STAKEHOLDER COMMENTS ON
2007 MONITORING DATA REVIEW

SOUTHERN SAN JOAQUIN VALLEY WATER QUALITY COALITION

Kaweah River Sub-Watershed
Kern River Sub-Watershed
Kings River Sub-Watershed
Tule River Sub-Watershed
4886 E. Jensen Avenue
Fresno, California 93725
(559) 237-5567

June 26, 2007

VIA ELECTRONIC MAIL

Margie Lopez-Read
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, CENTRAL VALLEY
11020 Sun Center Drive, Suite 200
Rancho Cordova, CA 95670-6114

RE: SOUTH SAN JOAQUIN VALLEY WATER QUALITY COALITION RESPONSES TO ZONE 4 MONITORING DATA REPORT

Dear Margie:

1. It is difficult for us to review and comment on data which had been accumulated from UC, Regional Board and SWAMP monitoring. The Coalition data was collected as a result of agreed upon MRP protocols, from monitoring stations agreed to by each the coalitions and Regional Board, and which was collected on uniform schedules. None of these scientific disciplines are true of the other data collections which did not have such agreed to and vetted protocols or monitoring station selections. Some of that data was from locations influenced by other sources, was taken at different frequencies and otherwise is not of the quality as Coalition derived data.

2. We concur that our Tulare Lake Basin hydrology is significantly different than the balance of the Region and our data is to be compared only to our Tulare Lake Basin, Basin Plan. We do not have the 303d, TMDL, Delta, fish, drinking water, etc. issues in our Region as are associated with the other sub-basins.

3. The criticism as to the "scarcity of monitoring data" from our sub-basin is a value judgment and not a report of monitoring data. The lower San Joaquin Valley is uniquely dry, flat, not characterized by water drainage systems, has limited run-off and what drainage there is goes into farming enterprises in the historic lake bed, and is consumed through evapotranspiration. The Regional Board approved the quantity, location and frequency of the monitoring stations and monitoring protocol. If there is a

lack of water the San Joaquin Valley itself cannot be blamed any more than the Regional Board which approved the MRPs and sites can be blamed.

4. The report overly focuses on pesticides and the extent of agriculture's reliance on them for pest damage prevention. There are many factors which may lead to water contamination – pesticides are but one. As indicated below, our pesticide monitoring does not bear out significant toxicity in our zone. The South San Joaquin Coalition data shows no pesticide or nutrient exceedance.

5. Table Z4-3 makes a point of "mortality in multiple species," however, in each instance algae toxicity is one such species. As the Regional Board staff recognizes through its joint coordination with the South San Joaquin Coalition specific testing was engaged in source water which confirmed that algae toxicity is not as a result of agriculture run-of. Consequently, a combining of these data may have no basis.

6. The Flathead Minnow Chart (Z4-4) does not identify the monitoring site for some of the coalition reports nor does it identify the year. It shows only two identified Coalition sites (Kings Lemoore and Tule North Fork) where two samples had a 20-50% minnow mortality, thus not triggering any TIE follow-up, therefore no cause conclusions can be made. The observation is made because there is more minnow than Ceriodaphmia toxicity it could be a result of ammonia. This appears to be speculation particularly in light of the absence of high levels of nitrogen in the nutrient data.

7. Only two South San Joaquin Coalition sites demonstrated Ceriodaphmia dubia toxicity (Kings Manning and Stone Corral) and there was no TIE analysis. We found the reference to TIEs from other programs to be of interest and we will refer to that in future data analysis, however, our pesticide monitoring did not find these chemistries.

8. In the other zone reports there were separate sections regarding pesticides. This was not the case regarding our zone. There were no pesticide exceedances found in our zone and this should have been equally presented.

We join many of the comments made by the other zones, including the point that the report seems to focus on critical data rather than being truly objective. Data of a non-exceedance is equally scientific and important as that of an exceedance. The report should also guard against reference to "detections" and stay focused only on the "exceedance" threshold. Another term of a "detection" is "lawful discharge."

9. The last sentence demanding "more frequent and comprehensive monitoring," is not a data report but a subjective opinion as to what may occur in future discussions between the Board staff and the Coalitions and amendments to the existing waiver, Regional MRP, and Coalition MRP.

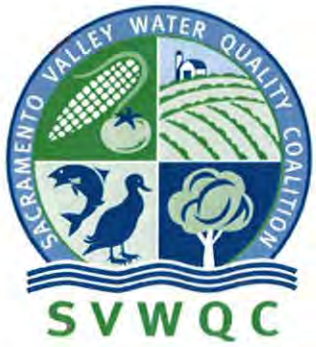
10. The summary section is not a data analysis, is disjointed, has no flow, and appears to be a collection of various staff speculations. The summary should merely be a data summary, if necessary whatsoever.

Respectfully submitted,

/s/ William J. Thomas
WILLIAM J. THOMAS
On behalf of the
SOUTHERN SAN JOAQUIN VALLEY
WATER QUALITY COALITION
c/o Best Best & Krieger LLP
400 Capitol Mall, Suite 1650
Sacramento, CA 95814
Telephone: (916) 325-4000

WJT:lmg

cc: Bill Croyle
Pamela Creedon
Southern San Joaquin Valley Water Quality Coalition



June 27, 2007

Ms. Margie Lopez-Reed
Regional Water Quality Control Board
11020 Sun Center Drive, #200
Rancho Cordova, CA 95670-6114

Re: Comments on Monitoring Data

Dear Ms. Lopez-Reed:

Thank you for allowing the Sacramento Valley Water Quality Coalition (SVWQC) to review the Draft 2007 Review of Monitoring Data for the Irrigated Lands Conditional Waiver Program. Please see the SVWQC's comments below.

Executive Summary

Executive Summary, First Paragraph

To give better context to "2007 review", it should be noted the dates of the monitoring being used, i.e. May 2004 through October 2006.

ES-1 & ES- 2, Overview of Water Quality Concerns

Number 3: It should be noted that no exceedances of toxic trace metals criteria were observed, and trace metals have not been determined to contribute to any cases of toxicity to algae.

Number 5: It should be clarified that detections are not necessarily exceedances.

Number 6: The use of "*common*" is vague and should be defined or clarified in: "The toxic effects of or organophosphate pesticides, …are common in all zones."

455 Capitol Mall, Suite 335 / Sacramento, CA 95814-4495 / Phone (916) 442-8333 / Fax (916) 442-4035

ES- 2, ES-3 & ES-4 Data Gaps

Number 1: "Each Phase was to have been conducted for two consecutive years." This is not an accurate description of the MRP language. The MRP states, "*…Phase 2 will start no later than 2 years after Phase 1* ", which specifies the interval between starting each phase but doesn't specify the length of each phase.

Number 1: "The temporal separation of toxicity testing and the measurement of potential stressors that cause toxicity creates an information data gap, which makes any source identification process much more complex." Is there an easier and less confusing way of stating that the chemical analysis and toxicity collection, in some cases, did not occur at the same time? A more clear and accurate statement would be "Toxicity testing and some chemical analyses were performed during the different phases. This phased approach provided less information about potential causes of toxicity than desired."

Number 2: The inability of the program to assess trends is not a failing of the program or of the Coalitions. Two years is simply an insufficient period to evaluate trends in highly variable water quality characteristics.

Number 3: *"The Central Valley Water Board has tentatively identified a process by which it could set forth the beneficial uses by water body according to existing Basin Plan requirements, and thereby identify the limits to be used in implementing the water quality standards."* Although it is not clear exactly what this process is, we applaud the effort to establish a process. However, it is not sufficient only to identify beneficial uses. The Board also needs to identify valid and appropriate numeric objectives to evaluate water quality supportive of those beneficial uses. The current process of using the lowest of a variety of unvalidated "triggers" does not meet consistent, rigorous scientific standard for setting water quality objectives, and it does not appear to comply with Porter-Cologne requirements.

Number 6: "*… data that is not captured includes occasions when drainage occurs from water that is applied for other purposes, such as pre-planting application, post-harvest application, and application of water for frost protection.*" This describes specific conditions described that are not currently targeted for sampling by the ILP MRP. The statement is accurate, but fails to note that these conditions are not common, account for only a very small percentage of runoff and drainage, and are unlikely to have region-wide water quality impacts.

Number 7: It should be noted that the SVWQC in Zone 1 has proposed a structured and objective long-term approach to prioritizing monitoring to satisfy the ILP MRP goals and objectives. This was refined in 2006 for the Coalition's Monitoring Plan for 2007, and the approach received verbal approvals during meetings between the Coalition and Water Board staff. However, the Coalition has not yet received any formal review or approval of the 2007 plan from the Water Board.

Section I. Introduction

Page 1, Purpose of the Discussion

The specific dates of the monitoring data being reviewed (i.e. May 2004 through October 2006) should be used here to give better context to "2007 review".

Page 1, Structure of the 2007 Review, Zone 1, Second Paragraph

Last sentence, add the word Estuary, "to the San Francisco Bay Estuary, and its watershed covers…."

Page 5, Data Included in this Evaluation

It should be noted that UCD data is gathered differently from Coalition data. The Coalitions generally collected one grab sample per site per event. In contrast, the UCD monitoring collected multiple samples per event (or per day) at some sites, and analyzed both composite and grab water sample. These differences in sampling have the potential of significantly biasing the data summary, especially when evaluating percentages of exceedances of water quality objectives.

Page 8, Second Bullet

This bullet incorrectly states monitoring is assumed to be conducted only on water bodies that are "*not constructed agricultural drains, nor are they non-stream tributaries*". Coalition monitoring includes several sites approved by the Water Board that are constructed specifically for conveying agricultural drainage and irrigation supply (e.g., Wadsworth Canal, Colusa Drain). Additionally, it should be clarified what is meant by "*non-stream tributaries*".

Section II. Zone Data Summaries
Zone 1

Zone 1 Description, First Paragraph

Revise the last sentence to read as follows: "Zone 1 includes irrigated lands within the geographic areas represented by Sacramento Valley Water Quality Coalition (SVWQC), which is subdivided in 10 subwatersheds, the Goose Lake Coalition, and the California Rice Coalition. It should also be clarified that the California Rice Coalition drainages are included within the SVWQC area, but are focused on acres planted predominantly with rice.

Table Z1-1

Analyte: Mercury is not part of the irrigated lands program. It does not have agricultural sources and should not be included in this table (Number 1, 3 and 4).
Potential Sources: It is incorrect and misleading to list only Agriculture as a potential source. All potential sources of the analytes of concern should be included. The way it is currently stated it looks like Agriculture is the only source.

Is this the best placement for the table, mixed in with the Upper Feather River Subwatershed section? Suggest moving the table after all of the subwatershed descriptions, or making individual tables specific to each subwateshed.

Applies To All Subwatersheds

The basis and description of "trends" in pesticide use is misleading and inappropriate. Two years is insufficient time to establish a trend. Gross pounds of pesticides applied is also a particularly un-useful statistic because it is dominated by low-efficacy high-application rate pesticides and tells us little about the potential reduction or increase in risk to water quality. This should be made either more specific (e.g., for certain pesticides), clarified, or deleted.

El Dorado, and Lake/Napa Subwatersheds

Once again Mercury is not part of the irrigated lands program and should not be included in this discussion.

Lake/Napa Subwatersheds

The last sentence in this section is in reference to the Pit River Subwatershed, not the Lake/Napa Subwatershed.

Goose Lake

This should be moved after the SVWQC 10 subwatersheds instead of being in the middle.

Page Z1-6, Table Z1-2

Number 9: "Andersen" should be Anderson.

Number 19: "Consumnes" should be Cosumnes.

At the end of the table there is a box with a description of what shaded means, there is no description for what is non-shaded.

The use of the subtotals in the middle of the table is awkward, and should be explained.

Page Z1-12, Top of the Page

All stressors can affect all test species when concentrations are high enough: Remember, "The dose makes the poison".

Page Z1-12, Figure Z1-3

This is clear objective presentation of the results. It would be improved by differentiating the toxicity by magnitude (e.g., ≤20%, >20%, >50%), as is done in Table Z1-3, etc.

Page Z1-14

"*Selenastrum*" should be capitalized wherever it occurs.
If you need to make a general association between metals and algae toxicity, it should be noted that in no case was toxicity attributed to trace metals, and that no exceedances of objectives for trace metals toxic to algae (e.g., copper) have been observed.

The number of *Selenastrum* tests seems low compared to other species. It seems like many conclusive results non-toxic were unnecessarily excluded, with the net effect of inflating the percent of toxic samples.

Page Z1-16, Hyalella results

It should be noted that most of the samples with statistically significant toxicity were less than a 20% effect. Only 7.6% of samples had a reduction greater than 20%.
The statement that "*The highest frequency of sediment toxic tests compared to the number collected seems to have occurred in the Sacramento/Amador, Solano/Yolo, and the Colusa Basin Subwatersheds.*" is vague and seems subjective. Any such comparisons should be made on a more objective and rigorous basis.

Page Z1-17, Table Z1-7

It should be specified which water quality objective is being used for diazinon.

Page Z1-16, Table Z1-6

This table (and others like it) should include have an explanation for distinguishing between the different magnitudes of toxicity (≤20%, >20%, and >50%). It should be explained that these are triggers for specific actions and consequences in the ILP.

Page Z1-17

"Shasta/Tehama Subwatershed: Site No. 11 (Burch Creek at Woodson Avenue Bridge) had multiple toxic results for *Ceriodaphnia* and one measured value of diazinon over the Basin Plan Objective." It should be explained that upon further investigation, results were likely due to non-agricultural sources (e.g., I-5, and truck stop and/or a nearby landfill).

Page Z1-17, Table Z1-7

"Chlorpirifos" should be Chlorpyrifos.

Page Z1-18, Table Z1-8

Number 9: "Andersen" should be Anderson.

Page Z1-19, Data Gaps

Goose Lake is not a subwatershed of the Sacramento Valley Water Quality Coalition. Therefore, it would be better to rephrase the first paragraph under Date Gaps to say, *"Monitoring frequency varies significantly for different Coalitions within Zone 1. For example, there are no available monitoring results for this 2007 review for the Goose Lake Coalition area. While there is significant data available for the Sacramento Valley Water Quality Coalition, but the number of data points varies from subwatershed to subwatershed."*

Page Z1-20, First Full Paragraph

"There are areas to the north of Cache Creek, Lake Napa County…" should be "*There are areas to the north of Cache Creek, Lake and Napa Counties."*

There is not a" Pit Fall River", please clarify the area you are referring to.

Last sentence: "*These areas will be the focus during the next site selection process within the next year or two.*" This does not appear to be a very strong or objective basis for selecting monitoring location. The Sacramento Valley Water Quality Coalition has not agreed that these areas have data gaps and therefore may or may not be the focus of the next site selection process. As stated in previous comments, SVWQC has provided the Water Board with an objective scientifically-based approach to prioritizing sites for monitoring.

Page Z1-20, Second Full Paragraph

This should state that "*A Management Plan effort has been initiated by the Sacramento Valley Coalition to address this question.*"

Page Z1-20, Third Full Paragraph

This sentence, "*In some instances, surveillance of land management and implementation of practices, such as fencing to restrict grazing animals, could be implemented to lower levels of the pathogen indicator*" implies that agriculture is responsible for the *E. coli* exceedances that are occurring throughout the Valley. It should be restated as "*In cases where agriculture is responsible or determined to contribute, surveillance of land management and implementation of practices…*"

Page Z1-21

It should be noted that toxicity was greater than 20% in only 7 out of 17 statistically toxic samples (7.6% of all samples), and at only 5 sites (10% of sites).
The relative frequency of Ceriodaphnia toxicity was much lower (approximately half) than of the frequency of chlorpyrifos and diazinon exceedances. This suggests that the chlorpyrifos and diazinon exceedances appear to overestimate invertebrate toxicity risk by ~50%.

Section III. Closing Summary

Monitoring and Reporting Program Issues

Page 1, Second Paragraph

With the all the Exceedance, Communication and the semi-Annual Reports that are required to be turned in, I believe the Coalitions has a good understanding of the constituents of concern.

Page 1, Fourth & Fifth Paragraphs

These two paragraphs are restatements of each other, one paragraph could be eliminated.

Monitoring Data Gaps

Page 2, First Paragraph

Need to clearly identify or restate the "priority areas" referenced in this paragraph.
Delete "either" from the third sentence.
The last sentence indicates a summary of data gaps was previously discussed in the section, but no summary of data gaps was included. As a result, it is difficult to determine whether the four steps outlined below the paragraph will address data gaps.

Page 2, #3 in the List

This is unrealistic with or without Coalition collaboration. The Pesticide Use Reporting system does not now, and will likely never support the kind of real-time site-specific reporting of pesticide applications that would be required to achieve this goal.

Page 2, #4 in the List

You will typically not see runoff during the "insufficiently characterized seasons" referred to in this paragraph, and the runoff that does occur will not cause streams to flow.

Page 2, Salinity and Background Contaminants, Third Paragraph

The first sentence is unclear. It states that "*There are constituents associated with irrigated runoff that will not be easily answered, and will require a concerted effort on the part of many agencies and groups, scientific studies, and perhaps the development of new management practices with different approaches to protecting water quality.*" It's not clear what this sentence is stating. The paragraph goes on to state that a CV Salinity Management Plan is being developed that will affect the ILP, but no details are provided.

Page 2, Multiple Land Uses, Fourth Paragraph

"Municipalities" are not a land use.

As a broader watershed approach, it may help to add a sentence on improving interdepartmental communication (i.e. coordination between the NDPES, dairy and Irrigated Lands Program with in the agency, as well as improving communication with other agencies).

Page 3, Prioritization of Implementation, First Paragraph

The first sentence (unintentionally?) implies that if data represent a broad geographic area, management practices implementation is required. No justification for this statement is provided.

The last sentence states that "*To address the magnitude of this potential concern*," but it is not clear what the antecedent of "this" is, or what is meant by "potential concern".

Page 3, Prioritization of Implementation, Second Paragraph

The first sentence states the obvious, and it would not be cost effective for any grower to implement management measures that had small or no potential to improve water quality. This paragraph also makes one think that there are no management practices in place.

Page 3, Management Practice Effectiveness, Fourth Paragraph

The meaning of the statement "Construction of physical management practices may be one measure of implementation effectiveness" is unclear. The paragraph goes on to state that the ultimate measure effectiveness of management practices is improved water quality. However, it then states that since this may take many years to identify, it's important to measure management practice effectiveness through runoff or localized monitoring where appropriate. It appears that the paragraph is trying to state that the number of constructed facilities could be used as a surrogate for improved water quality based on the assumption that facilities such as sediment basins can reduce inputs to streams. While physical facilities may reduce inputs of specific constituents (e.g. sediment basins and sediment), the statement ignores numerous non-construction approaches to management of applied constituents that can be very effective in reducing inputs to streams. These approaches should not be ignored, nor should the Regional Board believe that only constructed management facility approaches can be effective.

Page 3, Trend Analysis, Paragraph 5 and 6

It should be noted that SVWQC has continued to monitor several "core sites" at the request of the Water Board staff.

Attachment
Trigger Limits Used for Zone Data Review

Generally, it should be noted that the "trigger limits" come from a variety of sources and are not all equal or comparable in their scientific basis, their rigor of development, and the validity of the underlying data. It should also be made clear that many of the "trigger limits" do not have any legally recognized regulatory basis, but are being used under the ILP as screening values to

trigger various actions and evaluation of the need for management of potential water quality problems.

Aluminum, antimony, chromium, hexavalent chromium, and mercury are not ILP parameters and should be deleted from the Trigger Limits table.

The original source of the agriculture-based "trigger limits" for TDS, EC, boron should be referenced (Ayers and Westcott)

Basin Plan designated beneficial uses (e.g., WARM and COLD) should be all caps.

The DO minimum of 7.0 mg/L should list the specific beneficial uses.

Footnote 1: Should be "…*affected by the particular parameter*".

Public Health Goals should not be used as a regulatory "trigger" for human health benefits when there are legally valid MCLs for this purpose. This also applies to USEPA IRIS Reference Dose and Cal/EPA Cancer Potency Factors. These are not effect threshold values. Additionally, they are intended to be levels safe for long-term daily human consumption of treated drinking water, and are clearly not valid to be used as a "never to be exceeded" value in untreated surface water with a low potential for incidental human exposure. If they must be used at all as "triggers", they should be compared to long-term average or median water quality characteristics when evaluating potential risks.

Attachment B
Crop and Pesticide Use

Missing dates the reports were generated.

It should be noted that portions of some of the counties listed are not in the Coalition's areas nor are they part of Region 5 (i.e. the portion of Napa County that is in Region 5 is only 8% of the irrigated land in that County).

See also previous comment regarding evaluation of pesticide "trends".

Zone 1 Figures and Maps

Figure Z1-3 through Figure Z1-6:

In the summary charts, the y-axis should be the percent of toxic samples to allow comparison between species results, and to provide perspective on the frequency of toxicity. Showing only the total number of toxic results is misleading because it provides no perspective without the total number of samples evaluated. The total number in each category can be added to the charts without affecting the meaning or purpose of the graph.

In the map, toxicity should also be presented as percentages, not absolute numbers.

Figure Z1-7, Pesticides:

In the summary charts, the y-axis should be the percent of exceedances to provide perspective on the frequency. Showing only the total number of exceedances results is misleading because it provides no perspective without the total number of samples evaluated. The total number in each category can be added to the charts without affecting the meaning or purpose of the graph.

In the map, exceedances should also be presented as percentages, not absolute numbers.

Figure Z1-8, *E. coli*:

In the summary charts, the y-axis should be the percent of exceedances to provide perspective on the frequency. Showing only the total number of exceedances results is misleading because it provides no perspective without the total number of samples evaluated. The total number in each category can be added to the charts without affecting the meaning or purpose of the graph.

In the summary chart, no axis legend or explanation is provided. The presentation is not consistent with other figures and will be confusing to interpret.

In the map, exceedances should also be presented as percentages, not absolute numbers.

We look forward to continuing to work with you and your staff to provide Board Members and the general public an accurate assessment of the data collected under the Irrigated Lands Program.

Sincerely,

Tina Lunt

Tina Lunt

cc. Pamela Creedon, Regional Water Quality Control Board
Bill Croyle, Regional Water Quality Control Board
Jodi Pontureri, Regional Water Quality Control Board
Margaret Wong, Regional Water Quality Control Board

CALIFORNIA RICE COMMISSION

June 26, 2007

Ms. Margie Lopez-Read, REAII, Chief
Monitoring and Assessment Unit
Irrigated Lands Conditional Waiver Program
Central Valley Regional Water
Quality Control Board
11020 Sun Center Drive
Rancho Cordova, CA 95670

Dear Ms. Lopez-Read:

Thank you for the opportunity to comment on the *Draft 2007 Review of Monitoring Data for the Irrigated Lands Conditional Waiver Program*. The California Rice Commission (CRC) appreciates the dedication of the Central Valley Regional Water Quality Control Board (CVRWQCB) staff in developing these documents.

Per your email message, the CRC is providing comments by June 27, 2007. The CRC comments include minor corrections to pesticide use in Zone 1, and include clarification of the Basin Plan prohibition of discharge in Zones 2 and 3. In addition, the CH2M Hill memo provides comments as an enclosure to this letter.

SECTION II. ZONE DATA SUMMARIES – ZONE 1
Page Z1-21
Please revise the sentence to reflect the following, "The California Rice Commission in Zone 1 is developing an alternative approach to identifying algae toxicity, ~~which may provide information that will lead to appropriate management practices~~."

Algae reductions are a persistent problem throughout Region 5, including non-rice growing areas. Several samples, resamples, dilution series and toxicity identification evaluations have not conclusively detected a cause to algae reductions. The CRC is taking a proactive approach to identifying the causal factor, which may benefit agriculture throughout Region 5. The words, "which may provide information that will lead to appropriate management practices," indicates that rice field discharges cause algae reductions.

8801 FOLSOM BLVD. SUITE 172, SACRAMENTO, CA 95826 PHONE: 916/387-2264 FAX: 916/387-2265

SECTION II. ZONE DATA SUMMARIES – ZONE 2

Page Z2-11

The Basin Plan prohibition of discharge program applies to all rice grown in the Sacramento River and the San Joaquin River Basins for rice field discharges of carbofuran, malathion, methyl parathion, molinate and thiobencarb. Carbofuran is no longer a rice pesticide and no rice field applications of malathion or methyl parathion took place in Zone 2 from 2004-2006. Molinate and thiobencarb are specifically rice herbicides and no other crop residue tolerances (registrations) exist. The CRC receives pesticide use information for malathion, methyl parathion, molinate and thiobencarb from all rice counties, but only records use from the Sacramento River Basin in the annual report. Molinate and thiobencarb use must comply with the DPR permit conditions (management practices), which applies to all rice acreage in the Sacramento River and San Joaquin River Basins. Clarification of this point is critical to the CRC and, if necessary, we request a meeting to fully understand staff's interpretation preceding the workshop.

Page Z2-12

Table Z2-6. Summary of Detections of Pesticides Under Basin Plan Prohibition

Please revise the table to correctly reflect the prohibition of discharge for molinate and thiobencarb. Please omit any detection for molinate of 10.0 micrograms per liter of water (ug/L) or less, and thiobencarb of 1.5 ug/L or less.

Page Z2-14

The reference to a thiobencarb detection should be checked and not mentioned if it is 1.5 ug/L or less.

Page Z2-19

Thiobencarb is not a prohibited pesticide, so please remove that statement and revise the detections. A prohibition of discharge does not exist for thiobencarb when detections are 1.5 ug/L or less.

Pages Z2-20 to 23

Table Z2-9. Summary of Pesticide Monitoring Results Above Trigger Levels

The table lists thiobencarb with four detections above the trigger level. Please check and remove from the table if the thiobencarb detection was 1.5 ug/L or less.

SECTION II. ZONE DATA SUMMARIES – ZONE 3

Pages Z3-9 to 12

Table Z3-3. List of Pesticide Detects

Page Z3-11. Please correctly reflect the molinate detections in the table. The prohibition of discharge allows detections of molinate at 10.0 ug/L. In the table, 2 of 206, or 1.5% of the molinate samples resulted in detections ranging from 0.035 to 0.042 ug/L. The detections were inaccurately indicated to exceed the water quality trigger of 0 ug/L.

Page Z3-12. Please correctly reflect the thiobencarb detections in the table. The prohibition of discharge allows detections of thiobencarb at 1.5 ug/L. In the table, 6 of 206, or 3% of the thiobencarb samples resulted in detections ranging from 0.016 to 1.5 ug/L. The detections were inaccurately indicated to exceed the water quality trigger of 0 ug/L.

Page Z3-14.
The Basin Plan prohibition of discharge program applies to all rice grown in the Sacramento River and the San Joaquin River Basins for rice field discharges of carbofuran, malathion, methyl parathion, molinate and thiobencarb. Carbofuran is no longer a rice pesticide and no rice field applications of malathion or methyl parathion took place in Zone 2 from 2004-2006. Molinate and thiobencarb are specifically rice herbicides and no other crop residue tolerances (registrations) exist. The CRC receives pesticide use information for malathion, methyl parathion, molinate and thiobencarb from all rice counties, but only records use from the Sacramento River Basin in the annual report. Molinate and thiobencarb use must comply with the DPR permit conditions (management practices), which applies to all rice acreage in the Sacramento River and San Joaquin River Basins. Clarification of this point is critical to the CRC and, if necessary, we request a meeting to fully understand staff's interpretation preceding the workshop.

Page Z3-14.
Table Z3-5. Frequency of Select Pesticide Detections
Pesticides Under a Basin Plan Prohibition of Discharge
The pesticides carbofuran, malathion, methyl parathion, molinate and thiobencarb inaccurately reflect a trigger limit of 0 ug/L. The prohibition of discharge is effective for non-rice field applications of carbofuran, malathion and methyl parathion. Please revise the table to accurately reflect acceptable detections for rice field discharges: malathion 0.4 ug/L, methyl parathion 0.13 ug/L, molinate 10.0 ug/L and thiobencarb 1.5 ug/L. Carbofuran in no longer a rice pesticide.

ATTACHMENT A. TRIGGER LIMITS USED FOR ZONE DATA REVIEW
Zone 1: Pages A-3, A-5, A-7
Molinate: The Basin Plan performance goal is 10.0 ug/L. Please delete "or 0 ug/L" as it does not apply. Molinate is specifically a rice herbicide and no other crop residue tolerances (registrations) exist.

Thiobencarb: The Basin Plan performance goal is 1.5 ug/L. The water quality objective for municipal or domestic water supplies is 1.0 ug/L for taste. Compliance with the performance goal assures conformity with the water quality objective of 1.0 ug/L. Please delete "or 0 ug/L" as it does not apply. Thiobencarb is specifically a rice herbicide and no other crop residue tolerances (registrations) exist.

ATTACHMENT B. CROP AND PESTICIDE USE ZONES 1, 2 AND 3
Butte and Colusa Counties:
The report lists fluridone (CAS No. 59756-60-4) as a rice pesticide. In California, fluridone uses exist for landscape maintenance, regulatory pest control, rights of way, structural pest control and water areas (Department of Pesticide Regulation (DPR), Pesticide Use Report (PUR) 2004, 2005). No crop uses exist in California even though registrations exist on several commodities, excluding rice (Title 40 Code of Federal Regulations (CFR) §180.420). Fluridone is not a rice pesticide because no residue tolerance (40CFR§180.420) exists resulting in no registration of this product on rice.

Please include propiconazole because it is a combination product with trifloxystrobin in the formulated fungicide Stratego.

Glenn County:
Please remove the fumigant aluminum phosphide, since it is not a pesticide applied to a rice crop. In 2005, 1,280 tons of rice received 26.95 pounds active ingredient (AI) at either a mill or dryer.

Registration of the insecticide methyl parathion exists on rice. However, use is declining due to decreasing efficacy. In 2005, 82 acres of rice received a formulated insecticide containing methyl parathion, toxaphene and xylene, which accounts for separate listings of these products on the DPR PUR.

Yolo County:
Please remove the two fumigant pesticides aluminum phosphide and methyl bromide because they are not pesticides applied to a rice crop. In 2005, 49,500 tons of rice received 6.60 pounds AI of aluminum phosphide at either a mill or dryer. A structural fumigation of methyl bromide took place with 399 pounds AI to 199,500 cubic feet.

Yuba County:
Please remove the fumigant aluminum phosphide, since it is not a pesticide applied to a rice crop. In 2005, 125,000 units received 90.5773 pounds active ingredient (AI) at either a mill or dryer.

Registration of the insecticide methyl parathion exists on rice. However, use is declining due to decreasing efficacy. In 2005, 32 acres of rice received a formulated insecticide containing methyl parathion, and xylene, which accounts for separate listings of these products on the DPR PUR.

Thank you for working with us to develop the documents for the 2007 Review of Monitoring Data for the Irrigated Lands Conditional Waiver Program. CH2M Hill prepared additional comments on the Executive Summary, provided as a separate enclosure. The CRC greatly appreciates the collaboration between the CVRWQCB staff and the coalitions on this project. Please contact me, or Roberta Firoved, if you have any questions or concerns.

Sincerely,

Timothy A. Johnson
President & CEO

cc: Roberta Firoved

Enclosure

Review of CVRWQCB Staff Draft 2007 Monitoring Review

TO: Roberta Firoved/California Rice Commission

FROM: Summer Bundy/CH2M HILL
John Dickey/CH2M HILL

DATE: June 26, 2007

Overview

The CVRWQCB staff prepared a draft report for review by members of the ILP and other interested stakeholders. The report, entitled *Draft 2007 Review of Monitoring Data*, provides a review of a portion of the data collected by Coalitions approved under the Irrigated Lands Conditional Waiver. Also included are "supplemental data" which appear to include March and September 2003 UC Davis Phase I data, CVRWQCB July 2004 through March 2006 data, and some amount of CVRWQCB Surface Water Ambient Monitoring Program (SWAMP) data.

Data are grouped into four Zones, each representing large watershed areas. The report does not contain an assessment of compliance with the terms and conditions of the Conditional Waiver, rather it is used to identify spatial and temporal data gaps, and the frequency with which adopted water quality objectives and/or "trigger values" were exceeded.

The draft report was provided to Conditional Waiver Technical Issues Committee (TIC) Members, Irrigated Lands Program (ILP) Stakeholders and Interested Parties by CVRWQCB staff via email dated June 13, 2007. The finalized report will be made available via the CVRWQCB's website and will be the topic of a CVRWQCB workshop.

Purpose of Comments

The CRC requested that CH2M HILL review the data report in the context of rice water quality control. The following questions were considered during our review:

- Does the Executive Summary provide sufficient detail for executive and layman readership?
- Are conclusions adequately supported by data?
- Could the reader be left with the impression that CRC monitoring and reporting was not consistent with the requirements of the Conditional Waiver or the CRC's approved Monitoring and Reporting Program (MRP) Pan?
- Do maps include sufficient summary information so that if used in the newspaper they will include enough information to tell the whole story?
- Are Basin Plan requirements described correctly?

- Does summary information include sufficient detail to provide basis for recommending future MRP revisions?

Comments

Characterization Conditional Prohibition of Discharge (Rice Pesticides Program)

The CVRWCB Basin Plan includes a conditional prohibition of discharge for five historically used rice pesticides. The Basin Plan prohibits the discharge of those pesticides *unless the discharger implements approved management practices.* Where approved management practices are utilized, the Basin Plan establishes Performance Goals for water quality monitoring sites located in drains. The logic behind these Performance Goals was that attainment of these numeric water quality concentrations would result in attainment of taste thresholds at the municipal drinking water intakes.

Through various text and tables and Attachment A, it appears as though CVRWQCB staff is interpreting the Basin plan language as an *absolute* prohibition. Through this interpretation, staff is counting any *detections* of molinate and thiobencarb (rice-specific pesticides, i.e. only registered for use on rice) at drain sites as exceedances of water quality trigger values. This misinterpretation has the effect of leading the layman to believe that the conditional prohibition is being violated, which is not the case based on the CRVWQCB's regular review and approval of the Rice Pesticides Program and grower implementation of approved management practices.

It is suggested that all narrative discussion of molinate and thiobencarb detections be re-evaluated in the context of the conditional nature of the prohibition of discharge. For drain sites, the monitoring results should be compared to the Basin Plan performance goals. Without such revisions, the report will be inconsistent with the Basin Plan.

Additionally, if any monitoring sites for rice pesticides were within closed systems, those results should not be included as either drain or river sites.

Maps

The maps represent a critical portion of the report, as they are the most readily absorbed by the general public and media. The maps provide a useful summary of the reviewed data; however, additional summary information would provide a more thorough summary of the data and help to prevent misinterpretation by the layman. The following are specific comments on Zone 1 maps; it is assumed that similar comments would apply to other zones as well:

- **Figure Z1-1:** The title of this figure is "Supplemental Monitoring Sites". In the text, the term "supplemental" should be clarified/defined.
- **Figures Z1-4, Z1-5, Z1-5, Z1-6, Z1-7, Toxicity Results:** The maps present the number of times that statistically significant toxicity was detected. Although the maps do present the *sites* for which there was no detected, the *number* of samples for which toxicity was not detected should also be presented (e.g., n=# on the detection graphs). Additionally, graphs showing the temporal distribution of the toxicity results would be useful, as they may help to identify seasonal toxicity trends that may, in turn, be traced back to use patterns for specific pesticides or ambient seasonal conditions.

In addition, the report should clearly and plainly explain the purpose and nature of toxicity tests for readers unfamiliar with these tests. For example, it would be useful to explain that relatively sensitive organisms are intentionally employed, so that the tests do not necessarily indicate toxicity to all other organisms, but rather serve as a warning that the most sensitive organisms could be at risk at the time of sampling. Also, the cause of the toxicity is not necessarily determined by the test; rather, this requires additional and quite detailed analysis that the coalitions are also undertaking where toxicity is detected. Finally, a detection of toxicity does not prove that farming or irrigation in any way caused the toxicity; rather, this must be investigated by more detailed sampling and analysis. In Zone 1, there are many potential non-agricultural causes of toxicity.

- **Figure Z1-9, Monitoring Results for Escherichia coli:** The map presents the number of times that e. coli triggers are exceeded. It is suggested that the numeric trigger be noted on the map. Additionally, the number of sample events should also be included so that the reader could determine the % of the time that triggers are exceeded. Additionally, graphs showing the temporal distribution of the e.coli measurements would be useful, as they may help to identify seasonal toxicity trends that may, in turn, be traced back to use patterns for specific pesticides or ambient seasonal conditions.

Executive Summary

Suggest adding a summary that includes the specific data reviewed, including the number of sites, time period, parameters, and entities that collected the data that is assessed.

Could, either in the ES or Conclusions, state that the amount of data available for review is significantly more data than was available in 2003.

It also provides insight into the types of water quality ~~impacts~~ concerns that appear to be more pervasive in agricultural drainages within the Central Valley. In addition, source water quality, urban influences, legacy pollutants, and ambient conditions (air temperature, maintained nature of channels, hydraulic structures, low-flow conditions) contribute to water quality concerns

Suggest revising paragraph as indicated above in strikeout/underline.

Use of the word impacts overstates the appropriate application of the limited data analysis.

Are "agricultural drainages" streams/rivers that receive ag drainage, constructed ag drains, or ag-dominated waterbodies?

Overview of Water Quality Concerns

3. Toxicity to *Selenastrum capricornutum* (algal species) is widespread in the Central Valley. Toxicity to algae is generally associated with herbicides and metals, such as copper, though to-date the results of the analysis (including those undertaken by Coalitions and the UC Davis Phase 1 monitoring) have not conclusively identified specific causative agents. The California Rice Commission is undertaking special studies to help determine the causes of algal toxicity in Zone 1.

Request the above text be revised as suggest as indicated with underlined text. Information regarding the seasonality of such detections would be beneficial to the reader.

> 5. Predominant pesticides detected in water throughout the Central Valley monitoring sites include chlorpyrifos, diazinon, simazine, diuron, and DDT/breakdown products.

Information regarding the seasonality of such detections would be beneficial to the reader.

> 6. The toxic effects of organophosphate pesticides, such as diazinon and chlorpyrifos, are common in all Zones. This information is based upon results of toxicity tests, toxicity identification evaluations, and well as discrete pesticide analyses.

Please confirm that either specific TIEs or the detection of these pesticides at levels that exceed known toxicity thresholds for test species is the basis of this conclusion.

> 7. Salinity, as measured by electrical conductivity, is a concern in all Zones of the Central Valley although most notably in Zones 2, 3, and the northwest portions of Zone 4. Information that would clarify how much of this salinity is the result of background, or uncontrollable factors, and how much is contributed by irrigated agriculture is not available, and will require additional study. At this time, there is a concerted effort by many State and local agencies to address issues of salinity in the Central Valley.

What is the basis for the "concern"? Salinity in the Delta has been a known issue of concern for a very long time and the SWRCB is engaged in establishing and enforcing salinity requirements in the Delta (primarily associated with Delta pumping). In addition, TMDL efforts for Salinity are underway in the San Joaquin. Some historic perspective on this matter would provide the layman with background understanding regarding the Board's ongoing efforts to address salinity in the Central Valley.

Data Gaps

> 2. Status vs. Trend. It should be emphasized that the information in this 2007 Review is not sufficient to assess changes in water quality resulting from any management practices that may be implemented. The data submitted by Coalition Groups and summaries that are provided herein suffice, at the most, to give a baseline for the water bodies that have been monitored. In some cases, and there water quality concerns exist, source identification coupled with management practice implementation will need to take place. Subsequent monitoring and reporting to include details on management practice implementation will provide data that could indicate improvements.

Through use of the phrases "not sufficient" the reader might interpret this to mean that the intent of the data collected thus far was to assess changes in water quality. However, at the outset of the program it was recognized that new monitoring parameters, sites, and increased frequencies (relative to historic trend monitoring) would provide an initial dataset. Alternatively, use of a phrase such as "information is sufficient to provide baseline

data but use of data to assess changes in water quality would be limited due to short time frame of dataset" would not provide the reader the opportunity to misinterpret the purpose of the collected data. Further, it should be noted that when the Conditional Waiver was adopted, it was recognized that the initial few years would provide no more than baseline data upon which to prioritize water quality concerns and identify management actions.

3. Standards Applied to Detected Results. Because the Irrigated Lands Conditional Waiver is a general waiver, it does not set forth the designated beneficial uses in each water body, nor the water quality criteria and objectives (i.e., water quality standards that apply to each water body). The applicable water quality standards can vary from water body to water body, and there is a need to determine if measurements are exceeding criteria. The Central Valley Water Board has tentatively identified a process by which it could set forth the beneficial uses by water body according to existing Basin Plan requirements, and thereby identify the limits to be used in implementing the water quality standards. When this process is completed, the true effects of irrigated agriculture on waters of the State will be more clearly defined.

The statement "*Because the Irrigated Lands Conditional Waiver is a general waiver, it does not set forth the designated beneficial uses in each water body, nor the water quality criteria and objectives.*" is problematic. The issue at hand is that it may be inappropriate to apply drinking water standards to waterbodies that are agriculturally dominated and/or constructed ag drains. This has nothing to do with the waiver, rather, it is a matter of Basin Planning process. It would be better stated that where water quality standards/objectives are adopted for specific waterbodies, monitoring results have been compared to those standards/objectives. Where monitoring sites are located on waterbodies that do not have adopted standards/objectives, a public process is being developed to compare results to threshold values. This comparison will allow for the prioritization of concerns.

4. Pesticides Applied vs. Pesticides Analyzed. The MRP requires that coalition monitoring include tests for the specific list of standard-use pesticides for which analytical methods have been established. Regional Board staff have determined that the list of pesticides for which there are established analytical methods~~It is clear that this list of pesticides~~ is not comprehensive for all the pesticides that are in use in all areas of the Central Valley. A comparison of pesticides used in Zone 4 (Table Z4-1) and the baseline ILP MRP monitoring requirements shows that not all currently pesticides are currently included in baseline monitoring. ~~This is evidenced in Table Z4-1, Pesticide Use in Zone 4, which identifies the list of pesticides used for each crop type in Zone 4, many of which are not part of the baseline ILP MRP monitoring requirements.~~ It is also true that approved environmental analytical procedures at environmentally sensitive levels do not exist for all of the pesticides that are registered for use in the State of California. An effective approach to monitor precisely for the pesticides that are being used has not been developed and will need to be in order to address this data gap.

Suggest revising paragraph as indicated above in strikeout/underline.

The statements "*The MRP requires that coalition monitoring include tests for the specific list of standard-use pesticides for which analytical methods have been established*" and "*This is evidenced in Table Z4-1, Pesticide Use in Zone 4, which identifies the list of pesticides used for each crop type in Zone 4, many of which are not part of the baseline ILP MRP monitoring requirements*" are problematic. The first statement generalizes the requirements of the MRP and needs to be reworded to accurately reflect the requirements of the waiver with respect to pesticide monitoring. Specifically, the MRP requires that monitoring and reporting be conducted in accordance with approved MRP Plans developed in accordance with the CVRWQCB's Monitoring and Reporting Program Order R5-2005-0833 (MRP Order). The MRP Order specifies that Phase 1 monitoring was to include a Pesticide Use Evaluation. Phase 2 was to include chemical pesticide analyses based on the Pesticide Use Evaluation. Further, the MRP Order listed the minimum monitoring requirements for pesticide.

The second statement could be interpreted to mean that the MRP plans did not include required analyses. The MRP requires that monitoring and reporting be conducted in accordance with an approved Coalition-specific MRP Plans. The statement as written implies that Coalitions are not compliant with the MRP requirements. If the analysis of pesticides applied versus pesticides analyzed has determined that additional pesticides should be monitoring by Coalitions, then it is a matter of revising MRPs.

5. Acute Effects vs. Long-Term Effects. The ILP MRP requires monitoring for the acute effects for aquatic toxicity species, which are primarily mortality and fertilization. Long-term effects, or sub-lethal effects, can be equally as detrimental to species survival, and include factors such as growth and reproduction. Testing for chronic effects is beyond the scope of ~~existing~~approved Conditional Waiver monitoring program requirements ~~program monitoring~~.

Suggest revising paragraph as indicated above in strikeout/underline.

6. Missing Seasonal Data. The ILP MRP requires monitoring of two storm events during the winter season, and monthly during irrigation season. The intent of more frequent irrigation season monitoring was to capture the impact of drainage from irrigated lands when water is being applied to the fields and when the application of pesticides takes place. However, data that is not captured includes occasions when drainage occurs from water that is applied for other purposes, such as pre-planting application, post-harvest application, and application of water for frost protection. Additionally, subwatershed areas in Zone 4 have incorrectly interpreted the irrigation season to include only when water is being supplied to the grower by the local irrigation water purveyor, which is an abbreviated period of time, as little as two months. This interpretation excludes monitoring for the remainder of the year, in areas that are quite arid and in which water is often being applied to fields year round.

Again, this tone and wording makes it sound as though all the Coalitions are doing something that is not compliant with the requirements of the Conditional Waiver. Each approved MRP specifies the number of events and the timing of events. Suggest calling this section "Seasonal Data Gaps". If revisions to the Conditional Waiver program are thought necessary to improve the ability of the program to characterize agricultural discharges, then that should be stated.

Some Coalitions, specifically rice, have developed crop-specific calendars and monitoring schedules to capture key run-off events.

The Zone 4 issue should be grouped into the summary with the other zones.

7. Missing Spatial Data. There are some areas of the Central Valley for which there is partial or no monitoring data available, or for which representative sites have not been designated. These areas have been identified within each of the Zone report sections. The areas with the largest geographical areas for which monitoring sites have not been identified include Zones 1 and 4.

Again, makes it sound like Coalitions are doing something wrong. Suggest calling this section "Spatial Data Gaps". If revisions to the Conditional Waiver program are thought necessary to improve the ability of the program to characterize agricultural discharges, then that should be stated.

Introduction Comments

Page 5

Are the data described in bullet items 1,2 and 6 termed "supplemental" data on Figure Z1-2 and within Tables Z1-3, Z1-4, and Z1-5?

Zone 1 Comments

Page Z1-2

The narrative for the Solano/Yolo Subwatershed describes management practices being implemented in the subwatershed. It is noted that rice growers implement a range of management practices in all rice growing regions.

Table Z1-1

Although the table is a report of the 303(d) list, it would be beneficial note that certain rice pesticides for which the Colusa Basin Drain are listed are no longer registered or used. Same comment applies to the narrative section on Colusa Basin Drain.

Table Z1-2

Site No. 8 is listed as Sacramento Slough near Karnak (SS1). It is noted that in 2005 the CRC moved its Sacramento Slough sampling site to a site now designated Sacramento Slough Bridge (SSB). The sampling was moved to provide for field technician safety. If results for SS1 and SSB are combined in this table, is suggested that the newer site name be utilized and that the site be footnoted to provide clarity for future readers.

Site No. 33 is just listed as Sacramento Slough. Please provide additional site identification information for this site to reduce confusion.

The "subtotals" row on page Z1-7 appears to present the subtotal for Coalition monitoring sites? Please clarify the data that are being subtotaled.

Page Z1-10

"In some cases, the same stressor will affect two species, but ~~it will require~~ those effects will be observed at different concentration~~s~~ ~~levels for each~~."

Suggest revising paragraph as indicated above in strikeout/underline.

Figure Z1-3
The figure includes samples with "significant toxicity". This should be clarified as "***statistically*** significant toxicity" and this change should be reflected throughout the narrative.

Seasonality of toxic events would be beneficial to the reader.

Are TIE results included in the summary? It should be noted whether TIEs were successful at determining the causative toxic agents. Alternatively, if the evaluation of TIE results is not included this report, it should be noted so that a diligent reader would understand that TIEs were undertaken in conjunction with the sampling and in response to results triggering that analysis.

Page Z1-12

Overall, 1.6% percent of the total fathead minnow tests (501 total) ~~resulted~~ showed ~~in~~ statistically significant toxicity.

Suggest revising paragraph as indicated above in strikeout/underline.

Water flea toxicity is generally associated with insecticide toxicity.~~ and o~~ Out of the 96 monitoring locations, 21% had a test result with toxicity to water flea at least one time, although monitoring frequency at each site varied."

Suggest revising paragraph as indicated above in strikeout/underline.

Page Z1-14

The table below indicates that 94 sample tests resulted in significant toxicity to *selenastrum* ~~water flea~~, approximately 24.1% of the 390 *selenastrum* tests.

Suggest revising paragraph as indicated above in strikeout/underline.

Page Z1-16
Please clarify the definition of "water quality trigger". Under the Conditional Waiver program, a "trigger" has generally indicated a result which requires some type of follow up action (for instance, observed statistically significant above a toxicity threshold triggers follow-up sampling and analysis). In this case, water quality trigger seems to mean some level that selected studies have shown to be of water quality concern due to toxic effects observed at that level. Please clarify.

Additionally, Table Z1-8 goes on to use the terminology "**Number Tests Outside of the Limits"**. Please use consistent language within the report and define terms appropriately to provide the reader proper context within the confines of the Basin Plan and generally accepted aquatic toxicology literature.

Page Z1-21
Regarding sediment toxicity, seasonality would be useful information. Future review of seasonality of toxicity combined with a review of pesticide use records and/or ambient drain/stream conditions could provide insight into potential causative agents.

Summary

The report summarizes a substantial amount of information at a programmatic level that is useful in identifying potential water quality concerns and data gaps. The maps prove very useful in demonstrating the spatial distribution of water quality concerns. This information can form a useful basis for revisions to MRP Plans and the development of long-term monitoring strategies designed to measure baseline conditions as well as develop programs to measure the long-term influence of implemented management practices and ambient conditions.

A primary concern for the CRC is the misinterpretation of the conditional prohibition of discharge. Revisions to the narrative and exceedance tables should be sought to ensure that the write-up is consistent with the Basin Plan's Rice Pesticides Program and that the layman is not left with the incorrect impression that rice growers are not in compliance with the terms and conditions of the CVRWQCB's program for control of rice water quality.

Additionally, the seasonality of toxicity events and bacteria exceedances would be useful information, as it would allow for analysis of pesticide use in comparison to observed toxicity.

San Joaquin County & Delta Water Quality Coalition
3422 W. Hammer Lane, Suite A
Stockton, California 95219
209-472-7127 ext 125

June 27, 2007

Via FAX 916-464-4780 3pgs

Ms. Margie Lopez Read
Senior Environmental Scientist
Irrigated Lands Program
Central Valley Regional Water Quality Control Board
11020 Sun Center Drive #200
Rancho Cordova, CA 95670-6114

Re: Zone 2 Monitoring Comment Response

Dear Margie:

The following pages contain are our comments on the Regional Board's Draft of the Zone 2 monitoring data prepared by Chris Jimmersen. We applaud his attempts not to editorialize and stick with the data provided.

The comments were prepared by Dr. Michael Johnson, our Program Director, and are meant to assist you to correct assumptions made on the data that are not correct or relevant and several sections that are difficult to understand and could be edited for clarity.

We appreciate the ability to comment on this important matter. If you have any questions, please do not hesitate to contact me.

Regards,

John B. Meek, Jr. AFM/AAC
Executive Director

Cc: SJCRCD Board of Directors

San Joaquin County & Delta Water Quality Coalition
Zone 2 Monitoring Comment Response

General Comments:

1. The document contains the symbol for μ which appears to be a "u". It should be changed.

2. Throughout the section there are tables such as Table Z2-2 that are compilations of the number of tests and the numbers of exceedances. A large number of the entries in the table are 0's for the exceedances. Including only those sites with exceedances would reduce the size of the table and increase the readability. Although there may be some desire to indicate the number of tests performed at each site, unless there is an explicit conclusion to be drawn from the number of tests performed and the number of exceedances found, the lengthy tables are not necessary.

Specific comments:

1. Page Z2-1, paragraph 1. The presentation of the pesticide data in Appendix B by total pounds is misleading since a large portion of the applications are inert compounds that should not be included. The current description suggests that for some crops in some locations, between 100-150 lbs/acre of pesticides are applied.

2. Page Z2-7, paragraph 2. The last sentence should be deleted. If the document is a review of monitoring data only, the last sentence is a statement of one course of action resulting from the review. While it may be correct, it is outside the bounds of a data review.

3. Page Z2-7, paragraph 3. Two of the three general classes of toxicants identified in the paragraph are subsets of each other. I.e., organophosphate compounds are metabolically activated compounds and metabolically activated compounds are non-Polar organics, at least as identified in a TIE analysis.

4. Page Z2-8, paragraph 1. This paragraph is not specific to Zone 2, and a majority of those tests were performed in Zone 3. The percentages of pyrethroid/chlorpyrifos associated sediment toxicity should be specific to the zone.

5. Page Z2-7, Table Z2-3 and Page Z2-8, paragraph 2. The water quality objective in the table and the paragraph should be 0.16 μg/L, not 0.10 μg/L (Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control of Diazinon and Chlorpyrifos Runoff into the Sacramento-San Joaquin Delta, June 2006 Final Staff Report, pgs 25-26).

6. Page Z2-8, paragraph 3. The third sentence states that the detection of DDT/DDE could be a result of current illegal use. A review of monitoring data does not support such a conclusion. It's clear that DDT was used in the past, and the presence of DDE indicates that we are currently detecting pesticide applied decades ago. But the suggestion that DDT is a result of current illegal use is not substantiated by any evidence and the statement should be deleted.

7. Page Z2-16, paragraph 3. The paragraph focuses on agricultural uses of copper and the potential for these uses to be responsible for the exceedances. While applications by agriculture may be responsible for the exceedances, other sources may also contribute (e.g. brake pads) to the copper in the water bodies. This is especially true for a location such as Pixley Slough @ Eight Mile Road which is adjacent to a major road with high traffic volume. Break pad wear can be a substantial contributor of copper in surface waters as evidenced by the Break Pad Partnership which was formed in the Bay Area to address the issue because of the extreme loading of copper to the waters of SF Bay (http://www.suscon.org/brakepad/details.asp).

8. Page Z2-19, paragraph 1. It's not clear what this paragraph is meant to convey but it is not an interpretation of available data. It's speculation and the last sentence includes three statements of "may" which indicates there is no evidence to support any conclusions that have been drawn. The paragraph should be deleted.

9. Page Z2-19, paragraphs 5 & 6. After providing statistics on the frequency of toxic sampling events for water column toxicity, there are statements that start "although" and then provide the percentage of sites with exceedances. The statements are meant to imply that although there appears to be a very small percentage of toxic samples, there are a large percentage of toxic sites. Both or neither may be true, and the statistics should be presented without the qualification of "although." The reader should be allowed to decide on the magnitude of the percentages without subtle implications that they are large or small.

End of comments.

ZONE 3 COMMENTS

From: "Joe McGahan" <jmcgahan@summerseng.com>
To: "Margie Lopez-Read" <MLopez-Read@waterboards.ca.gov>, <mbjohnson@ucdavis.edu>
Date: 6/27/2007 1:14:49 PM
Subject: RE: comments on zone 3 report

It includes Westside comments. Joe Mc.

-----Original Message-----
From: Margie Lopez-Read [mailto:MLopez-Read@waterboards.ca.gov]
Sent: Wednesday, June 27, 2007 12:46 PM
To: mbjohnson@ucdavis.edu
Cc: Joe McGahan; mmturner@ucdavis.edu; pklassen@unwiredbb.com; Susan Fregien; Bill Croyle
Subject: Re: comments on zone 3 report

Mike -
This will work, I just need to know who is represented in the comments. Is it Westside and East SJ Coalitions?
m

>>> "Michael Johnson" <mbjohnson@ucdavis.edu> 6/27/2007 12:32:48 PM >>>
Margie,

Parry and Joe are tied up in meetings today and requested that I submit the comments on the Zone 3 and Summary portions of the Monitoring data review.
Attached is the review. Do you need additional information like a cover letter, etc?

Mike

CC: <mmturner@ucdavis.edu>, <pklassen@unwiredbb.com>, "Susan Fregien" <sfregien@waterboards.ca.gov>, "Bill Croyle" <wcroyle@waterboards.ca.gov>

Comments on RB Draft 2007 Zone 3 Review of monitoring data

General comments:
Throughout the document, the symbol for µ appears to be a u. It should be the former.

Page Z3-1. The presentation of the pesticide data by total pounds is misleading since a large portion of the applications are inert compounds that should not be included. The current description suggests that in some crops in some locations, between 100-150 lbs/acre of pesticides are applied. This does not take into account a product's water solubility, it's relative toxicity to aquatic organism (if any) and whether applications of the products listed have the potential to reach waters of the state.

Page Z3-4, paragraph 3. In this paragraph and throughout the document, the focus is on the worst exceedances. For instance, the description of the fathead minnow tests starts with a statement that only 2 of 13 tests caused mortality above 50% but the remainder of the paragraph focuses on these two samples. There is no discussion of the remaining 11 tests or the level of mortality in those tests. In some tests, the survival of the minnows in the test water was at or above 90% that of the control samples; i.e. the death of a single minnow in a couple of the replicates could result in a statistically significant difference between the sample and the control. While statistically correct, the biological significance an 8% decrease in survival (for example) is questionable. The EPA manual addresses this issue but the ILP chose not to follow the manual in this regard. As a result very small differences in survival between controls and samples are treated in the same way as 0% survival. We recommend that the toxicity section should have an introduction that addresses the levels of toxicity and the differences in the interpretation of the results between the EPA manual and the ILP. Additionally, there should be some mention of those samples with very low mortality to balance the implication that levels of toxicity are severe. The same comment is applicable to both the *Ceriodaphnia* and the *Selenastrum* results.

Page Z3-4, paragraph 5. There is a statement that no correlations have yet been drawn between observed toxicity of fathead minnows and discharges. I believe that statement should be qualified by stating that "because of the small number of samples toxic to minnows within each monitoring program, sample sizes are too small to allow any correlations to be drawn between …". Currently, the statement does not provide any reason allowing the conclusion to be drawn that the lack of correlation is because the monitoring programs do not want to understand what correlations exist.

Page Z3-5, paragraph 1 (first complete paragraph). We believe the first sentence should be deleted. The explanation later in the paragraph is sufficient to allow the reader to adequately assess whether the results of the toxicity were related to pesticides. But, because Phase II and Phase III TIEs were not performed on a majority of the samples, the definitive statement that pesticides are the cause cannot be made. The results of the Phase I TIE indicates that the cause of toxicity is a function of nonpolar organics which may be metabolically activated compounds, but this statement is consistent with pesticides as a cause, not definitive. If it was definitive, there would be no need to run Phase II and Phase III TIEs and those tests would not exist.

Page Z3-5, paragraph 2. At 3 locations in this paragraph, LC50 values are provided without attribution. There should be a reference provided for each, and if the species on which the LC50 was developed was not C. dubia, that should be noted as well. We are disputing the LC50 values, but all readers should be able to go back to the original work to review development of the value.

Page Z3-5, paragraph 2. The end of the paragraph reports that a series of pesticides detected at least once in Ceriodaphnia-toxic samples were not individually responsible for the toxicity (based on the LC50 values) but could have contributed to toxicity through additive effects, especially for samples in which non-polar organics were identified as the cause of toxicity. This statement can be interpreted as stating that all additional toxic samples had two or more chemical detections and toxicity was a result of additive or synergistic effects. This statement should be qualified by providing data on the number of toxic tests that also had 2, 3, 4, or more chemical detections, and the concentrations of the chemicals in the samples. Also, there has not been sufficient research performed to understand the additive or synergistic potential for all of the various combinations of these compounds in the samples. Qualifying the statement by stating that it is possible leaves out the qualification that it is also not possible. The reviewer should state what is known and can be supported scientifically, not what is interpreted as "possible."

Page Z3-6, paragraph 5. The last sentence states that in samples with no algal toxicity, there were detections of herbicides that were at non-toxic levels or that antagonistic effects were in play. It's not clear what "in play" means, nor is it clear what "antagonistic effects" are. Both should be defined or explained thoroughly or the sentence should be deleted. It's clear that if herbicides were detected at levels below those known to reduce growth, and no reduced growth was observed in the toxicity test, the reduced levels of herbicides were insufficient to cause a reduction in growth. The implication in the last sentence is that they might have caused reduced growth but antagonistic effects prevented it. One of the implications is that nutrients may have stimulated growth which compensated for the effects of herbicides, but as stated in the next paragraph, the joint effects of nutrients and herbicides is not understood. Speculation that the RB understands the joint effects sufficiently to make the statement in the previous paragraph should not be included in this review.

Page Z3-7, paragraph 4. The first sentence should clarify what is meant by magnitude of certain hydrophobic pesticides. Does magnitude equate with concentration in the sediment? This section should also address the metals in the sediments.

Page Z3-8, first partial paragraph. There is a statement that says that in 33% of the toxic sediment samples, the cause could not be explained but could possibly be a result of other pesticides not measured but present in toxic amounts. This statement cannot be supported by the monitoring data and should be deleted. It is entirely speculative and not an interpretation of monitoring data.

Page Z3-8, paragraph 2. The first sentence indicates that DDT is still used in other countries, which is true but irrelevant to the current review. The beginning and ending clauses in that sentence are true.

Page Z3-12, Table Z3-4. This table addresses chlorpyrifos only and should be re-titled as such.

Page Z3-13, paragraph 2. The reference for the diazinon LC50 should be provided. Also, the water quality objective should be 0.16 µg/L, not 0.10 µg/L (*Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control of Diazinon and Chlorpyrifos Runoff into the Sacramento-San Joaquin Delta*, June 2006 Final Staff Report, pgs 25-26).

Page Z3-13, paragraph 3. The statement is made that DDT and DDE are trace contaminants in dicofol. DDT is used in the manufacture of dicofol and the EPA removed the registration when it appeared that the amount of DDT in the final product was too high. The registration was reinstated when it was demonstrated that a technical grade dicofol could be produced with a 0.1% (one tenth of one percent) DDT contamination level. DDE, a breakdown product of DDT, would not be expected to be found as a contaminant in the manufacturing process. Finally, given that the percentage of DDT in dicofol is 0.1%, the probability of finding DDT in a water body that was a result of contamination of dicofol would be very small, and would necessarily be accompanied by detections of dicofol in the water (chemical properties of the two compounds are similar). Dicofol was never detected suggesting that the detections of DDT and DDE were not a result of dicofol applications, but rather legacy applications of DDT during the last century.

Page Z3-16, first partial paragraph. The reference for the simizine growth effect should be provided.

Page Z3-16, paragraph 1. The discussion of dimethoate includes an objective based on a reference to 1/10 of the LC50 of a sensitive species. The reference should be provided as should the species used in the test. The test organism could be included parenthetically with no need for any additional text. This comment applies throughout the document to all uses of the 1/10 of the most sensitive species technique for developing a numeric objective.

Page Z3-17, paragraph 4. The preliminary report provided by the ESJWQC in November 2006 indicated that human fecal contamination was the most probable cause of the high coliform counts in surface waters. These results should be included in the current review because they are critical in the interpretation of the *E. coli* data submitted by the coalitions.

Page Z3-17, paragraph 5. This paragraph speculates on the potential causes of bacterial contamination but the speculations are not based on interpretations of the data. If the document is to be a review of monitoring data, this paragraph should be deleted.

Page Z3-19, first partial paragraph. The second line identifies Prairie Flower Drain and Hilmar Drain as the source of the majority of the EC/TDS exceedances on the east side of the river. It

should be pointed out that these sites are located very close to the SJR and overly a subsurface geology that is high in EC/TDS EC/TDS.

Page Z3-19, paragraph 3 under Summary section. No nutrient data were presented and this paragraph should be deleted. No exceedances of nutrients, with the exception of the single ammonia exceedance, have been reported to date and the tone of the paragraph is that nutrients are necessarily problematic, including a threat to human health, in Zone 3. No monitoring data are reported to substantiate these claims.

Section H: Closing Summary

General comment:
This section was difficult to understand. It seems to have multiple authors because the interconnections between sections and paragraphs are weak. For example, the 4th and 5th paragraphs on the first page are restatements of each other and one paragraph could be eliminated. Also, there appears to be several references to aspects of the ILP that were not included in the text of the monitoring report.

Page 2, paragraph 1. The last sentence indicates a summary of data gaps was previously discussed in the section, but no summary of data gaps was included. As a result, it is difficult to determine whether the four steps outlined below the paragraph will address data gaps.

Page 2, paragraph 3. The first sentence is unclear. It states that "There are constituents associated with irrigated runoff that will not be easily answered, and will require a concerted effort on the part of many agencies and groups, scientific studies, and perhaps the development of new management practices with different approaches to protecting water quality." It's not clear what this sentence is stating. The paragraph goes on to state that a CV Salinity Management Plan is being developed that will affect the ILP, but no details are provided.

Page 3, paragraph 1. The first sentence implies that if data represent a broad geographic area, management practices implementation is required. No justification for this statement is provided. The last sentence states that "To address the magnitude of this potential concern," but it is not clear what the antecedent of "this" is, or what is meant by "potential concern".

Page 3, paragraph 2. The first sentence states the obvious, and it would not be cost effective for any grower to implement management measures that had small or no potential to improve water quality.

Page 3, paragraph 3. It's not clear what an "identified" time schedule is. How does this differ from a simple time schedule that identifies appropriate intervals?

Page 3, paragraph 4. The meaning of the statement "Construction of physical management practices may be one measure of implementation effectiveness" is unclear. The paragraph goes on to state that the ultimate measure effectiveness of management practices is improved water quality. However, it then states that since this may take many years to identify, it's important to

measure management practice effectiveness through runoff or localized monitoring where appropriate. It appears that the paragraph is trying to state that the number of constructed facilities could be used as a surrogate for improved water quality based on the assumption that facilities such as sediment basins can reduce inputs to streams. While physical facilities may reduce inputs of specific constituents (e.g. sediment basins and sediment), the statement ignores numerous non-construction approaches to management of applied constituents that can be very effective in reducing inputs to streams. These approaches should not be ignored, nor should the Regional Board believe that only constructed management facility approaches can be effective.

COMMENTS FROM MARSHALL LEE, DEPARTMENT OF PESTICIDE REGULATION

From: Margie Lopez-Read
To: mlee@cdpr.ca.gov
Date: 7/3/2007 7:37:13 PM
Subject: Re: Reconsideration of Earlier Comments on Monitoring Review

>>> "Marshall Lee" <mlee@cdpr.ca.gov> 07/03/07 5:16 PM >>>
Margie:
In my comments to you regarding the draft "2007 Review of Monitoring Data," I questioned the rationale for using once-a-month sampling to determine compliance with water quality triggers that reflect numeric water quality objectives for chronic (4-day average) exposures. After I sent my comments, I thought about it a little more and consulted with Frank Spurlock, one of our statistically inclined staff. He reminded me that when he examined data from year-long monitoring studies of diazinon and chlorpyrifos in the San Joaquin Valley in the 1990s, he analyzed for autocorrelation among data. He found that data collected on consecutive days were autocorrelated; high concentrations tended to be associated with high concentrations on preceding or subsequent days. This suggests that it may not be inappropriate to use monthly grab samples as an indicator for exceedances of numeric water quality objectives for 4-day average exposures.

You can access Frank's analysis at http://www.cdpr.ca.gov/docs/empm/pubs/ehapreps/eh0101.pdf; the section on autocorrelation analyses is on page 13 and in figures 5 and 6. It may help support your decisions on which water quality triggers to use in the ILP.

I hope this is helpful to you and your staff. Feel free to contact me if you have any questions.

Regards,
Marshall

Marshall Lee
Environmental Monitoring Branch
Department of Pesticide Regulation
1001 I Street, P.O. Box 4015
Sacramento, California 95812-4015
ph: (916) 324-4269
fax: (916) 324-4088
mlee@cdpr.ca.gov

CC: kgoh@cdpr.ca.gov,jsanders@cdpr.ca.gov,fcspurlock@cdpr.ca.gov

COMMENTS FROM MARSHALL LEE, DEPARTMENT OF PESTICIDE REGULATION

From: Margie Lopez-Read
To: mlee@cdpr.ca.gov
Date: 6/28/2007 6:45:19 AM
Subject: Re: Monitoring Data Review

Marshall -
thank you for your thoughtful comments. We intend to make any necessary changes this week and early next week, and will post the revised document on the web. I have always appreciated your input in our Program.
margie

Margie Read, REAII, Chief
Monitoring and Assessment Unit
Irrigated Lands Conditional Waiver Program
Central Valley Regional Water Quality Control Board
11020 Sun Center Drive Suite 200
Rancho Cordova, CA 95670-6114

phone: 916-464-4624
fax: 916-464-4780
>>> "Marshall Lee" <mlee@cdpr.ca.gov> 06/27/07 9:05 PM >>>
Margie:
Thanks for the opportunity to review the draft 2007 Review of Monitoring Data. I have a few comments.

I'll start with Appendix 1, since it contains the trigger limits that are compared to the data for the various zones. Of course, how you respond to these comments may affect your analyses in Section II.

1) The triggers for chlorpyrifos and diazinon are water quality objectives for chronic exposures, as detemined by the 4-day average concentration. The monitoring schedules described in the MRP are not designed to determine compliance with those objectives. If the chronic objectives are used, rationale, perhaps in Section 1 or as a footnote in Appendix 1, should be provided.

2) Similarly, the triggers for cypermethrin and methomyl are based the Department of Fish and Game's (DFG's) recommended 4-day average concentrations, even though DFG derived 1-hour average concentrations as well. (The recommended 1-hour average concentrations and 4-day average concentrations for carbaryl are the same [2.53 ug/L]). If using chronic criteria over acute criteria is favored, additional rationale would be helpful given the MRP's monitoring schedule.

3) The Basin Plan does not have numeric water quality objectives for malathion, so the "standard type" designation of "numeric" seems incorrect. Performance goals should not be characterized as a numeric standard since they are not included in the water quality objectives section of the Basin Plan*they are described in the Basin Plan's implementation section as performance criteria of acceptable management practices. Additionally, "0 ug/L" should not be characterized as a numeric standard either: It's the assumed numeric result of the prohibition of discharge, which is part of the

overall implementation strategy to bring concentrations down to levels that approach compliance with water quality objectives. It has little value as a "water quality trigger" because, unlike the other triggers, there is no toxicological basis for it to be used for the protection of beneficial uses or compliance with the toxicity objective. As an alternative, consider a water quality trigger of 0.1 ug/L (U.S. EPA's National Ambient Water Quality Criterion) as an interpretation of the narrative toxicity objective.

This comment is also relevant to the methyl parathion and carbofuran triggers, which also have performance goals listed in the Basin Plan's implementation section. For methyl parathion, consider a trigger of 0.08 ug/L (DFG's interim water quality criterion); and for carbofuran, consider a trigger of 0.5 ug/L (DFG's interim water quality criterion).

4) Section I, Page 7, Comparison to Standards: It will probably not be apparent to many readers why MCLs and other public health-related values will be used as water quality triggers in waterways that are not intuitively considered drinking water sources (MUN). A fuller explanation of your generalizations and assumptions would be helpful. Also, to allay concern that drinking water may be unhealthful due to pesticides found in MUN-designated waters, it would be valuable to state that MCLs (as defined in CCR Title 22) for pesticides are fully protected.

5) Similarly, it would valuable to state, perhaps in Section I, that exceedances of water quality triggers do not necessarily equate to toxic conditions or impairments of beneficial uses. Water quality criteria, for example, are protective by design and cannot be equated with thresholds of toxicity.

6) Section II: When comparing pesticide use between years, as you did when describing the Shasta/Tehama Subwatershed in Zone 1, use caution when using the terms "decreasing" and "increasing." They suggest trends that cannot be determined with two years data.

Thanks for considering my comments. I look forward to our continued collaboration.
Marshall

Marshall Lee
Environmental Monitoring Branch
Department of Pesticide Regulation
1001 I Street, P.O. Box 4015
Sacramento, California 95812-4015
ph: (916) 324-4269
fax: (916) 324-4088
mlee@cdpr.ca.gov

>>> "Margie Lopez-Read" <MLopez-Read@waterboards.ca.gov> 6/13/2007 5:24 PM >>>
TIC Members, ILP Stakeholders and Interested Parties -
If you are receiving this email, it is because you have participated in the TIC and Stakeholder meetings for the Irrigated Lands Conditional Waiver

Program, and in discussions regarding the developing monitoring and reporting program.

Attached are copies of the Draft 2007 Review of Monitoring Data for the Irrigated Lands Conditional Waiver Program. For the purpose of this Review, the Central Valley has been divided into four Zones, as described in the introduction. There are several maps that have been developed for each Zone, but these are not included with this email due to their size. If you would like to see copies of the maps, please let me know. When the Review is finalized, it will be posted on the Irrigated Lands website in complete form. Additionally, a Monitoring Workshop to discuss the Review is scheduled for the Regional Board meeting which will be held on August 3rd or 4th.

At this point, the review is still in draft form, and your thoughts and comments will need to be received by 27 June 2007 in order to be considered for the final Review. Please let me know if you have any additional questions.

Best Regards -

Margie

Margie Read, REAII, Chief
Monitoring and Assessment Unit
Irrigated Lands Conditional Waiver Program
Central Valley Regional Water Quality Control Board
11020 Sun Center Drive Suite 200
Rancho Cordova, CA 95670-6114

phone: 916-464-4624
fax: 916-464-4780

CC: kgoh@cdpr.ca.gov,jsanders@cdpr.ca.gov

COMMENTS AND WATER BOARD RESPONSE TO COMMENTS
2007 MONITORING REPORT REVIEW

The Water Board staff appreciates the many detailed comments provided by various stakeholders who have previewed the Draft 2007 Monitoring Report Review (Review). The response to comments provided below address only those comments which *did not* result in changes to the Review, or for those that did not seem to request a change.

A. RESPONSE TO COMMENTS RECEIVED FROM WILLIAM J. THOMAS AND THE SOUTHERN SAN JOAQUIN VALLEY WATER QUALITY COALITION

1. COMMENT #1: "It is difficult for us to review and comment on data which had been accumulated from UC, Regional Board and SWAMP monitoring. The Coalition data was collected as a result of agreed upon MRP protocols, from monitoring stations agreed to by each the coalitions and Regional Board, and which was collected on uniform schedules. None of these scientific disciplines are true of the other data collections which did not have such agreed to and vetted protocols or monitoring station selections. Some of that data was from locations influenced by other sources, was taken at different frequencies and otherwise is not of the quality as Coalition derived data."

RESPONSE: All monitoring for the Irrigated Lands Program is required to follow the Quality Assurance Program Plan, which originated from Surface Water Ambient Monitoring Program (SWAMP) guidelines. This includes the monitoring conducted by Regional Water Board (staff), the contract work through University of California and the SWAMP program itself. Coalitions have also been required to comply with SWAMP-comparable QAPP. In those cases when it was clear that quality assurance protocols were not followed (e.g., field parameters, such as pH measured in the laboratory), staff did not include those data.

It should be noted that combining various water quality data that has been collected and analyzed consistent with a QAPP is a common practice and is an established State-wide policy (http://www.waterboards.ca.gov/tmdl/docs/ffed_303d_listingpolicy093004.pdf) for 303(d) listing purposes. Finally, if the Coalition is having difficulty in reviewing the data, Water Board staff are available to meet with Coalition staff to address any areas of potential confusion.

2. COMMENT #2: "We concur that our Tulare Lake Basin hydrology is significantly different than the balance of the Region and our data is to be compared only to our Tulare Lake Basin, Basin Plan. We do not have the 303d, TMDL, Delta, fish, drinking water, etc. issues in our Region as are associated with the other sub-basins."

RESPONSE: Each of the zone discussions used in the Review have addressed the unique nature of the watersheds. The Zone 4 review in particular, which includes the SSJWQC, addresses the monitoring results through the lens of the Tulare Lake Basin Plan. Although the Zone 4 does not have the quantity of CWA 303(d) listings as other Zones, there are several listed water body segments in the Tulare Lake Basin, and as a result, the development of TMDLs will be scheduled. Furthermore, beneficial uses to support fish as well as drinking water are identified in the Tulare Lake Basin Plan, including Kings, Kaweah, Tule and Kern Rivers.

3. COMMENT #3: "The criticism as to the 'scarcity of monitoring data' from our sub-basin is a value judgment and not a report of monitoring data. The lower San Joaquin Valley is uniquely dry, flat, not characterized by water drainage systems, has limited run-off and what drainage there is goes into farming enterprises in the historic lake bed, and is consumed through evapotranspiration. The Regional Board approved the quantity, location and frequency of the monitoring stations and monitoring protocol. If there is a lack of water the San Joaquin Valley itself cannot be blamed any more than the Region Board which approved the MRPs and sites can be blamed.

RESPONSE: The Review was written to provide a data summary and an evaluation of the monitoring, including a baseline assessment. There was no intent to evaluate compliance or

coalition performance, so no criticism is intended. Relative to the other Zones, a limited amount of data is available for Zone 4 as discussed in the Review: "There can be a variety of reasons for this scarcity of monitoring data, including limitations caused by natural characteristics such as soil texture, low rainfall, and snow pack, as well as the different interpretations for monitoring programs utilized by Coalitions in Zone 4." Staff recognizes the challenges posed by the unique watershed characteristics in Zone 4, and also believes that a collaborative approach to monitoring design will produce sufficient information for a more complete assessment.

4. COMMENT #4: "The report overly focuses on pesticides and the extent of agriculture's reliance on them for pest damage prevention. There are many factors which may lead to water contamination – pesticides are but one. As indicated below, our pesticide monitoring does not bear out significant toxicity in our zone. The South San Joaquin Coalition data shows no pesticide or nutrient exceedance."

RESPONSE: The Review includes a discussion of aquatic and sediment toxicity, salinity and data gaps as well as a summary of the limited amount of pesticide data for Zone 4. Additionally, the quantity of pesticide monitoring data from Zone 4 is minimal, as compared to the data available to Staff for other zones. The more limited quantity of pesticide monitoring data, both in frequency and in variety of pesticides tested, is unfortunate, considering the quantity of pesticides applied in Zone 4. Staff anticipates that current implementation of the second phase of Coalition monitoring which, when completed, will provide the full suite of metals, pesticides and nutrients, and will provide valuable information about other possible sources of water contamination.

5. COMMENT #5: Table Z4-3 makes a point of 'mortality in multiple species', however, in each instance algae toxicity is one such species. As the Regional Board staff recognizes through its joint coordination with the South San Joaquin Coalition specific testing was engaged in source water which confirmed that algae toxicity is not as a result of agriculture run-of. Consequently, a combining of these data may have no basis."

RESPONSE: Staff is aware that the SSJWQC has collected algae toxicity tests at two monitoring sites on the Kings River that are believed to be above any irrigated agriculture land use, and that these two sites indicated the presence of algae toxicity. However, there has not been any formal submittal of the data with appropriate assessment and/or statistical comparison to other monitoring sites along the Kings River. Since the Regional Board does not have data demonstrating that non-agricultural sources are causing the algal toxicity, the observation of "mortality in multiple species" is accurate. Furthermore, there has not been any similar type of source monitoring that the staff is aware of for the Kaweah, Tule and Kern Rivers, or any other water bodies in the Tulare Lake Basin area.

6. COMMENT #6: "The Flathead Minnow Chart (Z4-4) does not identify the monitoring site for some of the coalition reports nor does it identify the year. It shows only two identified Coalition sites (Kings Lemoore and Tule North Fork) where two samples had a 20-50% minnow mortality, thus not triggering any TIE follow-up, therefore no cause conclusions can be made. The observation is made because there is more minnow than Ceriodaphmia toxicity it could be a result of ammonia. This appears to be speculation particularly in light of the absence of high levels of nitrogen in the nutrient data.

RESPONSE: The comment seems to state that some Coalition monitoring sites are not listed in Table Z4-4. This is intentional, as only sites that indicated some level of fathead minnow toxicity

are listed on the Table. Sites where no fathead minnow toxicity occurred are not listed. It should be noted, however, that the Table also lists four test results (three of which were Coalition monitoring sites) that exceeded the 50% criteria for conducting a TIE. Figure Z4-4 does show all of the Coalition and Supplemental monitoring sites for fathead minnow, including those for which no toxicity was found.

Primarily because nutrient monitoring (which includes nitrates and ammonia) for coalitions began recently with irrigation season 2006, minimal nutrient data were available to the Staff for the Review. It is anticipated that future monitoring summaries will include more information on nutrients which could help explain issues of minnow toxicity, low dissolved oxygen, or other concerns. The SSJWQC also should be advised that nitrogen is toxic to fathead minnow only at very high levels, but low levels of ammonia are very toxic to the same species. Results for nitrogen should not be confused with those for ammonia.

7. COMMENT #7: Only two South San Joaquin Coalition sites demonstrated Ceriodaphmia dubia toxicity (Kings Manning and Stone Corral) and there was no TIE analysis. We found the reference to TIEs from other programs to be of interest and we will refer to that in future data analysis, however, our pesticide monitoring did not find these chemistries.

RESPONSE: It should be noted that two of the test results for *Ceriodaphnia dubia* that were conducted at coalition monitoring sites exceeded the 50% mortality which would trigger a TIE, and staff agrees that none was conducted, although it was required. One of these was at the Stone Corral site (zero percent survival) referenced in the comment letter, the other was at a Westlands Coalition monitoring site. It should also be noted that only minimal pesticide monitoring data have been generated for Zone 4, in large part due to the fact that Phase II of the Coalition MRP (which includes pesticides, nutrients and metals) began only recently with irrigation season 2006. The fact that the MRP Order has divided the monitoring program into two phases, with Phase I being for toxicity testing and Phase II to include pesticides and metals is a complication to the identification of the causes of toxicity. In the absence of concurrent chemical and toxicity analyses, identification of toxicant(s) becomes more difficult.

8. COMMENT #8: “In the other zone reports there were separate sections regarding pesticides. This was not the case regarding our zone. There were no pesticide exceedances found in our zone and this should have been equally presented.

We join many of the comments made by the other zones, including the point that the report seems to focus on critical data rather than being truly objective. Data of a non-exceedance is equally scientific and important as that of an exceedance. The report should also guard against reference to ‘detections’ and stay focused only on the ‘exceedance’ threshold. Another term of a ‘detection’ is a ‘lawful discharge’.”

RESPONSE: This comment seems to be inconsistent with Comment #4, which refers to an overemphasis on pesticides. The Review for Zone 4 does include a separate section on Pesticides, immediately following the discussions on water column and sediment toxicity. The section also includes Table Z4-8, Pesticide Tests and Results Greater than Trigger Limits, as well as Figure Z4-8, Monitoring Results for Pesticides. Staff agrees that it is also important to identify areas where there were no pesticide exceedances, and Figure Z4-8, in particular, identifies the monitoring locations that did not have exceedances.

Staff does not agree that pesticide detections should not be referenced, due to the fact that multiple pesticides at levels below trigger limits could have an additive and/or synergistic effect on aquatic species and could help explain toxicity test results.

9. COMMENT #9: "The last sentence demanding 'more frequent and comprehensive monitoring,' is not a data report but a subjective opinion as to what may occur in future discussions between the Board staff and the Coalitions and amendments to the existing waiver, Regional MRP, and Coalition MRP."

RESPONSE: It appears that the Comment references a sentence that is located in the separate discussion of Zone 4 entitled 'PESTICIDES'. Staff agrees that there are alternatives to developing an understanding of the presence of pesticides and their impact to water quality, which would not necessarily be limited to more monitoring. The sentence will be modified accordingly.

10. COMMENT #10: "The summary section is not a data analysis, is disjointed, has no flow, and appears to be a collection of various staff speculations. The summary should merely be a data summary, if necessary whatsoever.

RESPONSE: Staff appreciates the comment.

B. RESPONSE TO COMMENTS RECEIVED FROM TINA LUNT, SACRAMENTO VALLEY WATER QUALITY COALITION (SVWQC)

1. SVWQC COMMENT: "ES Number 3: '*The Central Valley Water Board has tentatively identified a process by which it could set forth the beneficial uses by water body according to existing Basin Plan requirements, and thereby identify the limits to be used in implementing the water quality standards.'* Although it is not clear exactly what this process is, we applaud the effort to establish a process. However, it is not sufficient only to identify beneficial uses. The Board also needs to identify valid and appropriate numeric objectives to evaluate water quality supportive of those beneficial uses. The current process of using the lowest of a variety of unvalidated 'triggers' does not meet consistent, rigorous scientific standard for setting water quality objectives, and it does not appear to comply with Porter-Cologne requirements."

RESPONSE: Staff does not agree that there is a "current process" that uses "the lowest of a variety of unvalidated 'triggers'" which do not meet "consistent, rigorous, scientific standards for setting water quality objectives", and that "does not comply with Porter-Cologne requirements." Staff has initiated a process which it has discussed with the ILP Technical Issues Committee. The process will utilize existing Basin Plan requirements and set forth the beneficial uses by water body and identify the limits in the MRPs to be used in applying the water quality standards in the different water bodies. It also sets forth the option for stakeholders to provide additional information to the Central Valley Water Board relevant to beneficial uses, numeric values to apply narrative objectives, and applicable analytical methods and validity of technical studies. This is entirely consistent with the Board adopted *Policy for Application of Water Quality Objectives,* found in Chapter IV of the Basin Plan, which states in part:

> "To evaluate compliance with the narrative water quality objectives, the Regional Water Board considers, on a case-by-case basis, direct evidence of beneficial use impacts, all material and relevant information submitted by the discharger and other interested parties, and relevant numerical criteria and guidelines developed and/or published by other agencies and organizations... In considering such criteria, the Board evaluates

whether the specific numerical criteria, which are available through these sources and through other information supplied to the Board, are relevant and appropriate to the situation at hand and, therefore, should be used in determining compliance with the narrative objective."

2. SVWQC COMMENT: "ES Number 6: '*data that is not captured includes occasions when drainage occurs from water that is applied for other purposes, such as pre-planting application, post-harvest application, and application of water for frost protection.'* This describes specific conditions that are not currently targeted for sampling by the ILP MRP. The statement is accurate but fails to note that these conditions are not common, account for only a very small percentage of runoff and drainage, and are unlikely to have region-wide water quality impacts."

RESPONSE: The intent of the Review is to identify data gaps which make it difficult to develop an accurate characterization of the impact of irrigated agriculture on water quality. If certain agricultural practices (eg: irrigation for frost protection) are not being addressed by the ILP MRP, then that is worth noting. The comment that the "conditions are not common, account for only a very small percentage of runoff and drainage, and are unlikely to have region-wide water quality impacts." Is speculative and remains to be verified throughout the Central Valley. Region-wide impacts are not necessary for a discharge to be in violation of water quality standards.

3. SVWQC COMMENT: "Page Z1-17. '*Shasta/Tehama Subwatershed: Site No. 11 (Burch Creek at Woodson Avenue Bridge) had multiple toxic results for Ceriodaphnia and one measured value of diazinon over the Basin Plan Objective.'* It should be explained that upon further investigation, results were likely due to non-agricultural sources (e.g., I-5, and truck stop and/or a nearby landfill).

RESPONSE: Staff understands that SVWQC has moved the Burch Creek at Woodson Avenue Bridge monitoring site so that it is now upstream of the I-5 bridge, instead of downstream. However, there has not been sufficient time for the monitoring at the new site, nor has a technical evaluation been provided, that could help eliminate irrigated agriculture as a source of exceedances identified at the previous site. Staff welcomes more information that will help evaluate the cause of the previous exceedances.

4. SVWQC COMMENT: "Page Z1-21. It should be noted that toxicity was greater than 20% in only 7 out of the 17 statistically toxic samples (7.6% of all samples), and at only 5 sites (10% of sites). The relative frequency of Ceriodaphnia toxicity was much lower (approximately half) than of the frequency of chlorpyrifos and diazinon exceedances. This suggests that the chlorpyrifos and diazinon exceedances appear to overestimate invertebrate toxicity risk by apx. 50%."

RESPONSE: It appears that the comment is addressing the paragraph in Zone 1 summary regarding sediment toxicity frequency for the first sentence in this comment, and is then addressing the paragraph on pesticide results that immediately follows that sediment toxicity discussion. It is important to recognize that the 20% mortality for toxicity is a trigger level that is utilized by the Coalitions to determine if re-sampling is required or not. It is possible for a toxicity test result that is less than or equal to 20% mortality to be statistically significant, thereby meeting the definition of toxicity and to be considered an exceedance.

The comparison of *Ceriodaphnia dubia* test results to the presence of chlorpyrifos and diazinon may be a mechanism to understand water flea toxicity. However, a direct comparison of the

number of acute toxicity test results to the number of pesticide results that exceed a chronic limit is not a direct and meaningful comparison. If the toxicity tests included longer testing for chronic effects, the relationship might have more significance. In addition, depending on the degree a water sample exceeds a water quality objective, one may or may not expect to observe concomitant toxicity to aquatic test species. This is because water quality objectives are set below toxic thresholds to protect all aquatic species not to predict toxic effects on a particular test species.

5. SVWQC COMMENT: "Page 3, Prioritization of Implementation, Second Paragraph. The first sentence states the obvious, and it would not be cost effective for any grower to implement management measures that had small or no potential to improve water quality. This paragraph also makes on think that there are no management practices in place."

RESPONSE: The statement is intended to reflect the need to prioritize based on the greatest potential to improve water quality, in preference to different considerations, such as ease of implementation, cost of implementation, or other. It is clear that there are management practices being implemented; it is not clear to Staff where this is occurring, or how often it is occurring, or the if implementation is improving water quality.

6. SVWQC COMMENT: "Page 3, Trend Analysis, Paragraph 5 and 6. It should be noted that SVWQC has continued to monitor several 'core sites' at the request of the Water Board staff.

RESPONSE: The development of core monitoring sites by SVWQC is so noted, and the potential to evaluate trends is applauded.

7. SVWQC COMMENT: "Aluminum, antimony, chromium, hexavalent chromium and mercury are not ILP parameters and should be deleted from the Trigger Limits table."

RESPONSE: The Review is a summary of all of the monitoring data that has been submitted, and in many cases metals results are submitted as a complete scan, whether or not they are part of the required analytes on the MRP list. Some of the listed analytes may have been part of that complete scan, or they may have been part of the UCDavis monitoring, which was not excluded to the parameters listed in the ILP Coalition MPR. Hexavalent chromium is not part of a multi-metal laboratory scan, and was not tested for in ILP monitoring, and that is now removed from the list, per commenters request.

8. SVWQC COMMENT: "Basin Plan designated beneficial uses (e.g., WARM and COLD) should be all caps."

RESPONSE: There is no requirement to capitalize beneficial uses where acronyms are not utilized.

9. SVWQC COMMENT: "Public Health Goals should not be used as a regulatory 'trigger' for human health benefits when there are legally valid MCLs for this purpose. This also applies to USEPA IRIS Reference Dose and Cal/EPA Cancer Potency Factors. These are not effect threshold values. Additionally, they are intended to be levels safe for long-term daily human consumption of treated drinking water, and are clearly not valid to be used as a 'never to be exceeded' value in untreated surface water with a low potential for incidental human exposure. If they must be used at all as 'triggers', they should be compared to long-term average or median water quality characteristics when evaluating potential risks.

RESPONSE: When an MCL and advisory concentrations (such as public health goals, IRIS Reference Doses, etc.) both exist for the same constituent dealing with the same human health impact, it is usually most appropriate to consider the MCL when evaluating potential human health impacts of that constituent. The Zone Report is strictly a presentation of data. MCLs, PHGs, and other regulatory standards and advisory guidance are included to assist reviewers in understanding the significance of the data, but the Zone Report does not conclude that any specific concentration is appropriate or not appropriate for a given sampling site. As discussed in earlier responses, the Board is initiating a process to better define the beneficial uses and water quality objectives that apply to Central Valley water bodies.

Also, a single or relatively few sample results may not adequately determine "compliance" with an MCL or other concentration deemed appropriate for long-term human consumption. Many factors may need to be considered, including the need for additional sampling. However, where monitoring occurs with low frequency and calculation of long-term averages is not possible, the Regoinal Board must make the assumption that measured concentrations may, in fact, have occurred over long periods. To do otherwise would not provide prudent protection of beneficial uses. The fact that limited sampling data exists is considered in determining the Regional Board's response to the data, including possibly determining that follow-up monitoring is needed so that long-term water quality conditions can be evaluated.

10. SVWQC COMMENT: "Figure Z1-3 through Figure Z1-6. In the summary charts, the y-axis should be the percent of toxic samples to allow comparison between species results, and to provide perspective on the frequency of toxicity. Showing only the total number of toxic results is misleading because it provides no perspective without the total number of samples evaluated. The total number in each category can be added to the charts without affecting the meaning or purpose of the graph. In the map, toxicity should also be presented as percentages, not absolute numbers."
SVWQC COMMENT: "Figure Z1-7, Pesticides. In the summary charts….. (similar to above comment on toxicity charts)
SVWQC COMMENT: "Figure Z1-8, *E-coli*. In the summary charts…..(similar to above comment on toxicity charts)

RESPONSE TO THE ABOVE THREE COMMENTS: Different types of information are presented when discussing percentages as opposed to absolute numbers, and it is difficult to present all of the information in one chart. For this reason, the Review does attempt to present the information in a variety of ways, through the summary tables, in the graphs and maps. This allows the reader to have access to multiple aspects of the data evaluation.

C. RESPONSE TO COMMENTS RECEIVED FROM TIMOTHY JOHNSON, CALIFORNIA RICE COMMISSION (CRC)

1. CRC COMMENT: "Page Z2-12. Table Z2-6. Summary of Detections of Pesticides Under Basin Plan Prohibition. Please revise the table to correctly reflect the prohibition of discharge for molinate and thiobencarb. Please omit any detection for molinate of 10.0 micrograms per liter of water (ug/L) or less, and thiobencarb of 1.5 ug/L or less."
CRC COMMENT: " Page Z3-12. (similar to above comment)
CRC COMMENT: "Page Z3-14. (similar to above comment)
CRC COMMENT: "Zone 1:Pages A-3, A-5, A-7 (similar to above comment)

RESPONSE TO THE ABOVE FOUR COMMENTS: The CRC has very appropriately identified to Staff that the Basin Plan prohibition of discharge for these five pesticides does not apply to

members of the California Rice Commission, to which Basin Plan performance goals are applied. Molinate and thiobencarb are used exclusively on rice crops in Zones 1, 2 and 3 and therefore Staff corrected the Zone reports to compare the results to Basin Plan performance goals, which for molinate is 10.0 ug/L. However, the secondary MCL of 1.0 is used for thiobencarb in Zones 2 and 3, due to the fact that there is no information that indicates that the sites are not on waterbodies tributary to MUN waterbodies. Staff has reworked the sections in Zones 2 and 3 that address the Basin Plan prohibited pesticides, and a few small changes in the tables that tally exceedances. Additionally, trigger limits listed in the tables for methyl parathion, malathion and carbofuran have been changed from 0 ug/L to ND (non detect) for non-rice applications.

2. CRC COMMENT: "Attachment B. Crop and Pesticide Use Zones 1,2, 3. Butte and Colusa Counties. The report lists fluridone (CAS No. 59756-60-4) as a rice pesticide. In California, fluridone uses exist for landscape maintenance, regulatory pest control, rights of way, structural pest control and water areas (Department of Pesticide Regulation (DPR), Pesticide Use Report (PUR) 2004, 1005). No crop uses exist in California even though registrations exist on several commodities, excluding rice (Title 40 Code of Federal Regulations Section 180.420. Fluridone is not a rice pesticide because no residue tolerance (40CFR Section 180.420) exists resulting in no registration of this produce on rice.
Please include propiconazole because it is a combination product with trifloxystrobin in the formulated fungicide Stratego.
CRC COMMENT: "Attachment B. Glenn County: Registration of the insecticide methyl parathion exists on rice. However, use is declining due to decreasing efficacy. In 2005, 82 acres of rice received a formulated insecticide containing methyl parathion, toxaphene and xylene, which accounts for separate listings of these products on the DPR PUR."
CRC COMMENT: "Attachment B. Yuba County: Registration of the insecticide methyl parathion exists on rice. However, use is declining due to decreasing efficacy. In 2005, 32 acres of rice received a formulated insecticide containing methyl parathion, and xylene, which accounts for separate listings of these products on the DPR PUR.

RESPONSE TO THE ABOVE THREE COMMENTS: Subsequent to receiving this comment Staff noted that slightly different reports result from the DPR Pesticide Use Portal than from the DPR Pesticide Use Summary, both of which are accessed from the DRP website, http://www.cdpr.ca.gov/docs/pur/purmain.htm. Staff communicated with DRP and the CRC regarding the discrepancy, and as a result of those communications, an error in the database which generates the DPR website reports has been corrected by DPR. The Review Attachment B that was generated from the DPR website, was also corrected.

COMMENTS FROM CH2M HILL, for CRC

3. CRC COMMENT: 'Characterization Conditional Prohibition of Discharge (Rice Pesticides Program). It is suggested that all narrative discussion of molinate and thiobencarb detections be re-evaluated in the context of the conditional nature of the prohibition of discharge. For drain sites, the monitoring results should be compared to the Basin Plan performance goals. Without such revisions, the report will be inconsistent with the Basin Plan. Additionally, if any monitoring sites for rice pesticides were within closed systems, those results should not be included as either drain or river sites."

RESPONSE: Same response as to CRC Comment, C.1. above.

4. CRC COMMENT: “Figure Z1-1: The title of this figure is “Supplemental Monitoring Sites”. In the text, the term “supplemental” should be clarified/defined.

RESPONSE: Perhaps the commenter meant to refer to Figure Z1-2, which does have the title of “Supplemental Monitoring Sites”. Staff agrees that the definitions of Supplemental Monitoring Sites and MRP Plan sites (or Coalition Monitoring Sites) should be provided. These are now provided in the Review Introduction, under the section entitled ‘Data Included In This Evaluation.

5. CRC COMMENT: “Figures Z1-4, Z1-5, Z1-5, Z1-6, Z1-7, Toxicity Results. The maps present the number of times that statistically significant toxicity was detected. Although the maps do present the *sites* for which there was no detected, the *number* of samples for which toxicity was not detected should also be presented (a.g., N=# on the detection graphs). Additionally, graphs showing the temporal distribution of the toxicity results would be useful, as they may help to identify seasonal toxicity trends that may, in turn, be traced back to use patterns for specific pesticides or ambient seasonal conditions.”

RESPONSE: There are tables throughout the 2007 Review that correspond to each of the maps in which the total number of toxicity tests that were conducted is presented. In particular, Table Z1-2 lists the total number of tests collected at each monitoring site for Zone 1. Staff agrees that an understanding of the total number collected as compared to the number that exceeded the criterion is important information. Staff also agrees that showing seasonal *E. coli* trends would be informative and helpful, although there was insufficient time to evaluate the data for all four Zones to that extent. It is anticipated that the Coalitions are performing this type of analysis when their Semi-Annual Monitoring Reports are being prepared.

6. CRC COMMENT: “Figures Z1-4, Z1-5, Z1-5, Z1-6, Z1-7, Toxicity Results. …the report should clearly and plainly explain the purpose and nature of toxicity tests for readers unfamiliar with these tests. For example, it would be useful to explain that relatively sensitive organisms are intentionally employed, so that the tests do not necessarily indicate toxicity to all other organisms, but rather serve as a warning that the most sensitive organisms could be at risk at the time of sampling. Also, the cause of the toxicity is not necessarily determined by the test; rather, this requires additional and quite detailed analysis that the coalitions are also undertaking where toxicity is detected. Finally, a detection of toxicity does not prove that farming or irrigation in any way caused the toxicity; rather, this must be investigated by more detailed sampling and analysis. In Zone 1, there are many potential non-agricultural causes of toxicity.

RESPONSE: The 2007 Monitoring Review is written for an audience with a moderately technical background. However, the Monitoring Workshop, which will be presented to the Central Valley Water Board in August, will provide a more layman’s explanation of the value of toxicity testing and the selection of test species. The three test species used to assess toxicity were selected to represent three trophic levels of the food web: *S. capricornutum*, algae and primary producer; *C. dubia*, invertebrate and primary consumer; *P. promelas*, minnow and secondary consumer. In addition the testing methods for these species are well established, are reliable and repeatable, and have been demonstrated to predict instream impacts to the aquatic community (USEPA 1991. Technical support document for water quality-based toxics control, EPA/505/2-90-001. Office of Water, Washington, D.C.). These species are neither the most nor least sensitive when compared to other species. Regardless of the species used to assess toxicity, only a small range of sensitivity is represented.

Finally, staff agrees that a detection of toxicity does not prove that farming or irrigation necessarily caused the toxicity. It is true that there are other land uses that could cause the same result, although it is the Coalition's responsibility to take care in sample site selection so that influence from other land uses is minimized. The identification of sources of water quality exceedances is an action that Coalitions must also undertake, particularly if more than one exceedance occurs within a three-year period.

7. CRC COMMENT: "Figure Z1-9, Monitoring Results for Escherichia coli: The map presents the number of times that e.coli triggers are exceeded. It is suggested that the numeric trigger be noted on the map. Additionally, the number of sample events should also be included so that the reader could determine the % of the time that triggers are exceeded. Additionally, graphs showing the temporal distribution of the e.coli measurements would be useful, as they may help to identify seasonal toxicity trends that may, in turn, be traced back to use patterns for specific pesticides or ambient seasonal conditions."

RESPONSE: There are tables throughout the 2007 Review that correspond to each of the maps in which the total number of toxicity tests that were conducted is presented. In particular, Table Z1-2 lists the total number of tests collected at each monitoring site for Zone 1, including those for *E. coli* (bacteria column). Staff agrees that an understanding of the total number collected as compared to the number that were toxic is important information. Staff also agrees that showing seasonal toxicity trends would be informative and helpful, although there was insufficient time to evaluate the data for all four Zones to that extent. It is anticipated that the Coalitions are performing this type of analysis when their Semi-Annual Monitoring Reports are being prepared.

8. CRC COMMENT: "Executive Summary. Are 'agricultural drainages' streams/rivers that receive ag drainage, constructed ag drains, or ag-dominated waterbodies?"

RESPONSE: The term 'agricultural drainages' in this context is used to describe waterbodies that receive agricultural drainage or runoff from irrigated agriculture.

9. CRC COMMENT: Overview of Water Quality Concerns. CRC recommends the following text change, and information regarding the seasonality of such detections would be beneficial to the reader: "3. Toxicity to *Selenastrum capricornutum* (algal species) is generally associated with herbicides, and metals, such as copper, though to date the results of the analysis (including those undertaken by Coalitions and the UC Davis Phase I monitoring) have not conclusively identified specific causative agents.

RESPONSE: The recommended language change was added with the exception of the phrase underlined above. The UCDavis Phase I monitoring did not include *Selenastrum capricornutum*, and therefore, that statement is not accurate. Furthermore, staff recognizes that some TIE results for the algal species have provided information, and the task remains to evaluate all TIE results in order to determine how many specific causative agents have, or have not, been identified.

It is also anticipated that with completion of all Coalition's Phase II monitoring, which includes herbicides and metals, that a greater number of specific correlations will be made. In addition, the California Rice Commission is undertaking special studies to help determine the causes of algal toxicity in Zone 1. Staff also agrees that showing seasonal toxicity trends would be informative and helpful, although there was insufficient time to evaluate the data for all four

Zones to that extent. It is anticipated that the Coalitions are performing this type of analysis when their Semi-Annual Monitoring Reports are being prepared.

10. CRC COMMENT: "Overview of Water Quality Concerns. Information regarding the seasonality of such detections (chlorpyrifos, diazinon, simazine, diruon, and DDT/breakdown products) would be beneficial to the reader."

RESPONSE: Staff also agrees that showing seasonal trends would be informative and helpful, although there was insufficient time to evaluate the data for all four Zones to that extent. It is anticipated that the Coalitions are performing this type of analysis when their Semi-Annual Monitoring Reports are being prepared.

11. CRC COMMENT: Overview of Water Quality Concerns. 7. Salinity… "what is the basis for the 'concern'? Salinity in the Delta has been a known issue of concern for a very long time and the SWRCB is engaged in establishing and enforcing salinity requirements in the Delta (primarily associated with Delta pumping). In addition, TMDL efforts for Salinity are underway in the San Joaquin. Some historic perspective on this matter would provide the layman with background understanding regarding the Board's ongoing efforts to address salinity in the Central Valley."

RESPONSE: Staff agrees that making more information about the salinity issue and actions taken to address it would be informative to the reader. A link to the Central Valley Regional Water Quality Control website that describes the salinity issue and describes programs being taken to address it has been added to the Executive Summary.

12. CRC COMMENT: "3. Standards Applied to Detected Results. The statement '*Because the Irrigated Lands Conditional Waiver is a general waiver, it does not set forth the designated beneficial uses in each water body, nor the water quality criteria and objectives.'* is problematic. The issue at hand that it may be inappropriate to apply drinking water standards to waterbodies that are agriculturally dominated and/or constructed ag drains. This has nothing to do with the waiver, rather, it is a matter of Basin Planning process. It would be better stated that where water quality standards/objectives are adopted for specific waterbodies, monitoring results have been compared to those standards/objectives. Where monitoring sites are located on waterbodies that do not have adopted standards/objectives, a public process is being developed to compare results to threshold values. This comparison will allow for the prioritization of concerns.

RESPONSE: According to USEPA, *all* of our water bodies have beneficial uses designated in the Basin Plan, either directly for water bodies named in the Basin Plan, or more indirectly via the tributary footnote and our incorporation of the Sources of Drinking Water Policy into our Basin Plan (all unnamed waterbodies have MUN). In addition, water quality objectives have been assigned to specific water bodies or to protect specific beneficial uses more broadly. In addition, CTR and NTR criteria apply to most surface waters within our Region. Therefore, water quality standards [(designated beneficial uses) + (water quality objectives or CTR/NTR criteria)] have been adopted for most of our water bodies.

13. CRC COMMENT: "4. Pesticides Applied vs. Pesticides Analyzed. The statements '*The MRP requires that coalition monitoring include tests for specific list of standard-use pesticides for which analytical methods have been established' and 'This is evidenced in Table Z4-1, Pesticide use in Zone 4, which identifies the list of pesticides used for each crop type in Zone 4, many of which are not part of the baseline ILP MRP monitoring requirements'* are problematic.

The first statement generalizes the requirements of the MRP and needs to be reworded to accurately reflect the requirements of the waiver with respect to pesticide monitoring. Specifically, the MRP requires that monitoring and reporting be conducted in accordance with approved MRP Plans developed in accordance with the CVRWQCB's Monitoring and Reporing Program Order R5-2005-0833 (MRP Order). The MRP Order specifies that Phase I monitoring was to include a Pesticide Use Evaluation. Phase 2 was to include chemical pesticide analyses based on the Pesticide Use Evaluation. Further, the MRP Order listed the minimum monitoring requirements for pesticide.

The second statement could be interpreted to mean that the MRP plans did not include required analyses. The MRP requires that monitoring and reporting be conducted in accordance with an approved Coalition-specific MRP Plans. The statement was written implies that Coalitions are not compliant with the MRP requirements. If the analysis of pesticides applied versus pesticides analyzed has determined that additional pesticides should be monitored by Coalitions, then it is a matter of revising MRPs."

RESPONSE: The following is an excerpt from the introduction of the 2007 Review:

> This 2007 Review does not consider issues of compliance in the evaluation of data collected for the Monitoring Program. The intent of is solely to summarize the monitoring information and provide baseline information regarding water quality conditions, identify findings that can be made, and consider areas where the collection of more water quality data would be effective at understanding baseline conditions and providing guidance for management practice implementation.

The above paragraph indicates that there was a specific effort during the writing of the Review to avoid any discussion about Coalition compliance. The statements about the pesticides being monitored compared to the pesticides being applied refers to the fact that current pesticide applications are not always being monitored and does not say anything about Coalition compliance. The intent of the section is to identify to the reader that water quality data on the pesticides that are in current use during the monitoring season would be more informative than monitoring from a specified list, such as the one in the existing MRP Order.

14. CRC COMMENT: "7. Missing Spatial Data. If revisions to the Conditional Waiver program are thought necessary to improve the ability of the program to characterize agricultural discharges, then that should be stated."

RESPONSE: The reason that this Review has been prepared, and will be presented to the Central Valley Water Board members (Board) is in large part so that program decisions can be made based on the information that the Monitoring Review provides. One of the upcoming decisions for the Board will be decisions on modifications to the existing MRP Order. The Closing Summary of the Review states as follows:

> 'The Coalition Group Monitoring and Reporting Program is being revised in part through the efforts of Water Board staff in consultation with the ILP Technical Issues Committee as well as other stakeholders. The changes that are being proposed are based on lessons learned from the previous and current MRP (Order RB5S-2005-0833), as well as on considerations to balance the need for more technical information with concerns about cost effectiveness. The modifications that will be made in the Coalition monitoring plans will have an effect on information available for future data assessments.'

15. CRC COMMENT: “Figure Z1-3. Seasonality of toxic events would be beneficial to the reader.”
CRC COMMENT: “Page Z1-21. (similar comment to above)”
CRC COMMENT: “Summary. (similar comment to above)”

RESPONSE TO THE ABOVE THREE COMMENTS: Staff agrees that showing seasonal trends would be informative and helpful, although there was insufficient time to evaluate the data for all four Zones to that extent. It is anticipated that the Coalitions are performing this type of analysis when their Semi-Annual Monitoring Reports are being prepared.

D. RESPONSE TO COMMENTS RECEIVED FROM JOHN B. MEEK, Jr. SAN JOAQUIN COUNTY & DELTA WATER QUALITY COALITION (SJCDWQC)

1. SJCDWQC COMMENT: “General Comments. 1. The document contains the symbol for µ which appears to be a ‘u’. It should be changed.”

RESPONSE: Staff has been instructed to use u instead of µ when describing concentrations, in particular when the document will be converted into different software versions or into different programs. Staff has experienced distortions with some symbols when program conversions take place.

2. SJCDWQC COMMENT: “Specific Comments. 1. The presentation of the pesticide data in Appendix B by total pounds is misleading since a large portion of the applications are inert compounds that should not be included. The current description suggests that for some crops in some locations, between 100-150 lbs/acre of pesticides are applied.”

RESPONSE: Staff has deleted the inert ingredients and the pounds of inert ingredients applied.

3. SJCDWQC COMMENT: “4. Page Z2-8, paragraph 1. This paragraph is not specific to Zone 2, and a majority of those tests were performed in Zone 3. The percentages of pyrethroid/chlorpyrifos associated sediment toxicity should be specific to the zone.”

RESPONSE: The study being conducted through the University of California is providing valuable information about the causes of sediment toxicity that is currently not available from Coalition monitoring, due to the existing MRP Order requirements. The paragraph regarding results from the UC study is not removed, although specific reference with respect to percentages has been removed.

4. SJCDWQC COMMENT: “Page Z2-7, Table Z2-3 and Page Z2-8, paragraph 2. The water quality objective in the table and the paragraph should be 0.16 ug/L, not 0.10 ug/L (Amendments to the Water Quality control Plan for Sacramento River and the San Joaquin River Basins for the Control of Diazinon and Chlorpyrifos Runoff into the Sacramento-San Joaquin Delta, June 2006 Final Staff Report, pgs 25-56).

RESPONSE: Commenter is referring to the use of chronic exposure levels of 0.10 ug/L, as determined by the 4-day average concentrations. Staff does not agree that the use of only acute values, such as 0.16 ug/L, is appropriate for sampling that occurs only once per month. The sample results are assumed to be representative of water quality conditions during that month, so the evaluation of the data is based on the chronic criterion. To be prudently protective of the aquatic life beneficial use, it must be assumed that infrequent sample results

represent concentrations that could occur over extended periods and result in chronic toxicity. Coalitions do have the alternative of increasing the monitoring frequency so that 4-day average concentrations could be calculated and both acute and chronic exposure levels could be applied to the results.

E. RESPONSE TO COMMENTS RECEIVED FROM MICHAEL JOHNSON, FOR PARRY KLASSEN (EAST SAN JOAQUIN WATER QUALITY COALITION) AND JOE MCGAHAN (WESTSIDE COALITION)

1. KLASSEN-MCGAHAN COMMENT: "General Comments. 1. The document contains the symbol for μ which appears to be a 'u'. It should be changed."

RESPONSE: See response to D.1, above.

2. KLASSEN-MCGAHAN COMMENT: "General Comments. Page Z3-1. The presentation of the pesticide data by total pounds is misleading since a large portion of the applications are inert compounds that should not be included. The current description suggests that in some crops in some locations, between 100-150 lbs/acre of pesticides are applied. This does not take into account a product's water solubility, it's relative toxicity to aquatic organism (if any) and whether applications of the products listed have the potential to reach waters of the state."

RESPONSE: Perhaps the commenters are referring to pesticides listed in Attachment B. See response to comment, D. 2, above. taff has deleted the inert ingredients and the pounds of inert ingredients applied from that Attachment. The text in Page Z3-1 and the table in Attachment B do not state nor imply anything with regard to the relative risk of the chemicals in the use summary, based on the characteristics described by the commenters. The Attachment merely summarizes total pesticide use, which in some cases totals many pounds per acre. The relative risk of certain specific pesticides, based on interpretation of available data, is evaluated and presented elsewhere in the report.

3. KLASSEN-MCGAHAN COMMENT: "Page Z3-8, paragraph 2. The first sentence indicates that DDT is still used in other countries, which is true but irrelevant to the current review. The beginning clauses in that sentence are true."

RESPONSE: The fact that DDT is used in other countries has relevance to the discussion, because it raises the possibility of possible sources of DDT residues, such as importation of contaminated products, illegal use, etc.

4. KLASSEN-MCGAHAN COMMENT: "Page Z3-17, paragraph 4. The preliminary report provided by the ESJWQC in November 2006 indicated that human fecal contamination was the most probable cause of the high coliform counts in surface waters. These results should be included in the current review because they are critical in the interpretation of the *E. coli* data submitted by the coalition."

RESPONSE: The preliminary report from ESJWQC provides useful and important preliminary information, but it had not been thoroughly reviewed, finalized and submitted in November 2006. It is also important to note that the samples collected for the DNA study conducted by UCDavis were collected only at specific monitoring sites, and only during the irrigation season. It may well be that results from different locations and during the storm seasons would have different results. The final report completed by UC Davis for the ESJWQC on 18 June 2007, and was provided to staff in July 2007. The Draft 2007 Monitoring Data Review was completed on 13

June 2007. Clearly, there has been insufficient time for staff to review the final report, make comment, and include it in the 2007 Monitoring Review.

5. KLASSEN-MCGAHAN COMMENT: "Page Z3-19, first partial paragraph. The second line identifies Prarie Flower Drain and Hilmar Drain as the source of the majority of the EC/TDS exceedances on the east side of the river. It should be pointed out that these sites are located very close to the SJR and overly a subsurface geology that is high in EC/TDS EC/TDS."

RESPONSE: The relevance of the comment that these sites are very close to the San Joaquin River is not clear. The comment that the sites overlie a subsurface geology high in TDS offers one possible source or explanation for the salinity measured at these locations. Documentation of this as part of an approach to identifying causes of exceedances will be appropriate for the Coalitions' Management Plans.

6. KLASSEN-MCGAHAN COMMENT: "Page 2, paragraph 3. The paragraph goes on to state that a CV Salinity management Plan is being developed that will affect the ILP, but no details are provided."

RESPONSE: Staff agrees that making more information about the salinity issue and actions taken to address it would be informative to the reader. A link to the Central Valley Regional Water Quality Control website that describes the salinity issue and describes programs being taken to address it has been added to the Executive Summary.

F. RESPONSE TO COMMENTS RECEIVED FROM MARSHALL LEE, CALIFORNIA DEPARTMENT OF PESTICIDE REGULATION (CDPR)

1. CDPR COMMENT: "Section I, Page 7, Comparison to Standards; It will probably not be apparent to many readers why MCLs and other public health-related values will be used as water quality triggers in waterways that are not intuitively considered drinking water sources (MUN). A fuller explanation of your generalizations and assumptions would be helpful. Also, to allay concern that drinking water may be unhealthful due to pesticides found in MUN-designated waters, it would be valuable to state that MCLs (as defined in CCR Title 22) for pesticides are fully protected.

RESPONSE: The Water Board is mandated to protect future as well as existing beneficial uses. The manner in which the Sources of Drinking Water Policy was incorporated into the Basin Plan, designated MUN for all waters not specifically listed. Generalization for the Review had to be made, although beneficial uses and appropriate standards to apply at each of the monitoring sites will be clarified in the near future as the ILP continues to develop. Staff will consider the use of clarifying language regarding generalizations and assumptions for future reports and discussions.

2. CDPR COMMENT: "Section I, Page 7. Similarly, it would be valuable to state, perhaps in Section I, that exceedances of water quality triggers do not necessarily equate to toxic conditions or impairments of beneficial uses. Water quality criteria, for example, are protective by design and cannot be equated with thresholds of toxicity."

RESPONSE: According to USEPA protocols, aquatic life numeric triggers represent concentrations that, if exceeded more than once in three years, could result in impairment of beneficial uses. Exceeding a trigger, used to apply a narrative objective, can be interpreted as a violation of the narrative objective. The demonstration of concurrent toxicity or any direct evidence of use impairment before noting an exceedance is not needed. USEPA's long-standing policy for determining compliance with water quality standards has been than any line of evidence (chemical, toxicity, or biologic integrity) can be used independently to determine whether violations have occurred.