a minimum, those items details in the QAPP Guidelines.	✓			App. D	
13.2	The most current version of the CRC's eQAPP.	✓			App. D	
13.3	Electronic copies of all field sheets.	✓			App. B-1	
13.4	Electronic copies of photos obtained from all surface water monitoring sites, clearly labeled with CEDEN comparable station code and date.	✓			App. A	
13.5	Electronic copies of all applicable laboratory analytical results	✓			App. B	

Attachment 1: 2016 Annual Report Review Checklist

			Item meets requirement	Incomplete item/ Not included	Not applicable	Page # (Section #)	Comments
Item No.		AMR Component Name					
13.6		For toxicity reports, all laboratory raw data must be included in the analytical report (including data for failed tests), as well as copies of all original bench sheets showing the results of individual replicates, such that all calculations and statistics can be reconstructed. The toxicity analyses data submittals must include individual sample results, negative control summary results, and replicate results. The minimum in-test water quality measurements reported must include the minimum and maximum measured values for specific conductivity, pH, ammonia, temperature, and dissolved oxygen.			✓		Not required in Modified Assessment Year.
13.7		For chemistry data, analytical reports must include, at a minimum, the following:	✓			App. B	
	13.7.1	A lab narrative describing QC failures	✓			App. B	
	13.7.2	Analytical problems and anomalous occurrences	✓			App. B	
	13.7.2	Chain of custody (COC) and sample receipt documentation	✓			App. B	
	13.7.4	All sample results for contract and subcontract laboratories with units, RLs and MDLs	✓			App. B	
	13.7.5	Sample preparation, extraction and analysis dates	✓			App. B	
	13.7.6	Results for all QC samples including all field and laboratory blanks, lab control spikes, matrix spikes, field and laboratory duplicates, and surrogate recoveries	✓			App. B	
14	Electronic groundwater data provided as specified by the Executive Officer						
14.1		The CRC shall submit the prior year's groundwater monitoring results as an Excel workbook containing an export of all data records in a format specified by the Executive Officer.			✓	Begins 2017	
14.2		If any data are missing from the report, the submittal must include a description of what data are missing and when they will be submitted to the Central Valley Water Board.			✓	Begins 2017	

Attachment 1: 2016 Annual Report Review Checklist

			Item meets requirement	Incomplete item/ Not included	Not applicable	Page # (Section #)	Comments
Item No.		AMR Component Name				Page # (Section #)	Comments
15		Sampling and analytical methods used					
15.1		Description of sampling methods used (e.g. type of collection, collection containers, sample preservation, transportation, handling, field measurements), with references to SOP's if appropriate	✓			10-1 - 10-3	
15.2		Description of analytical methods used (references to SOP's and QAPP as appropriate); any deviations from the QAPP are described and explained	✓			10-1 - 10-3	
16		Summary of QA Evaluation results (as identified in the most recent version of the CRC's approved QAPP for Precision, Accuracy and Completeness)					
16.1		Acceptance criteria for all field and laboratory QA/QC measurements identified and in agreement with most recent approved QAPP; any adjustments to acceptance criteria documented and discussed	✓			Section 11 and App. D	Text cites the August 2015 QAPP, which has not yet been approved by the CVWB.
16.2		Summary of accuracy (lab control spike and matrix spike recovery) and precision (RPD for field duplicate, LCS/LCSD and MS/MSD pairs) included for all constituents and tests		✓		Section 11	LCSD results were not reported by the lab for propanil. See 16.3.2.
16.3		QA/QC results that did not meet acceptance criteria identified in a table or narrative description that is prepared by the Coalition (not laboratories)	✓			11-10 - 11-12	
16.3.1		Discussion of how the failed QA/QC results affect the validity of the reported data		✓		11-12	Whether or not failed QA/QC results affects the validity of the reported data is not discussed.
16.3.2		Corrective actions for QA/QC results that did not meet acceptance criteria are described, laboratory exception reports are included when samples are reanalyzed due to exceedance of the linear range	✓			Section 11	Lab has been notified of the requirement to report LCSD results.
16.4		Both field and laboratory completeness are calculated and reported; overall Project completeness is determined		✓		11-11 - 11-12	AMR states "field and laboratory completeness were calculated and determined to be at least 90 percent." In future AMRs, please call out overall "Project Completeness". It is not clear if the statement in the AMR represents an overall or just that both the field and laboratory completeness were each at least 90 percent.
17		Specification of the method(s) used to obtain estimated flow at each surface water monitoring site during each monitoring event					
17.1		The method used to obtain flow measurement at each monitoring site during each monitoring event is listed	✓			7-13	

Attachment 1: 2016 Annual Report Review Checklist

Item No.	AMR Component Name	Item meets requirement	Incomplete item/ Not included	Not applicable	Page # (Section #)	Comments
18	Required every three years, an evaluation of monitoring data to identify spatial trends and patterns (begins 2018)					
18.1	Identification of potential trends and patterns in surface and groundwater quality			✓	Begins 2018	
	18.1.1 Determination whether there are any trends in degradation that may threaten applicable beneficial uses			✓	Begins 2018	
	18.1.2 Incorporation of pesticide use information, as needed, to assist in data evaluation.			✓	Begins 2018	
18.2	Analyze monitoring data to determine if additional sampling locations are needed. Propose schedule for additional monitoring or source studies			✓	Begins 2018	
18.3	Tables and/or graphs are utilized to illustrate and summarize the data evaluation			✓	Begins 2018	
19	Electronic or hard copies of photos obtained from all monitoring sites, clearly labeled with site ID and date					
19.1	Photos are included for each monitoring site, either electronically or in hardcopy	✓			App. A	
19.2	Each photo is clearly labeled with CEDEN comparable station code and date	✓			App. A	
19.3	Photos are descriptive and useful	✓			App. A	
20	Summary of exceedances of water quality objectives/trigger limits occurring during the reporting period and related pesticide use information					
20.1	Summary of all Exceedance Reports submitted during the AMR period is included	✓			13-1 - 13-2	
20.1	Pesticide use data for all pesticide and toxicity exceedances occurring during the AMR time period (unless under a Management Plan): all chemicals applied within the monitoring site subwatershed during the four weeks prior to the measured exceedance	✓			6-1 - 6-5	
21	Actions taken to address exceedances that have occurred, including but not limited to, revised or additional management practices implemented					
21.1	Discussion of actions taken to address water quality exceedances during the time frame of the AMR is included	✓			13-1 - 13-2	A DO management plan was submitted by CRC in May 2015 and is under staff review.
21.2	Updates or additional management practices implemented	✓			13-1 - 13-2	
22	Status update on preparation and implementation of all Management Plans and other special projects					
22.1	Brief update on status of all Management Plans and special projects that are in preparation or being implemented	✓			14-1	A DO management plan was submitted by CRC in May 2015 and is under staff review.
23	Summary of Management Practice Information collected as part of Farm Evaluations					
23.1	Aggregate and summarize information collected from Farm Evaluations once every three years beginning in 2015.	✓			Completed in 2015	
	23.1.1 Include quality assessment of the collected information by township (e.g., missing data, potentially incorrect/inaccurate reporting).	✓			Completed in 2015	

Attachment 1: 2016 Annual Report Review Checklist

Item No.	AMR Component Name	Item meets requirement	Incomplete item/ Not included	Not applicable	Page # (Section #)	Comments
	23.1.2	Description of corrective actions to be taken	✓			Completed in 2015
	23.2	Provide individual data records used to develop summary in electronic format, compatible with ArcGIS to at least township level.	✓			Completed in 2015
24	Summary or updates of mitigation monitoring					
	24.1	Report on CEQA mitigation measures reported by rice growers to meet the provisions of the Order and any mitigation measures the CRC has implemented on behalf of its growers.			✓	
	24.2	Identify the mitigation measure implemented, the potential impact the measure addressed, the location of the mitigation measure (township range, section), and any steps taken to monitor the success of the measure.			✓	
25	Summary of education and outreach activities					
	25.1	Location, dates, and reason for activities.	✓			17-1
	25.2	Summary of the content at each session.	✓			17-1; App. E
26	Summary of nitrogen management plan reporting, if applicable					
	26.1	Aggregate information from Nitrogen Management Plan Summary Reports to characterize the input, uptake, and loss of nitrogen fertilizer application by specific crops.			✓	No HVA
27	Conclusions and recommendations					
	27.1	Conclusions are supported by the data presented in the AMR	✓			19-1 - 19-3
	27.2	Recommendations are appropriate and adequately detailed	✓			19-3